Form No. 3395-857 Rev B

TORO®

Count on it.

Operator's Manual

Groundsmaster® 3280-D Traction Unit

Model No. 30344—Serial No. 315000001 and Up
Model No. 30345—Serial No. 315000001 and Up

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

CE

3395-857 B

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

⚠ WARNING

CALIFORNIA
Proposition 65 Warning

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

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

Important: This engine is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate the engine on any forest-covered, brush-covered, or grass-covered land. Other states or federal areas may have similar laws.

Introduction

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

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

You may contact Toro directly at www.Toro.com for product 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.

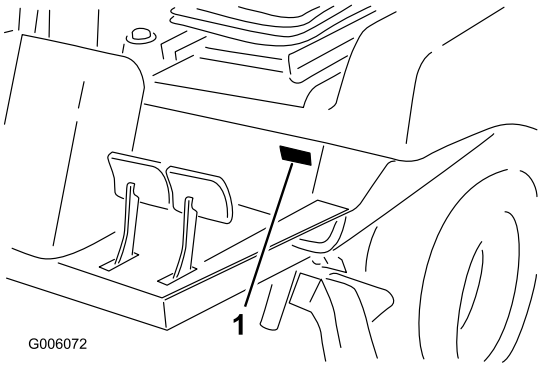


Figure 1

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

Contents

Safety

This machine has been designed in accordance with EN ISO 5395:2013 when equipped with the proper CE kit (refer to the Declaration of Conformity) and rear weight; refer to 11 Installing Rear Weights (page 21).

This machine has been designed in accordance with ANSI B71.4-2012, when equipped with the proper rear weight; refer to 11 Installing Rear Weights (page 21).

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

Safe Operating Practices

Training

- Read the *Operator's Manual* and other training material carefully. If the operator or mechanic can not read the language of this manual it is the owner's responsibility to explain this material to them.
- Be familiar with the controls, safety signs, and the proper use of the equipment.
- Never allow children or people unfamiliar with these instructions to use or service the mower. Local regulations may restrict the age of the operator.
- Never mow while people, especially children, or pets are nearby.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people or their property.
- Do not carry passengers.
- All operators and mechanics should seek and obtain professional and practical instruction. The owner is responsible for training the users. Such instruction should emphasize:
  - the need for care and concentration when working with ride-on machines;
  - control of a ride-on machine sliding on a slope will not be regained by the application of the brake. The main reasons for loss of control are:
    - ◊ insufficient wheel grip;
    - ◊ being driven too fast;
    - ◊ inadequate braking;
    - ◊ the type of machine is unsuitable for its task;
    - ◊ lack of awareness of the effect of ground conditions, especially slopes;
    - ◊ incorrect hitching and load distribution.
- The owner/user can prevent and is responsible for accidents or injuries occurring to himself or herself, other people, or property.

Preparation

- While mowing, always wear substantial, slip-resistant footwear, long trousers, hard hat, safety glasses, and hearing protection. Long hair, loose clothing, or jewelry may get tangled in moving parts. Do not operate the equipment when barefoot or wearing open sandals.
- Thoroughly inspect the area where the equipment is to be used and remove all objects which may be thrown by the machine.
- Replace faulty silencers/mufflers.
- Evaluate the terrain to determine what accessories and attachments are needed to properly and safely perform the job. Only use accessories and attachments approved by the manufacturer.
- Check the operator presence controls, safety switches and shields to make sure they are attached and functioning properly. Do not operate unless they are functioning properly.

⚠ CAUTION

Adequate rear weight is necessary to prevent the rear wheels from leaving the ground. Do not stop suddenly while deck or implement is raised. Do not travel down hill with the deck or implement raised. If the rear wheels leave the ground, steering is lost.

Safe Handling of Fuels

- To avoid personal injury or property damage, use extreme care in handling fuel. Fuel is extremely flammable and the vapors are explosive.
- Extinguish all cigarettes, cigars, pipes, and other sources of ignition.
- Use only an approved fuel container.
- Never remove fuel cap or add fuel with the engine running.
- Allow engine to cool before refueling.
- Never refuel the machine indoors.
- Never store the machine or fuel container where there is an open flame, spark, or pilot light such as on a water heater or on other appliances.
- Never fill containers inside a vehicle or on a truck or trailer bed with a plastic liner. Always place containers on the ground away from your vehicle before filling.

- Remove equipment from the truck or trailer and refuel it on the ground. If this is not possible, then refuel such equipment with a portable container, rather than from a fuel dispenser nozzle.
- Keep the nozzle in contact with the rim of the fuel tank or container opening at all times until fueling is complete. Do not use a nozzle lock open device.
- If fuel is spilled on clothing, change clothing immediately.
- Never overfill fuel tank. Replace fuel cap and tighten securely.

Operation

- Do not operate the engine in a confined space where dangerous carbon monoxide and other exhaust gasses can collect.

⚠ WARNING

Engine exhaust contains carbon monoxide, which is an odorless, deadly poison that can kill you.

Do not run engine indoors or in an enclosed area.

- Mow only in daylight or in good artificial light.
- Before attempting to start the engine, disengage all blade attachment clutches, shift into neutral, and engage the parking brake.
- Do not put hands or feet near or under rotating parts. Keep clear of the discharge opening at all times.
- Remember there is no such thing as a safe slope. Travel on grass slopes requires particular care. To guard against overturning:
  - do not stop or start suddenly when going up or downhill;
  - machine speeds should be kept low on slopes and during tight turns;
  - stay alert for humps and hollows and other hidden hazards;
  - never mow across the face of the slope.
- Stay alert for holes in the terrain and other hidden hazards.
- Watch out for traffic when crossing or near roadways.
- Stop the blades rotating before crossing surfaces other than grass.
- Never direct the discharge of material toward bystanders nor allow anyone near the machine while in operation.
- Never operate the machine with damaged guards, shields, or without safety protective devices in place. Be sure all interlocks are attached, adjusted properly, and functioning properly.
- Do not change the engine governor settings or over speed the engine. Operating the engine at excessive speed may increase the hazard of personal injury.
- Before leaving the operator's position:
  - stop on level ground;
  - disengage the power take-off and lower the attachments;
  - Set the parking brake;
  - stop the engine and remove the key.
- Disengage drive to attachments when transporting or not in use.
- Stop the engine and disengage drive to attachment
  - before refuelling;
  - before removing the grass catcher/catchers;
  - before making height adjustment unless adjustment can be made from the operator's position.
  - before clearing blockages;
  - before checking, cleaning or working on the mower;
  - after striking a foreign object or if an abnormal vibration occurs. Inspect the mower for damage and make repairs before restarting and operating the equipment.
- Keep hands and feet away from the mower deck.
- Look behind and down before backing up to be sure of a clear path.
- Slow down and use caution when making turns and crossing roads and sidewalks. Disengage blades if not mowing.
- Be aware of the mower discharge direction and do not point it at anyone.
- Do not operate the mower under the influence of alcohol or drugs.
- 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.
- Use care when loading or unloading the machine into a trailer or truck.
- Use care when approaching blind corners, shrubs, trees, or other objects that may obscure vision.

Rollover Protection System (ROPS) - Use and Maintenance

- The ROPS is an integral and effective safety device. Keep a folding ROPS in the raised and locked position and use the seat belt when operating the machine.
- Lower a folding ROPS temporarily only when absolutely necessary. Do not wear the seat belt when folded down
- Be aware there is no rollover protection when a folded ROPS is in the down position.
- Be certain that the seat belt can be released quickly in the event of an emergency.

- Check the area to be mowed and never fold down a folding ROPS in areas where there are slopes, drop offs or water
- Check carefully for overhead clearances (i.e. branches, doorways, electrical wires) before driving under any objects and do not contact them
- Keep the ROPS in safe operating condition by periodically thoroughly inspecting for damage and keeping all mounting fasteners tight.
- Replace a damaged ROPS. Do not repair or revise.
- **Do not** remove the ROPS.
- Any alterations to a ROPS must be approved by the manufacturer.

Maintenance and Storage

- Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
- Never store the equipment with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow the engine to cool before storing in any enclosure.
- To reduce the fire hazard, keep the engine, silencer/muffler, battery compartment and fuel storage area free of grass, leaves, or excessive grease.
- Keep all parts in good working condition and all hardware and hydraulic fittings tightened. Replace all worn or damaged parts and decals.
- If the fuel tank has to be drained, do this outdoors.
- Be careful during adjustment of the machine to prevent entrapment of the fingers between moving blades and fixed parts of the machine.
- On multi-spindle mowers, take care as rotating 1 blade can cause other blades to rotate.
- Disengage drives, lower the deck, set parking brake, stop engine and remove the key from the ignition. Wait for all movement to stop before adjusting, cleaning or repairing.
- Clean grass and debris from decks, drives, silencers/mufflers, engine and underside of machine to help prevent fires. Clean up oil or fuel spillage.
- Use jack stands to support components when required.
- Carefully release pressure from components with stored energy.
- Disconnect battery before making any repairs. Disconnect the negative terminal first and the positive last. Reconnect positive first and negative last.
- Use care when checking the blades. Wear gloves and use caution when servicing them. Only replace blades. Never straighten or weld them.
- Keep hands and feet away from moving parts. If possible, do not make adjustments with the engine running.
- Charge batteries in an open well ventilated area, away from spark and flames. Unplug charger before connecting or disconnecting from battery. Wear protective clothing and use insulated tools.

Hauling

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

Toro Riding Mower Safety

The following list contains safety information specific to Toro products or other safety information that you must know that is not included in the CEN, ISO, or ANSI standard.

This product is capable of amputating hands and feet and throwing objects. Always follow all safety instructions to avoid serious injury or death.

Use of this product for purposes other than its intended use could prove dangerous to user and bystanders.

- Know how to stop the engine quickly.
- Do not operate the machine while wearing tennis shoes or sneakers.
- Wearing safety shoes and long pants is advisable and required by some local ordinances and insurance regulations.
- Handle fuel carefully. Wipe up any spills.
- Check the safety interlock switches daily for proper operation. If a switch should fail, replace the switch before operating the machine.
- Before starting the engine, sit on the seat.
- Using the machine demands attention. To prevent loss of control:
  - Do not drive close to sand traps, ditches, creeks, or other hazards.
  - Reduce speed when making sharp turns. Avoid sudden stops and starts.
  - This machine is not designed or equipped for on-road use and is a “slow-moving vehicle.” If you must cross or travel on a public road, you should be aware of and comply with local regulations, such as required lights, slow moving vehicle signs, and reflectors.
  - When near or crossing roads, always yield the right-of-way.
  - Apply the service brakes when going downhill to keep forward speed slow and to maintain control of the machine.
- Raise the deck when driving from a work area to another.
- Do not touch the engine, silencer/muffler, or exhaust pipe while the engine is running or soon after it has stopped because these areas could be hot enough to cause burns.

- If the engine stalls or machine cannot make it to the top of a slope, do not turn the machine around. Always back slowly, straight down the slope.
- When a person or pet appears unexpectedly in or near the mowing area, stop mowing. Careless operation, combined with terrain angles, ricochets, or improperly positioned guards can lead to thrown object injuries. Do not resume mowing until the area is cleared.

Maintenance and Storage

- Make sure that all hydraulic line connectors are tight and that 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 the skin and cause serious injury. Seek immediate medical attention if fluid is injected into skin.
- Before disconnecting or performing any work on the hydraulic system, all pressure in the system must be relieved by stopping the engine and lowering the deck and attachments to the ground.
- Check all fuel lines for tightness and wear on a regular basis. Tighten or repair them as needed.
- If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing, and any parts of the body away from the deck, attachments, and any moving parts, especially the screen at the side of the engine. Keep everyone away.
- If major repairs are ever needed or if assistance is desired, contact an Authorized Toro Distributor.
- Use only Toro approved attachments and replacement parts. The warranty may be voided if used with unapproved attachments.

Sound Power Level

This unit has a guaranteed sound power level of 105 dBA, which includes an Uncertainty Value (K) of 1 dBA.

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

Sound Pressure Level

This unit has a sound pressure level at the operator's ear of 90 dBA, which includes an Uncertainty Value (K) of 1 dBA.

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

Vibration Level

Hand-Arm

Measured vibration level for right hand = 1.25 m/s^2

Measured vibration level for left hand = 1.28 m/s^2

Uncertainty Value (K) = 0.5 m/s^2

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

Whole Body

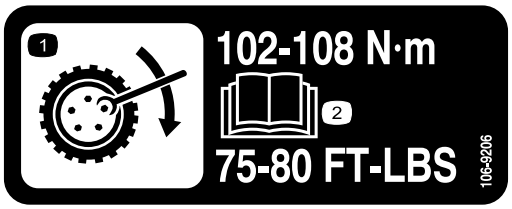
Measured vibration level = 0.37 m/s^2

Uncertainty Value (K) = 0.5 m/s^2

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

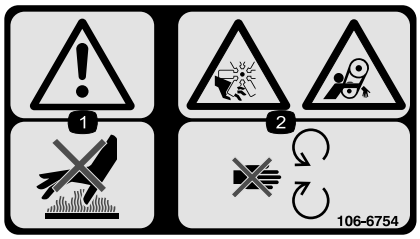
Safety and Instructional Decals

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.



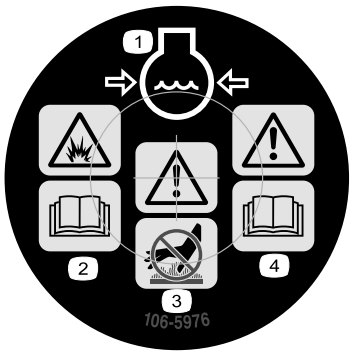
106-9206

1. Wheel torque specifications
2. Read the *Operator's Manual*.



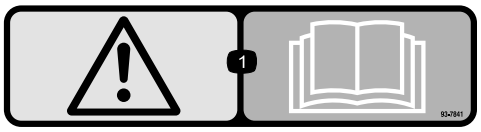
106-6754

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



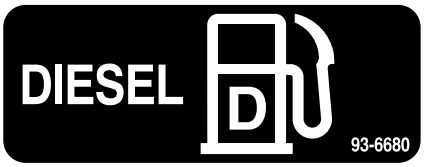
106-5976

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*.

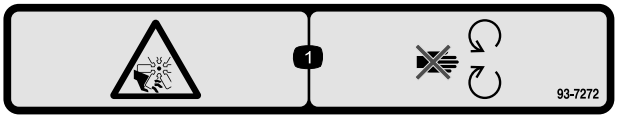


93-7841

1. Warning—read the *Operator's Manual*.



93-6680



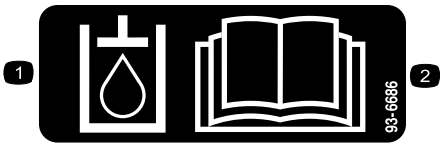
93-7272

1. Cutting/dismemberment hazard; fan—stay away from moving parts.

93-6697

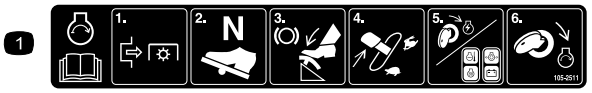
(Model 30345)

1. Read the *Operator's Manual*.
2. Add SAE 80w-90 (API GL-5) oil every 50 hours.



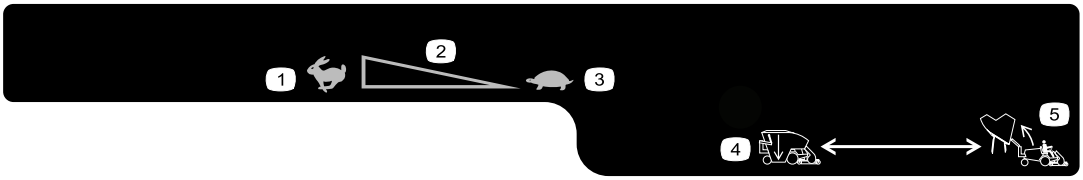
93-6686

1. Hydraulic oil
2. Read the *Operator's Manual.*



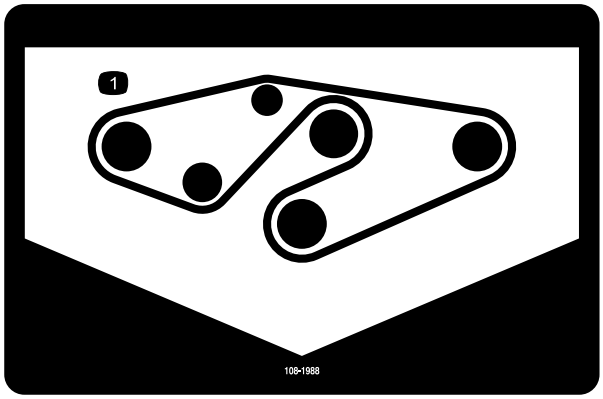
105-2511

1. Read *Operator's Manual* for starting instructions.



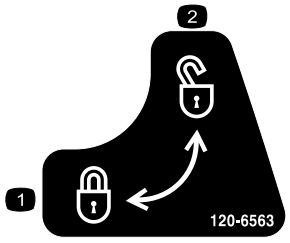
119-4832

1. Fast
2. Continuous variable setting
3. Slow
4. Lower the hopper
5. Raise the hopper



108-1988

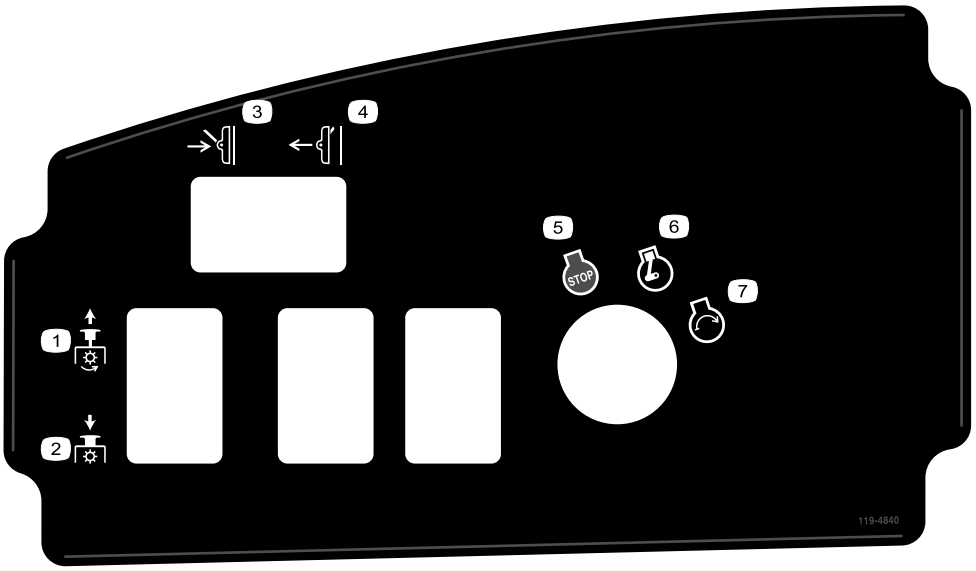
1. Belt routing



120-6563

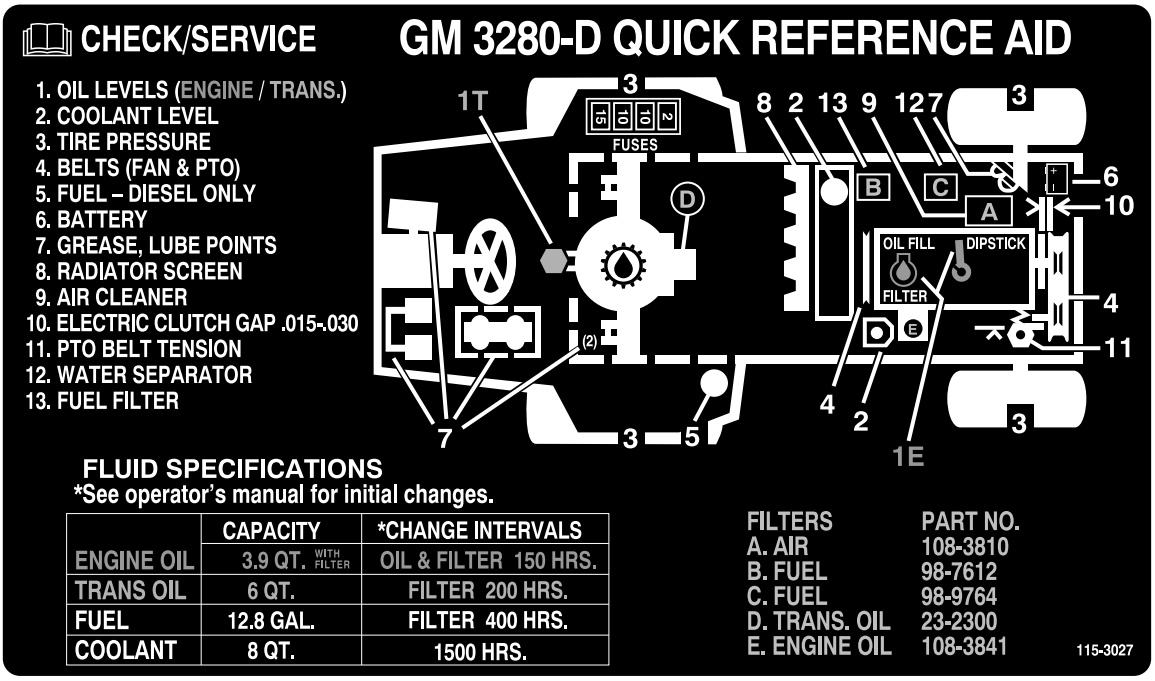
CE Only

1. Lock
2. Unlock

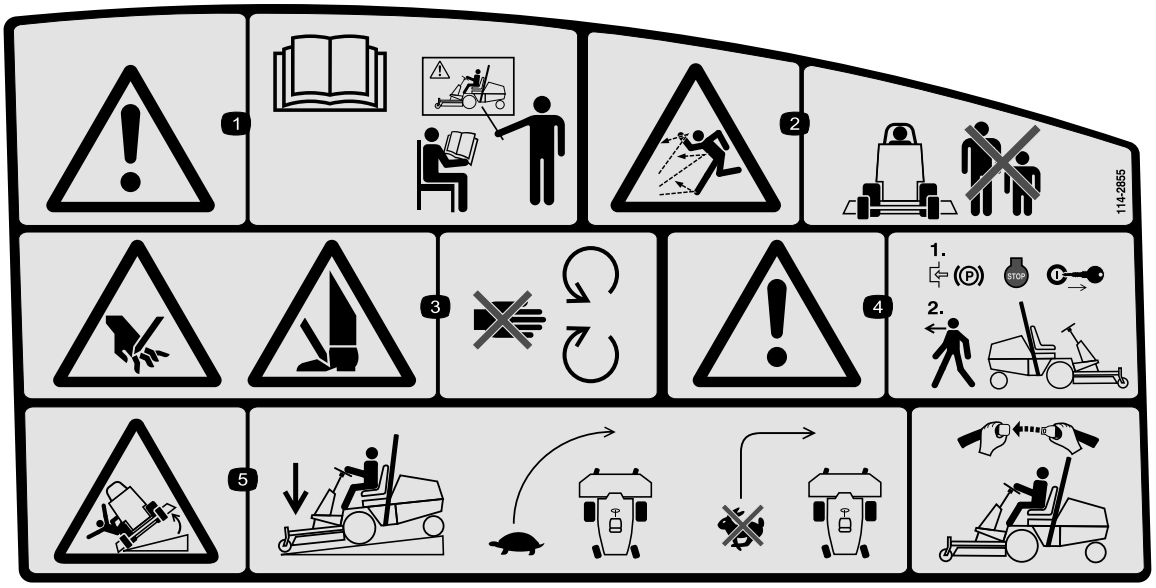


119-4840

1. PTO—On
2. PTO—Off
3. Lower deck
4. Raise deck
5. Engine—stop
6. Engine—run
7. Engine—start

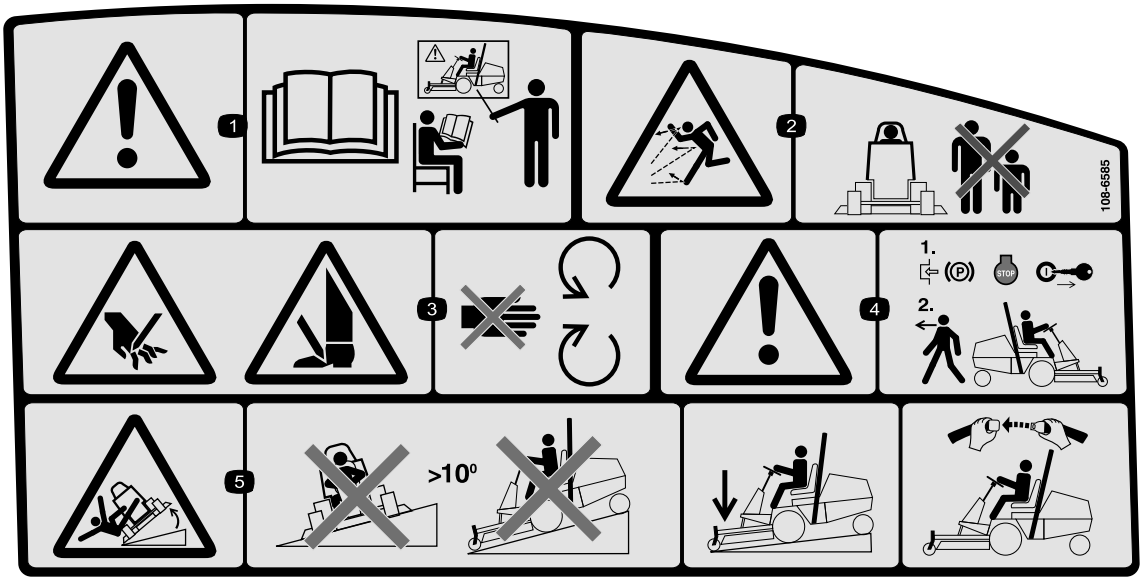


115-3027



114-2855

1. Warning—read the *Operator's Manual*, all operators should be trained before operating the machine.
2. Thrown object hazard—keep bystanders a safe distance from the machine and keep the deflector in place.
3. Cutting/dismemberment hazard of hands or feet, mower blade—stay away from moving parts.
4. Warning—engage the parking brake, and remove the ignition key before leaving the machine.
5. Tipping hazard—when driving down slopes, lower the cutting unit, slow machine before turning, do not turn at high speeds, and if the roll bar is installed, wear the seat belt.

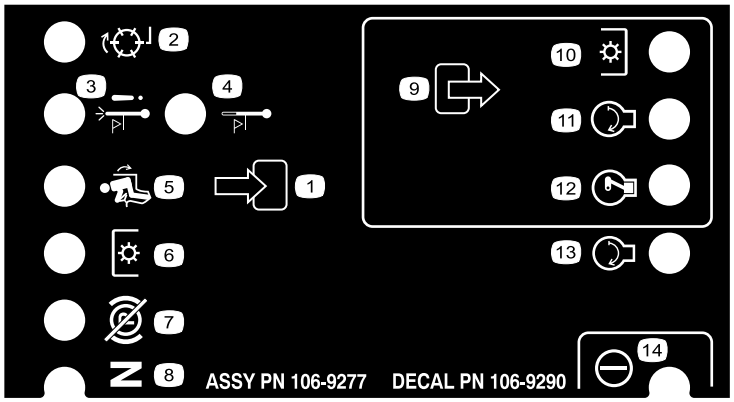


108-6585

(Apply over 114–2855 for CE)

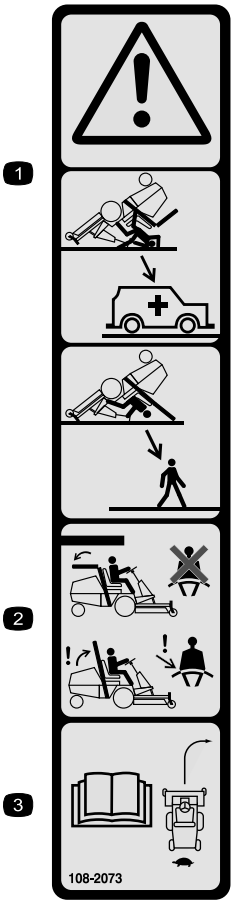
* This safety decal includes a slope warning required on the machine for compliance to the European Lawn Mower Safety Standard EN ISO 5395:2013. The conservative maximum slope angles indicated for operation of this machine are prescribed by and required by this standard.

1. Warning—read the *Operator's Manual*, all operators should be trained before operating the machine.
2. Thrown object hazard—keep bystanders a safe distance from the machine and keep the deflector in place.
3. Cutting/dismemberment hazard of hands or feet, mower blade—stay away from moving parts.
4. Warning—engage the parking brake, and remove the ignition key before leaving the machine.
5. Tipping hazard—do not drive the machine on a slope greater than 10 degrees; when driving down slopes, lower the cutting unit, and if the roll bar is raised, wear the seat belt.



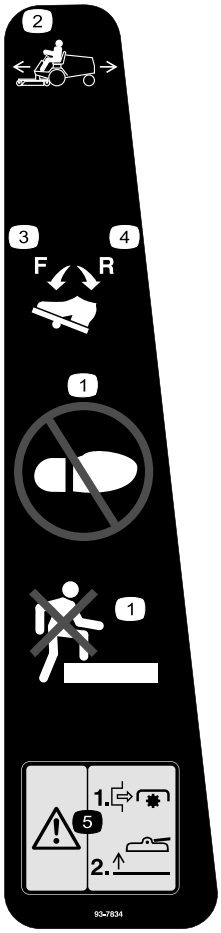
106-9290

1. Inputs
2. Not active
3. High temperature shutdown
4. High temperature warning
5. In seat
6. Power Take-off (PTO)
7. Parking brake Off
8. Neutral
9. Outputs
10. Power Take-off (PTO)
11. Start
12. Energize to Run (ETR)
13. Start
14. Power



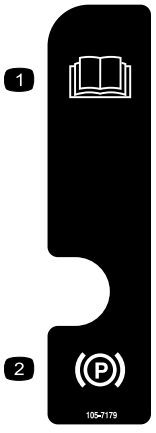
108-2073

1. Warning—there is no rollover protection when the roll bar is down.
2. To avoid injury or death from a rollover accident, keep the roll bar in the raised and locked position and wear the seat belt. Lower the roll bar only when absolutely necessary; do not wear the seat belt when the roll bar is down.
3. Read the *Operator's Manual*; drive slowly and carefully.



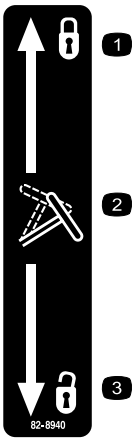
93-7834

1. No step
2. Traction pedal
3. Traction-forward
4. Traction-reverse
5. Warning—shut off PTO prior to raising decks; do not operate decks when they are in raised position



105-7179

1. Read the *Operator's Manual*.
2. Parking brake



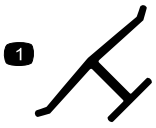
82-8940

1. Locked
2. Tilt steering
3. Unlocked

Battery Symbols

Some or all of these symbols are on your battery.

1. Explosion hazard
2. No fire, open flames, 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.



Manufacturer's Mark

1. Indicates the blade is identified as a part from the original machine manufacturer.

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Steering wheel Cover	1 1	Install the steering wheel.
2	Handle Screws	1 2	Install the hood handle.
3	Seat, Model 30398 and the Mechanical Seat Suspension Kit, Model No. 30312 or the Pneumatic Seat Suspension Kit, Model No. 30313 (obtained separately)	1	Install the seat.
4	Seat belt Bolts Lock washer Flat washer	2 2 2 2	Install the seat belt.
5	Manual tube R-clamp	1 2	Install the manual tube.
6	No parts required	–	Adjust the ROPS.
7	No parts required	–	Activate and charge the battery.
8	No parts required	–	Check the tire pressure.
9	Lift-lock lever Flat washer Spring washer Spacer Screw (1/4 x 1 inch) Flange locknut (1/4 inch)	1 1 1 1 1 1	Install the lift-lock lever.
10	No parts required	–	Adjust the counterbalance pressure.
11	Rear weight kit(s) as needed	-	Install the rear weights, if needed.
12	No parts required	–	Check the rear axle lubricant, hydraulic fluid, and engine-oil levels.
13	Operator's Manual Engine Operator's Manual Parts Catalog Operator Training Material Pre-delivery Inspection Sheet Certificate of compliance Certificate of Quality Roll pin Bolt (5/16 x 1-3/4 inches) Locknut (5/16 inch) Cylinder pin Cotter pin (3/16 x 1-1/2 inches) Brake-return springs	2 1 1 1 1 1 1 1 2 2 2 4 2	Read the manuals and watch the training materials before operating the machine. Use the remaining parts for the installation of attachments.

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

⚠ WARNING

The PTO universal shaft is attached to the machine frame. Do not engage the PTO without first removing the universal shaft or coupling it to a suitable implement.

1

Installing the Steering Wheel

Parts needed for this procedure:

1	Steering wheel
1	Cover

Procedure

1. Remove the steering wheel from the shipping skid (Figure 3).

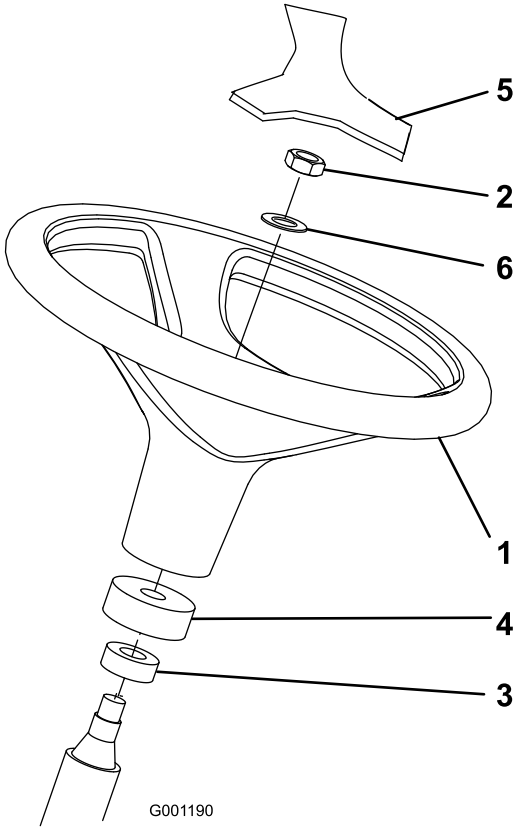


Figure 3

1. Steering wheel
2. Jam nut
3. Dust cover
4. Foam collar
5. Cover
6. Washer

2. Remove the jam nut and washer from the steering shaft.

   Note: Ensure that the foam collar and dust cover remain on the steering shaft (Figure 3).

3. Slide the steering wheel and washer onto the steering shaft (Figure 3).
4. Secure the steering wheel to the shaft with the jam nut. Tighten the jam nut to 27-35 N-m (20-26 ft-lb).
5. Mount the cover to the steering wheel (Figure 3).

2

Installing the Hood Handle

Parts needed for this procedure:

1	Handle
2	Screws

Procedure

1. Remove and discard the 2 screws and nuts securing the hood cable bracket and to the underside of the hood (Figure 4).

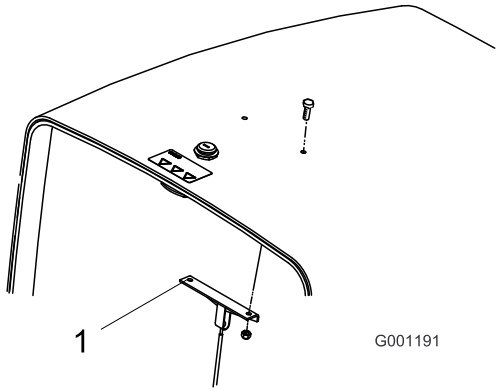


Figure 4

1. Hood cable bracket

2. Mount the handle and the cable bracket to the hood with 2 screws (Figure 5).

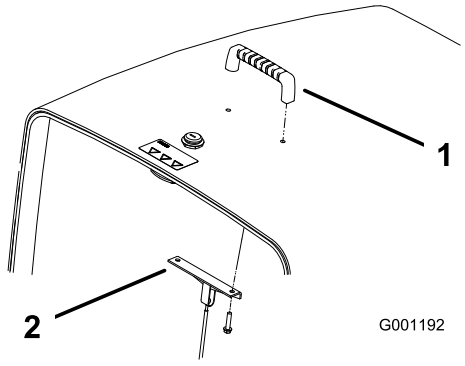


Figure 5

1. Handle
2. Hood-cable bracket

3

Installing the Seat

Parts needed for this procedure:

1	Seat, Model 30398 and the Mechanical Seat Suspension Kit, Model No. 30312 or the Pneumatic Seat Suspension Kit, Model No. 30313 (obtained separately)

Procedure

The Groundsmaster 3280-D is shipped without the seat assembly. Obtain and install the optional seat (Model 30398) and the Mechanical Seat Suspension Kit (Model 30312) or the Pneumatic Seat Suspension Kit (Model 30313). Refer to the seat kit for the installation instructions.

Note: Obtain and install the Auxiliary Power Unit Kit (Model 30382) before installing a Pneumatic Suspension Seat Kit to the machine.

Note: Refer to 5 Installing the Manual Tube (page 16) before mounting the seat to the seat suspension.

4

Installing the Seat Belt

Parts needed for this procedure:

2	Seat belt
2	Bolts
2	Lock washer
2	Flat washer

Procedure

Install each end of the seat belt in the holes in the back of the seat with 2 bolts (7/16 x 1 inch), flat washers (7/16 inch), and lock washers (7/16 inch) (Figure 6).

Important: Mount the latch side of the belt to the right side of the seat.

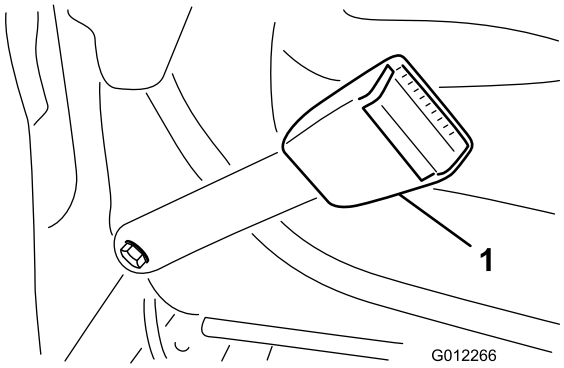


Figure 6

1. Seat-belt latch

5

Installing the Manual Tube

Parts needed for this procedure:

1	Manual tube
2	R-clamp

Procedure

1. Remove the manual tube and R-clamps secured to the seat plate.

   Note: Discard the 2 mounting bolts and flat washers.

2. Remove the 2 nuts and vinyl caps (if previously installed) securing the upper seat bracket to the left side of the seat suspension (Figure 7).
3. Loosely mount the R-clamps to the seat bracket studs with the 2 nuts previously removed. (Figure 7).

   Note: Position the R-clamps under the seat-suspension tabs.

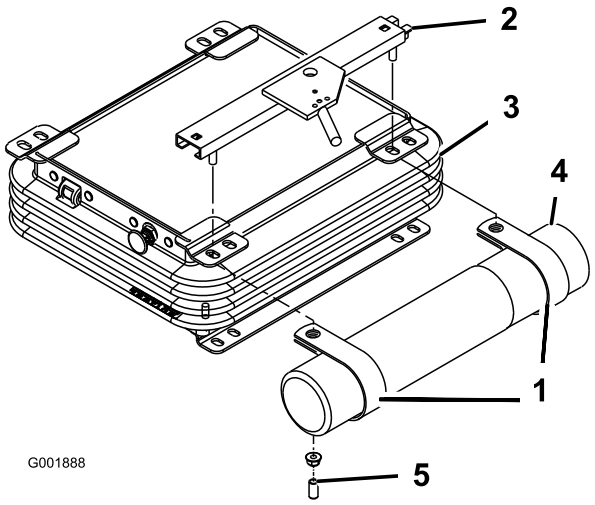


Figure 7

1. R-clamps
2. Upper seat bracket
3. Seat suspension
4. Manual tube
5. Vinyl cap

4. Install the manual tube into the R-clamps and tighten the nuts (Figure 7).
5. Insert the vinyl caps onto the seat bracket studs.

6

Adjusting the ROPS

No Parts Required

Procedure

1. Remove the hairpin cotter pins and remove the 2 pins from the roll bar (Figure 8).

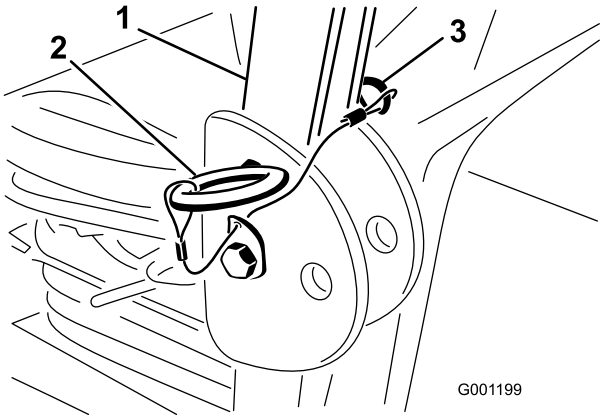


Figure 8

1. Roll bar
2. Pin
3. Hairpin cotter

2. Raise the roll bar to the upright position and install the 2 pins and secure them with the hairpin cotters(Figure 8).

   Note: The roll bar is an integral and effective safety device. Keep the roll bar in the raised and locked position. Lower the roll bar temporarily only when absolutely necessary.

7

Activating and Charging the Battery

No Parts Required

Procedure

Use only electrolyte (1.265 specific gravity) to fill battery initially.

1. Remove the battery from the machine.

   Important: Do not add electrolyte while the battery is in the machine. You could spill it, causing corrosion.

2. Clean the top of the battery and remove the vent caps (Figure 9).

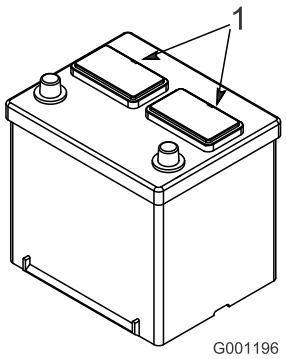


Figure 9

1. Vent caps

3. Carefully fill each cell with electrolyte until the plates are covered with about 6 mm (1/4 inch) of fluid (Figure 10).

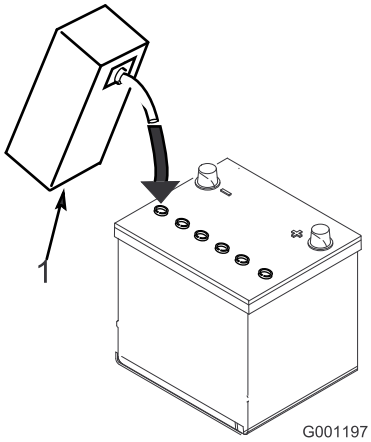


Figure 10

1. Electrolyte

4. Allow approximately 20 to 30 minutes for the electrolyte to soak into the plates.

   Note: Refill as necessary to bring the electrolyte to within about 6 mm (1/4 inch) of the bottom of the fill well (Figure 10).

⚠ WARNING

Charging the battery produces gasses that can explode.

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

5. Connect a 3 to 4 amp battery charger to the battery posts. Charge the battery at a rate of 3 to 4 amps until the specific gravity is 1.250 or higher and the temperature is at least 16° C (60° F) with all cells gassing freely.
6. When the battery is charged, disconnect the charger from the electrical outlet and battery posts.

   Note: Incomplete charging may result in gassing of the battery and the overflow of battery acid, causing corrosive damage to the machine.

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.

⚠ WARNING

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

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

7. Install the battery into the machine.
8. Install the positive cable (red) to the positive (+) terminal and then the negative cable (black) to the negative (-) terminal of the battery (Figure 11), and slide the rubber boot over the positive terminal to prevent a possible short from occurring.

⚠ WARNING

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

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

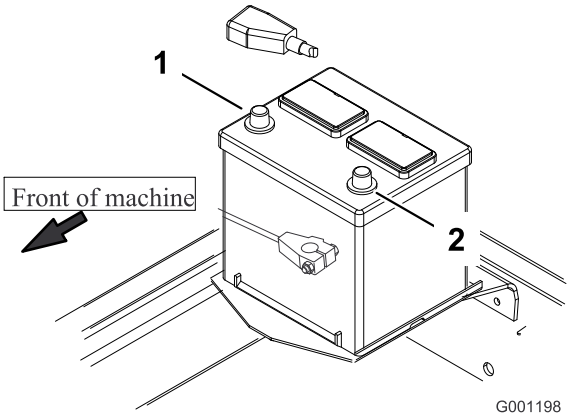


Figure 11

1. Positive (+)
2. Negative (-)

⚠ WARNING

Connecting cables to the wrong post could damage the electrical system and result in personal injury.

Note: Ensure that the battery cables are routed away from any sharp edges or moving parts.

8

Checking the Tire Pressure

No Parts Required

Procedure

The tires are over inflated for shipping. Therefore, release some of the air to reduce the pressure. The air pressure in front and rear tires should be 138 kPa (20 psi).

9

Installing the Lift-Lock Lever

Parts needed for this procedure:

1	Lift-lock lever
1	Flat washer
1	Spring washer
1	Spacer
1	Screw (1/4 x 1 inch)
1	Flange locknut (1/4 inch)

Procedure

For CE models only

1. Carefully locate and puncture the control-panel decal, in front of the LIFT switch, to expose the mounting hole for the LIFT-LOCK lever (Figure 12).

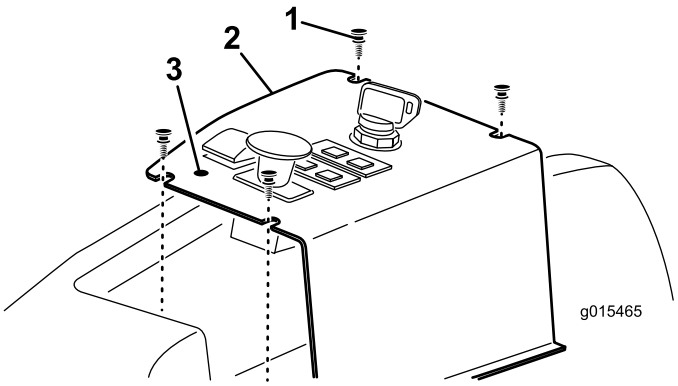


Figure 12

1. Mounting screw (4)
2. Control panel
3. Mounting hole

2. Remove the 4 screws securing the control panel to the machine (Figure 12).
3. Insert the LIFT-LOCK lever, spacer, wave washer, and flat washer onto the 1/4 x 1 inch pan-head screw positioning as shown in Figure 13.

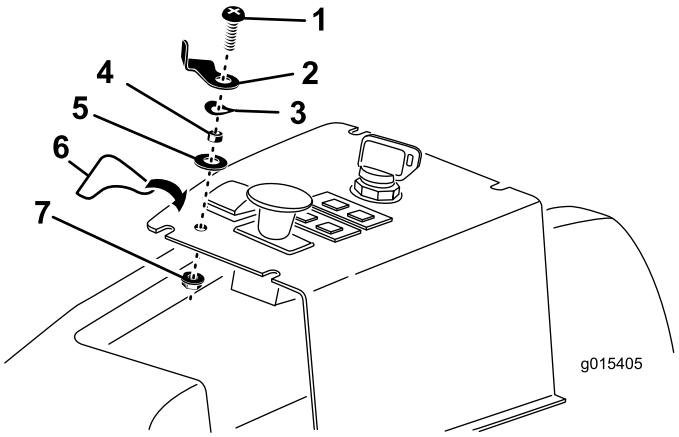


Figure 13

1. Screw
2. LIFT-LOCK lever
3. Spring washer
4. Spacer
5. Flat washer
6. Decal
7. Locknut

4. Insert the LIFT-LOCK lever assembly screw into the control-panel hole and secure it with a locknut. Position the LIFT-LOCK lever as shown in Figure 13 .
5. Affix the LIFT-LOCK lever decal to the control panel as shown inFigure 13.
6. Secure the control panel to machine, with the screws previously removed.
7. To operate the LIFT-LOCK lever, rotate it under the front edge of the lift switch to prevent the switch from being activated.

10

Adjusting the Counterbalance Pressure

No Parts Required

Procedure

For best performance, the cutting unit bounce on uneven turf is minimal and it does not ride heavily over flat terrain. If scalping occurs or the cut is uneven from side to side, there may be too much weight on the deck and the weight may have to be transferred to the machine: i.e. increased counterbalance pressure.

By contrast, if too much weight is transferred to the machine, the deck will bounce excessively and the cut will be uneven. If the cutting unit does not perform properly, adjust the counterbalance pressure as follows:

1. Ensure that the parking brake is set, the PTO switch is in the Off position, and the cutting unit is lowered.
2. Locate the lift manifold on the right side of the machine.
3. Connect a pressure gauge to the test port at the rear of the lift manifold (Figure 14).

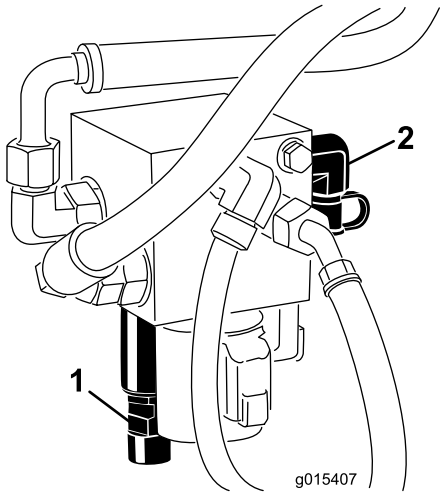


Figure 14

1. Counterbalance spool
2. Test port

4. On the front of the lift manifold, remove the cap from the manifold counterbalance spool (Figure 14).
5. Loosen the jam nut at the bottom of the counterbalance spool (Figure 14).
6. Start the engine and set the throttle to high idle.
7. Using an Allen wrench, adjust the lift valve spool until the desired pressure is attained on the gauge.

   Note: See the chart below for the recommended pressure setting for the cutting deck.

Cutting Deck	Counterbalance Pressure
52 inch Side Discharge Deck (Model 30555)	448 kPa (65 psi)
60 inch Side Discharge Deck (Model 30366) or 62 in Base Deck (Model 30403) or 62 in Side Discharge Deck (Model 30551)	1206 kPa (175 psi)
72 inch Side Discharge Deck (Model 31336) or 72 in Base Deck (Model 30404) or 72 in Guardian Recycler Deck (Model 31335)	1516 kPa (220 psi)

8. Stop the engine.
9. Tighten the jam nut on the bottom of the counterbalance spool. Torque the nut to 13-16 N-m (10-12 ft-lb).
10. Remove the pressure gauge from the test port.

11

Installing Rear Weights

Parts needed for this procedure:

-	Rear weight kit(s) as needed

Procedure

This machine complies with EN ISO 5395:2013 and ANSI B71.4-2012 standards when equipped with rear weight (215 lb of rear weight is installed at the factory). Use the chart below to determine the combinations of additional weight required. Order parts from your local Authorized Toro Distributor.

Two-Wheel Drive Chart	Additional Rear Weight Required	Left Side Weight Required	Weight Part Number	Weight Description	Qty.
52 inch Side Discharge Deck (Model 30555)	0 lb	0 lb	-	-	-
52 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	145 lb*	*77-6700 92-9670 24-5780	75 lb Wheel Weight Bracket Kit Rear Weight Kit	1 1 1
60 inch Side Discharge Deck (Model 30366) or 62 inch Base Deck (Model 30403 w/ Rear Discharge Kit (Model 30305) or Guardian Kit (Model 30306)	0 lb**	0 lb	-	-	
60 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	75 lb*	*77-6700	75 lb Wheel Weight	1
62 inch Side Discharge Deck (Model 30551)	0 lb	0 lb	-	-	-
62 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	85 lb	11–0440 325–18 92–9670 24–5790 60-9870 3253–7 3217–9	50 lb Wheel Weight (add both weights to left front wheel) Bolt (for wheel weights) Bracket Kit Rear Weight Bolt (1/2 x 2–1/4 inches) Lock washer (1/2 inch) Nut (1/2 inch)	1 4 1 1 2 2 2
72 inch Side Discharge Deck (Model 30368 or 31336) or 72 inch Base Deck (Model 30404) w/ Rear Discharge Kit (Model 30303) or Guardian Kit (Model 30304) or 72 inch Guardian Recycler Deck (Model 31335)	35 lb	0 lb	24-5790 60-9870 3253-7	Rear Weight, 35 lb Bolt (1/2 x 4–1/2 inches) Lock washer (1/2 inch)	1 2 2

*Requires a 75 lb wheel weight (included with 15 cu ft hopper) on the left wheel

**Requires a 35 lb rear weight when the universal sunshade is attached to the machine

This machine complies with EN ISO 5395:2013 and ANSI B71.4-2012 standards when equipped with rear weight (50 lb of rear weight is installed at the factory). Use the chart below to determine combinations of additional weight required. Order parts from your local Authorized Toro Distributor.

Four-Wheel Drive Chart	Additional Rear Weight Required	Left Side Weight Required	Weight Part Number	Weight Description	Qty.
52 inch Side Discharge Deck (Model 30555)	0 lb	0 lb	-	-	-
52 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	145 lb*	*77-6700 92-9670 24-5780	75 lb Wheel Weight Bracket Kit Rear Weight Kit	1 1 1
60 inch Side Discharge Deck (Model 30366) or 62 inch Base Deck (Model 30403 w/ Rear Discharge Kit (Model 30305) or Guardian Kit (Model 30306)	0 lb**	0 lb	-	-	-
60 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	75 lb*	*77-6700	75 lb Wheel Weight	1
62 inch Side Discharge Deck (Model 30551)	0 lb	0 lb	-	-	-
62 inch Side Discharge Deck with 15 cu. ft. Hopper	0 lb	85 lb	11–0440 325–18 92–9670 24–5790 60-9870 3253–7 3217–9	50 lb Wheel Weight (add both weights to left front wheel) Bolt (for wheel weights) Bracket Kit Rear Weight Bolt (1/2 x 2–1/4 inches) Lock washer (1/2 inch) Nut (1/2 inch)	1 4 1 1 2 2 2
72 inch Side Discharge Deck (Model 30368 or 31336) or 72 inch Base Deck (Model 30404) w/ Rear Discharge Kit (Model 30303) or Guardian Kit (Model 30304) or 72 inch Guardian Recycler Deck (Model 31335)	35 lb	0 lb	24-5790 60-9870 3253-7 3217–9	Rear Weight, 35 lb Bolt (1/2 x 4–1/2 inches) Lock washer (1/2 inch) Nut (1/2 inch)	1 2 2 2

*Requires a 75 lb wheel weight (included with 15 cu ft hopper) on the left wheel

**Requires a 35 lb rear weight when the universal sunshade is attached to the machine

12

Checking the Fluid Levels

No Parts Required

Procedure

1. Check the level of the rear-axle lubricant before the engine is first started; refer to Checking the Rear Axle Lubricant (Model 30345 only) (page 31).

   Check the level of the hydraulic fluid before the engine is first started; refer to 12 Checking the Fluid Levels (page 23).
2. Check the engine-oil level before and after the engine is first started; refer to Checking the Engine-Oil Level (page 27).

13

Reading the Manuals and Viewing the Training Materials

Parts needed for this procedure:

2	*Operator's Manual*
1	*Engine Operator's Manual*
1	*Parts Catalog*
1	Operator Training Material
1	Pre-delivery Inspection Sheet
1	Certificate of compliance
1	Certificate of Quality
1	Roll pin
2	Bolt (5/16 x 1-3/4 inches)
2	Locknut (5/16 inch)
2	Cylinder pin
4	Cotter pin (3/16 x 1-1/2 inches)
2	Brake-return springs

Procedure

1. Read the manuals.
2. View the operator training materials.
3. Save the roll pin, bolts (5/16 x 1-3/4 inches), and locknuts (5/16 inch) to secure the universal shaft to an implement.
4. Save the cylinder pin and cotter pin (3/16 x 1-1/2 inches) to secure the deck lift arms to the lift cylinder.
5. Save the brake return springs to mount the deck lift arms.

Product Overview

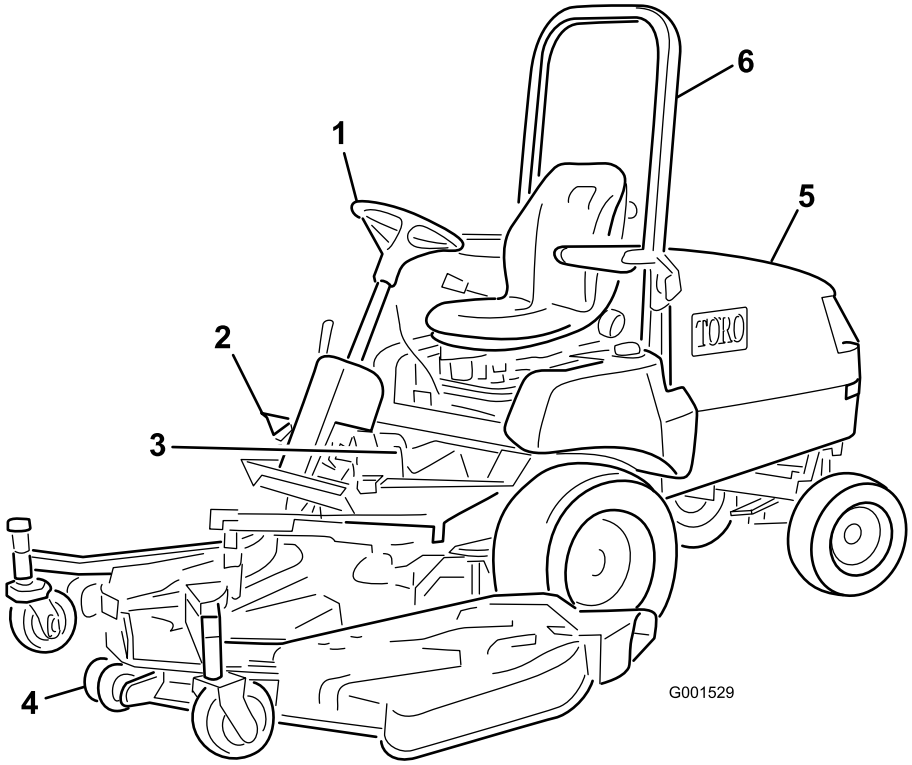


Figure 15

1. Steering wheel
2. Traction pedal
3. Brakes
4. Cutting unit
5. Hood/engine compartment
6. ROPS (Rollover Protection System)

Controls

Service Brakes

The left and right brake pedals (Figure 16) are connected to the left and right front wheels. Since both brakes work independently of each other, you can use the brakes to turn sharply or to increase traction if 1 wheel tends to slip while operating on certain slope conditions. However, you can damage wet grass or soft turf whenever you use the brakes to turn sharply. To stop quickly, press both brake pedals together. Always lock the brakes together when transporting the machine.

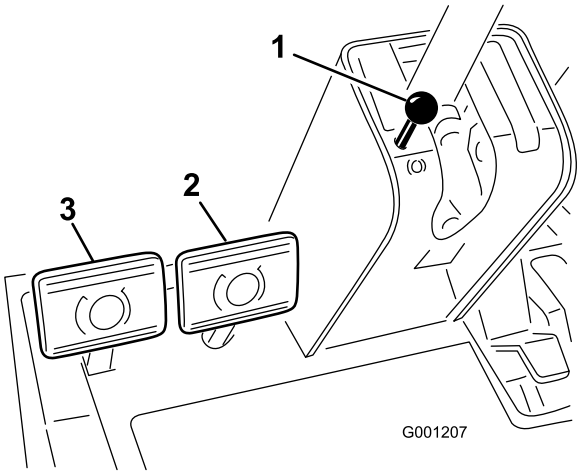


Figure 16

1. Parking-brake knob
2. Right-brake pedal
3. Left-brake pedal

Parking Brake

Whenever you stop the engine, engage the parking brake to prevent the machine from accidentally moving. To engage the parking brake, push the lock arm (Figure 17) on the left brake pedal so that it locks together with the right pedal. Then push

down fully on both pedals, pull the parking brake knob out (Figure 16), and release the pedals. To release the parking brake, press both pedals until the parking-brake knob retracts. Before starting the engine, however, the lock arm may be disengaged from the left brake pedal so that both pedals work independently with each front wheel.

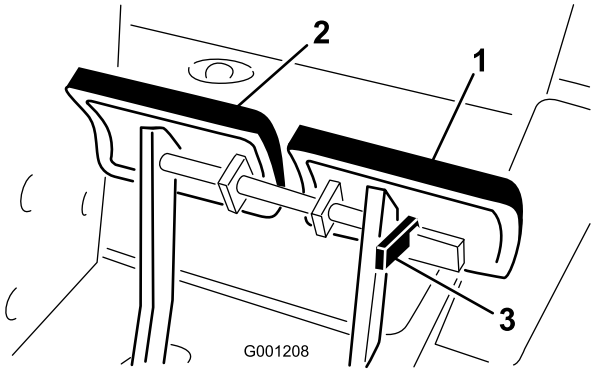


Figure 17

1. Left-brake pedal
2. Right-brake pedal
3. Lock arm

Traction Pedal

The traction pedal (Figure 18) has 2 functions: To make the machine move forward and make it move rearward. Using the heel and toe of the right foot, press the top of the pedal to move forward and the bottom of the pedal to move rearward. Ground speed is proportionate to how far the pedal is pressed. For maximum ground speed, the traction pedal must be fully depressed while throttle is in the Fast position. Maximum speed forward is approximately 16 kph (10 mph). To get maximum power under heavy load or when ascending a hill, have the throttle in the Fast position while pressing traction pedal slightly to keep the engine rpm high. When the engine rpm begins to decrease, release the traction pedal slightly to allow the engine speed (rpm) to increase.

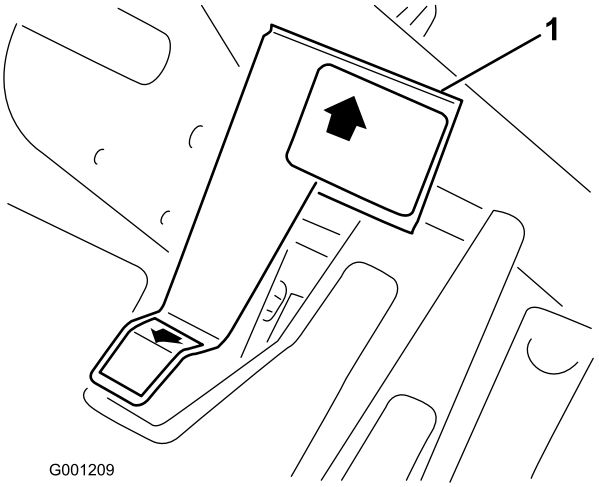


Figure 18

1. Traction pedal

Tilt-Steering Control

The tilt-steering control is a lever on the right side of the steering column (Figure 19). Pull the lever rearward to adjust the steering wheel to the desired fore or aft operating position and push the lever forward to lock the adjustment.

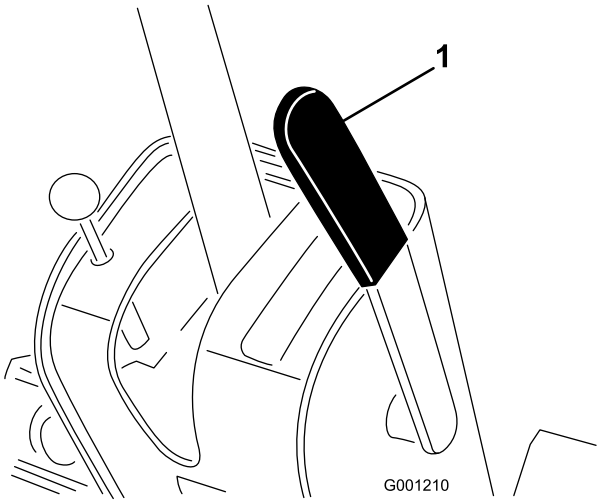


Figure 19

1. Tilt-steering control

⚠ CAUTION

Raising the deck can expose you to rotating blades, and contact with rotating blades can cause serious injury.

Never raise the deck while the blades are rotating.

Lift Switch

The lift switch (Figure 20) raises and lowers the deck. Pressing the switch forward, into the DETENT position, lowers the deck and allows the deck to float. Pressing the switch backward raises the deck. Raise the deck whenever you transport the machine between locations. Lower the deck whenever you are not using the machine.

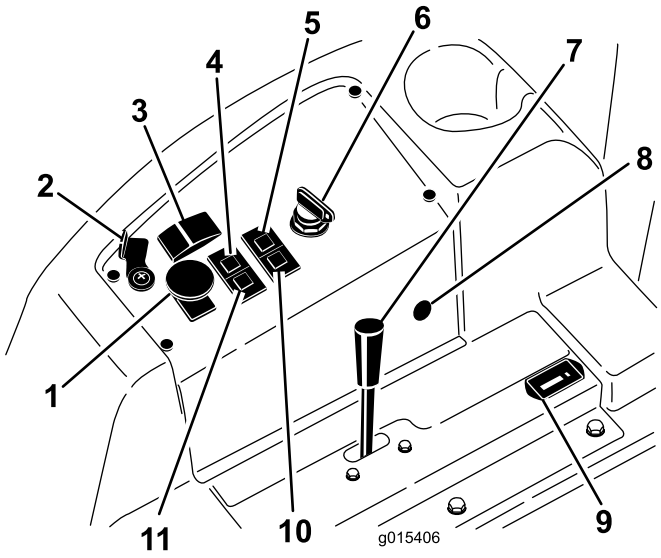


Figure 20

1. PTO Switch
2. LIFT-LOCK lever (optional)
3. LIFT switch
4. Coolant-temperature indicator
5. Oil-pressure indicator
6. IGNITION switch
7. Throttle
8. Power point
9. Hour meter
10. Glow-plug indicator
11. Charge indicator

PTO Switch

Pull up the switch knob to engage the electric PTO clutch (Figure 20). Push down the knob to disengage the electric PTO clutch. The only time the PTO switch should be in the ENGAGE position is when the implement is down in the operating position and ready to begin operation. If you leave the seat when the PTO switch is engaged, the machine shuts down. To engage the PTO, push down and then pull up the knob.

Fuel Gauge

The fuel gauge (Figure 21) indicates the quantity of fuel remaining in the fuel tank.

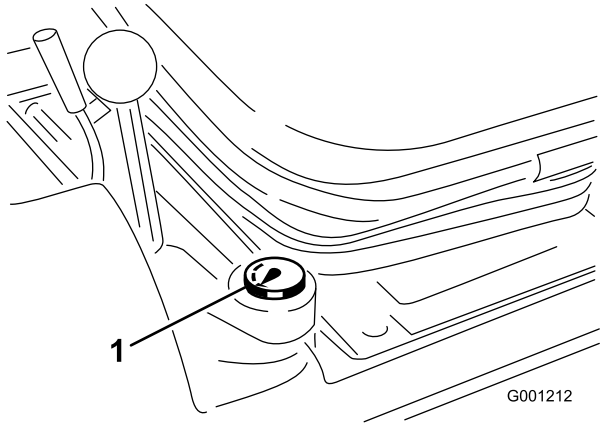


Figure 21

1. Fuel gauge

Ignition Switch

The ignition switch has 3 positions: Off, On/Preheat, and Start. (Figure 20).

Throttle

The throttle (Figure 20) is used to operate the engine at various speeds. Moving the throttle forward toward the FAST position increases the engine speed. Moving it rearward toward the SLOW position decreases the engine speed. The throttle controls the speed of the blades and, in conjunction with traction pedal, controls ground speed of the machine. The detent is the HIGH-IDLE position.

Hour Meter

The hour meter (Figure 20) registers accumulated hours of engine operation.

Engine Coolant Temperature Warning Light

The temperature warning light (Figure 20) glows and the implement stops if the coolant temperature is above normal operating limits. The engine will shut down if the coolant rises another 20° F. Operate the engine at low idle to allow the coolant to return to the normal operating range. If the warning light continues to glow, shut down the engine and determine the cause.

Glow Plug Indicator

When lit, indicates that the glow plugs are on (Figure 20).

Charge Indicator

Illuminates when the system charging circuit malfunctions (Figure 20).

Oil-Pressure-Warning Light

The oil-pressure-warning light (Figure 20) glows when the oil pressure in engine drops below a safe level. If low oil pressure ever occurs, stop the engine and determine the cause. Repair the damage before starting the engine again.

Lift-Lock Lever

Lock the LIFT switch (Figure 20), in the raised position, when performing maintenance on the deck or when transporting between mowing locations.

Specifications

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

Length	208 cm (82 inches)
Width (Rear wheels)	119 cm (47 inches)
Height without ROPS	127 cm (50 inches)
Height with ROPS	196 cm (77 inches)
Net Weight (Model 30344)	635 kg (1,400 lb)
Net Weight (Model 30345)	794 kg (1,751 lb)

Attachments/Accessories

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

Operation

⚠ CAUTION

This machine produces sound levels in excess of 85 dBA at the operators ear and can cause hearing loss through extended periods of exposure.

Wear hearing protection when operating this machine.

⚠ CAUTION

If the machine does not have adequate rear weight, the rear wheels may come off the ground, causing you to lose control of the machine.

- **Add the necessary amount of rear weight to prevent the rear wheels from leaving the ground.**
- **Do not stop suddenly while you raise the deck or implement.**
- **Do not travel downhill with the deck or implement raised.**

Checking the Engine-Oil Level

Service Interval: Before each use or daily

The engine is shipped with oil in the crankcase; however, check the oil level before and after you first start the engine.

The crankcase capacity is approximately 3.8 L (4 qt) with the filter. Use high-quality engine oil that meets the following specifications:

- API Classification Level Required: CH-4, CI-4 or higher.
- Preferred oil: SAE 15W-40 (above 0°F)
- Alternate oil: SAE 10W-30 or 5W-30 (all temperatures)

Note: Toro Premium Engine Oil is available from your distributor in either 15W-40 or 10W-30 viscosity. See the parts catalog for part numbers.

1. Park the machine on a level surface, lower the cutting deck, stop the engine, and remove the key from the ignition switch.
2. Open the hood.
3. Remove the dipstick (Figure 22), wipe it clean, and install the dipstick.

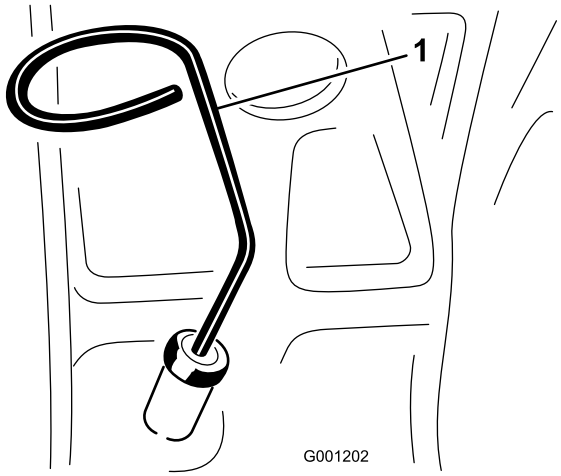


Figure 22

1. Dipstick

4. Remove the dipstick and check the oil level.

   Note: The oil level should be up to the Full mark on the dipstick.

5. If the oil level is below the Full mark, remove the fill cap (Figure 23) and add oil until the level reaches the Full mark on the dipstick. **Do not overfill.**.

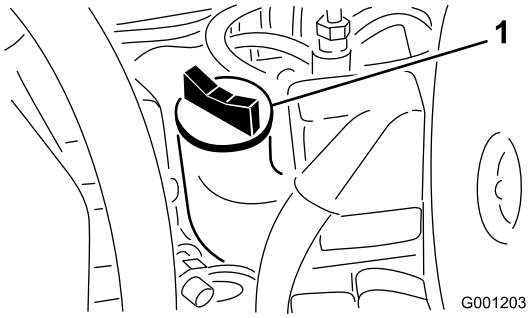


Figure 23

1. Oil fill

6. Install the oil-fill cap and close the hood.

Checking the Cooling System

Service Interval: Before each use or daily

Clean debris off the screen and the radiator/oil cooler daily, more often if conditions are extremely dusty and dirty; refer to Cleaning the Radiator and the Screen (page 49).

Check the level of the coolant in the expansion tank at the beginning of each day before starting the engine. The capacity of the cooling system is 7.5 L (8 qt).

Recommended Coolant

Note: Coolant must meet or exceed ASTM Standard 3306

Glycol based pre-diluted coolant (50/50 blend)

or

Glycol based coolant mixed with **distilled** water (50/50 blend)

or

Glycol based coolant mixed with good quality water (50/50 blend)

$CaCO_3$ + $MgCO_3$ <170 ppm

Chloride <40 ppm (Cl)

Sulfer <100 ppm (SO_4)

⚠ WARNING

If the engine has been running, the radiator will be pressurized and the coolant inside will be hot. If you remove the cap, coolant may spray out, causing severe burns.

- **Do not remove the recovery-tank cap to check coolant levels.**
- **Do not remove the recovery-tank cap when the engine is hot. Allow the engine to cool for at least 15 minutes or until the radiator cap is cool enough to touch without burning your hand.**

1. Check the level of the coolant in the expansion tank (Figure 24).

   Note: The coolant level should be between the marks on the side of the tank.

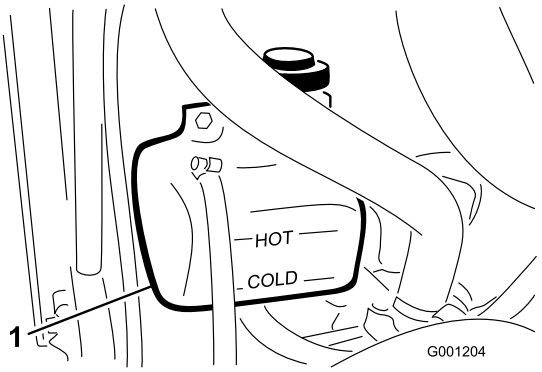


Figure 24

1. Expansion tank

2. If the coolant is low, add the recommended replacement coolant as required. **Do not use water only or alcohol-based coolants. Do not overfill**.
3. Install the expansion-tank cap.

Checking the Hydraulic System

The machines reservoir is filled at the factory with approximately 4.7 L (5 qt) of high quality hydraulic fluid. Check the level of the hydraulic fluid before the engine is first started and daily thereafter. The recommended replacement fluid is as follows:

Toro Premium Transmission/Hydraulic Tractor Fluid
(Available in 5 gallon pails or 55 gallon drums. See parts catalog or Toro distributor for part numbers.)

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

Note: Toro will not assume responsibility for damage caused by improper substitutions, so use only products from reputable manufacturers who will stand behind their recommendation.

Material Properties:

Viscosity, ASTM D445	cSt @ 40°C 55 to 62 cSt @ 100°C 9.1 to 9.8
Viscosity Index ASTM D2270	140 to 152
Pour Point, ASTM D97	-35°F to -46°F

Industry Specifications:

API GL-4, AGCO Powerfluid 821 XL, Ford New Holland FNHA-2-C-201.00, Kubota UDT, John Deere J20C, Vickers 35VQ25, and Volvo WB-101/BM

Note: Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic system oil is available in 20 ml (2/3 oz) bottles. 1 bottle is sufficient for 15-22 L (4-6 US gallons) of hydraulic oil. Order part number 44-2500 from your authorized Toro distributor.

1. Position machine on a level surface.
2. Place all controls in the NEUTRAL position and start the engine.
3. Run engine at lowest possible rpm to purge the system of air.

   Important: Do not engage the PTO.
4. Cycle steering wheel several times fully to the left and right.
5. Raise the deck to extend the lift cylinders, aiming the steering wheels straight forward.
6. Stop the engine.
7. Remove dipstick cap (Figure 25) from filler neck and wipe it with a clean rag.

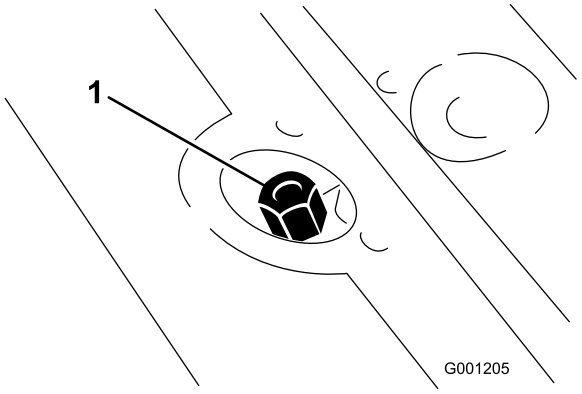


Figure 25

1. Dipstick cap

8. Screw the dipstick cap onto the filler neck.
9. Remove the dipstick cap and check the fluid level.

   Note: If level is not within 13 mm (1/2 inch) from the groove in the dipstick, add enough high-quality hydraulic fluid to raise level to groove mark. Do not overfill.
10. Thread the dipstick fill cap onto the filler neck.

    Note: Do not tighten the cap with a wrench.
11. Check all hoses and fittings for leaks.

Adding Fuel

Fuel tank capacity: 72 L (12.8 US gallons)

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.

Use summer grade diesel fuel (No. 2-D) at temperatures above 20° F (-7° C) 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.

Use of summer grade fuel above 20° F (-7° C) 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 the fuel tank or conditioner opening.**
- **Keep fuel away from your eyes and skin.**

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.

⚠ DANGER

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

- **Fill the fuel tank outdoors, in an open area, when the engine is cold. Wipe up any fuel that spills.**
- **Never fill the fuel tank inside an enclosed trailer.**
- **Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.**
- **Store fuel in an approved container and keep it out of the reach of children. Never buy more than a 180-day supply of fuel.**
- **Do not operate without entire exhaust system in place and in proper working condition.**

⚠ DANGER

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

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

1. Park the machine on a level surface.
2. Using a clean rag, clean area around fuel-tank cap.

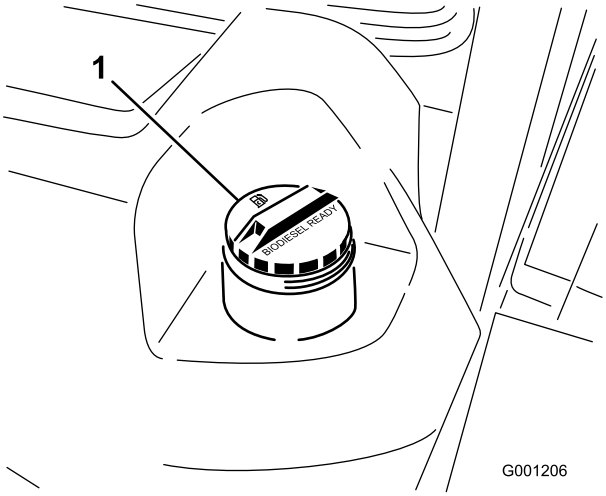


Figure 26

1. Fuel-tank cap

3. Remove the cap from the fuel tank (Figure 26).
4. Fill the tank until the level is to the bottom of the filler neck with diesel fuel.
5. Install fuel-tank cap tightly after filling the tank.

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

Checking the Rear Axle Lubricant (Model 30345 only)

The rear axle has 3 separate reservoirs that use SAE 80W-90 weight gear lube. Although the axle is shipped with lubricant from the factory, check the level before operating the machine.

1. Position the machine on a level surface.
2. Remove the check plugs from the axle and ensure that there is lubricant up to the bottom of each hole. If the level of lubricant is low, remove the fill plugs and add enough lubricant to bring the level up to the bottom of the check-plug holes (Figure 27 and Figure 28).

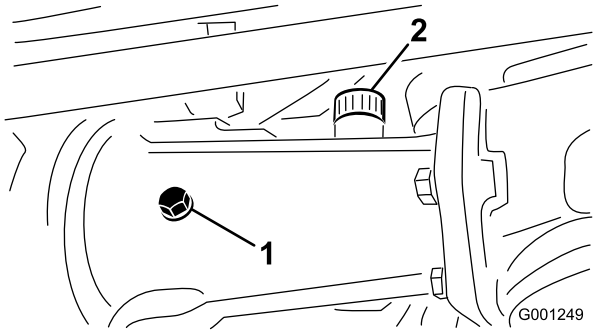


Figure 27

1. Check plug
2. Fill plug

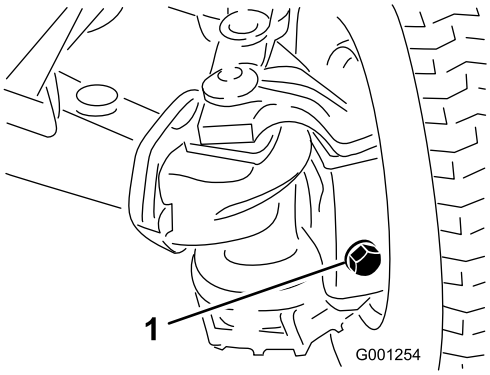


Figure 28

1. Fill/check plug (1 on each end of axle)

Checking the Bidirectional Clutch Lubricant (Model 30345 only)

1. Position the machine on a level surface.
2. Rotate the clutch (Figure 29) so that the check plug is positioned at 4 o'clock.

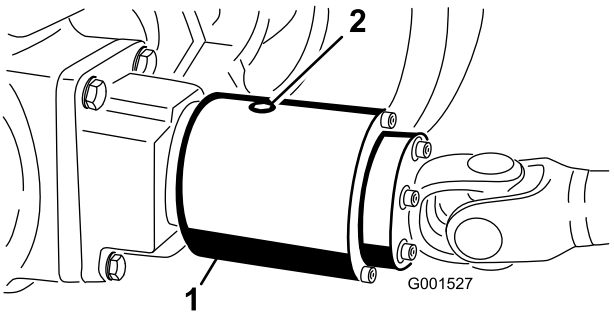


Figure 29

The check plug is shown in the 12 o'clock position.

1. Bidirectional clutch
2. Check plug

3. Remove the check plug.

Note: The fluid level should be up to the hole in the clutch. If the fluid level is low, add Mobil Fluid 424. The clutch should be approximately 1/3 full.

4. Install the check-plug.

Note: Do not use engine oil (such as 10W30) in the bidirectional clutch. Anti-wear and extreme pressure additives cause undesirable clutch performance.

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

Using the Rollover Protection System (ROPS)

⚠ WARNING

To avoid injury or death from rollover: Keep the roll bar in the raised locked position and use the seat belt.

Ensure that the rear part of the seat is secured with the seat latch.

⚠ WARNING

There is no rollover protection when the roll bar is in the down position.

- **Lower the roll bar only when absolutely necessary.**
- **Do not wear the seat belt when the roll bar is in the down position.**
- **Drive slowly and carefully.**
- **Raise the roll bar as soon as clearance permits.**
- **Check carefully for overhead clearances (i.e., branches, doorways, electrical wires) before driving under any objects and do not contact them.**
- **Lower roll bar slowly so damage to hood does not occur.**

Important: Lower the roll bar only when absolutely necessary.

1. To lower the roll bar, remove the hairpin cotters, and remove the 2 pins (Figure 30).

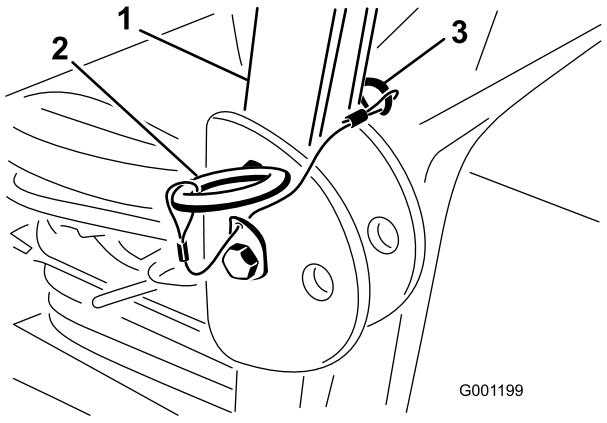


Figure 30

1. Roll bar
2. Pin
3. Hairpin cotter

2. Lower the roll bar to the down position.
3. Install the 2 pins and secure them with the hairpin cotters (Figure 30).
4. To raise the roll bar, remove the hairpin cotters, and remove the 2 pins (Figure 30).
5. Raise the roll bar to the upright position, install the 2 pins, and secure them with the hairpin cotters (Figure 30).

Important: Always use the seat belt when the roll bar is in the raised and locked position. Do not use the seat belt when the ROPS is in the lowered position.

Starting and Stopping the Engine

Important: You might need to bleed the fuel system in any of the following situations: initially starting up a new machine, the engine no longer running due to lack of fuel, or fuel system components replaced or serviced.

1. Raise the ROPS and lock it into place.
2. Sit on the seat and fasten the seat belt.
3. Ensure that the parking brake is set and the PTO switch is in the OFF position.
4. Remove your foot from traction pedal and ensure that it is in neutral.
5. Move the throttle control to the FAST position.
6. Turn the ignition switch to the ON/PREHEAT position.

   Note: An automatic timer then controls the preheat for 6 seconds.
7. After preheating, turn the key to the Start position, **crank the engine for no longer than 15 seconds**, and release the key when the engine starts.

   Note: If additional preheating is required, turn the key to the OFF position, then to the ON/PREHEAT position. Repeat this process as required.
8. Move the throttle to idle speed or partial throttle and run the engine until it warms up.

   Important: When you start the engine for the first time; or after you change the engine oil or overhaul the engine, transmission, or axle; operate the machine in forward and reverse for 1 to 2 minutes. Also, operate the lift lever and PTO lever to ensure that all parts are properly operating. Turn the power-steering wheel to the left and right to check the steering response. Then shut the engine off, check the fluid levels, and check for oil leaks, loose parts, and any other malfunctions.

⚠ CAUTION

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

9. To stop engine, move the throttle control backward to the SLOW position, move the PTO switch to the OFF

position and rotate ignition key to the OFF position. Remove key from the switch to prevent accidental starting.

Bleeding the Fuel System

1. Park the machine on a level surface.
2. Ensure that the fuel tank is at least half full.
3. Unlatch and raise the hood.

⚠ 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.

- **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 to the bottom of the filler neck.**
- **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.**

4. Open the air-bleed screw on the fuel injection pump (Figure 31).

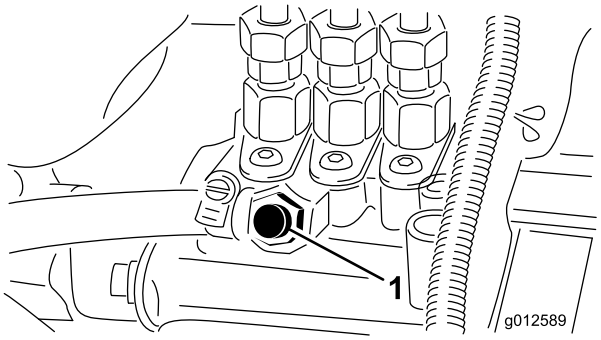


Figure 31

1. Air-bleed screw

5. Turn the key in the ignition switch to the ON position.

   The electric fuel pump will begin operation, thereby forcing air out around the air-bleed screw.
6. Leave the key in the ON position until a solid stream of fuel flows out around the screw.
7. Tighten the screw and turn key to the OFF position.

   Note: The engine should start after you perform this procedure. However, if engine does not start, air may be trapped between the injection pump and the injectors; refer to Bleeding the Air from the Injectors (page 44).

Checking the Interlock System

The purpose of the safety interlock system is to prevent the engine from cranking or starting unless the traction pedal is in neutral and the PTO switch is in the OFF position. In addition, the engine should stop when

- the PTO control is engaged with the operator off the seat;
- the traction pedal is pressed with the operator off the seat;
- the traction pedal pressed with the parking brake engaged.

⚠ CAUTION

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

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

1. Move PTO switch to OFF position and remove foot from traction pedal so it is fully released.
2. Rotate the ignition key to Start.

   Note: The engine should crank; if the engine cranks, proceed to step 3. If engine does not crank, there may be a malfunction in the safety-interlock system.
3. Raise off the seat and engage the PTO switch while the engine is running. The engine should stop within 2 seconds. If engine stops, the switch is operating correctly; thus, proceed to step 4. If engine does not stop, there is a malfunction in the safety-interlock system.
4. Raise off the seat and press the traction pedal while engine is running and the PTO lever is disengaged. The engine should stop within 2 seconds. If engine stops, the switch is operating correctly; thus, proceed to step 5 If engine does not stop, there is a malfunction in the safety-interlock system.
5. Engage the parking brake. Depress the traction pedal while engine is running and the PTO lever is disengaged. The engine should stop within 2 seconds. If engine stops, the switch is operating correctly; thus, continue operation. If engine does not stop, there is a malfunction in the safety-interlock system.

Pushing or Towing the Machine

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

Important: Pushing or towing the machine faster than 3 to 5 km/h (2 to 3 mph) may damage the transmission. If you must move the machine a considerable distance, transport it on a truck or trailer. Whenever you push or tow the machine, the bypass valve must be open.

1. Loosen the knob and remove the access cover at the rear of the seat-mounting plate (Figure 32).

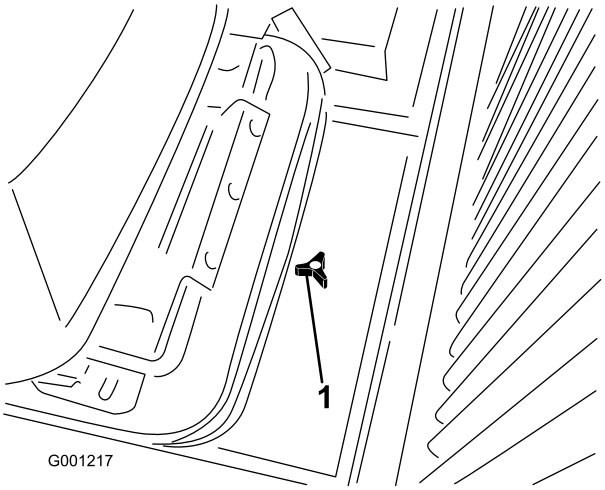


Figure 32

1. Access-cover knob

2. Press and hold the pins located in the center of the 2 check-valve assemblies in the top of the transmission (Figure 33) while pushing or towing the machine.

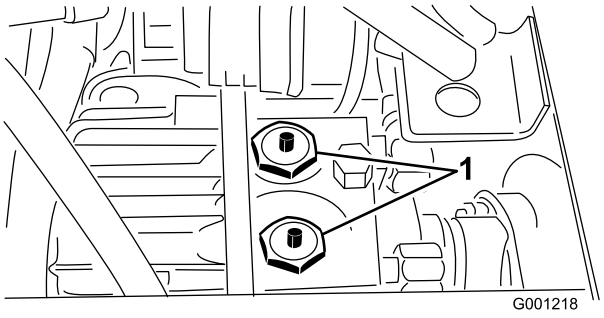


Figure 33

The seat and seat-mounting plate are removed.

1. Transmission-check-valve-bypass pins (2)

3. Start the engine momentarily after you complete the repairs and ensure that the pins are in the full disengaged (fully up) position.

   Important: Running the machine with the bypass valve open will cause the transmission to overheat.

4. Install the access cover.

Standard Control Module (SCM)

The Standard Control Module is a potted electronic device produced in a one-size-fits-all configuration. The module uses solid state and mechanical components to monitor and control standard electrical features required for safe product operation.

The module monitors inputs including neutral, parking brake, PTO, start, backlap, and high temperature. The module energizes outputs including PTO, Starter, and ETR (energize to run) solenoid.

The module is divided into inputs and outputs. Inputs and outputs are identified by yellow LED indicators mounted on the printed-circuit board.

The start-circuit input is energized by 12 VDC. All other inputs are energized when the circuit is closed to ground. Each input has a LED that is illuminated when the specific circuit is energized. Use the input LEDs for switch and input circuit troubleshooting.

Output circuits are energized by an appropriate set of input conditions. The 3 outputs include PTO, ETR, and START. Output LEDs monitor relay condition indicating the presence of voltage at 1 of 3 specific output terminals.

Output circuits do not determine output device integrity so electrical troubleshooting includes output LED inspection and conventional device and wire harness integrity testing. Measure disconnected component impedance, impedance through wire harness (disconnect at SCM), or by temporarily test energizing the specific component.

The SCM does not connect to an external computer or hand held device, cannot be re-programmed, and does not record intermittent fault troubleshooting data.

The decal on the SCM only includes symbols. 3 LED output symbols are shown in the output box. All other LEDs are inputs. The chart below identifies the symbols.

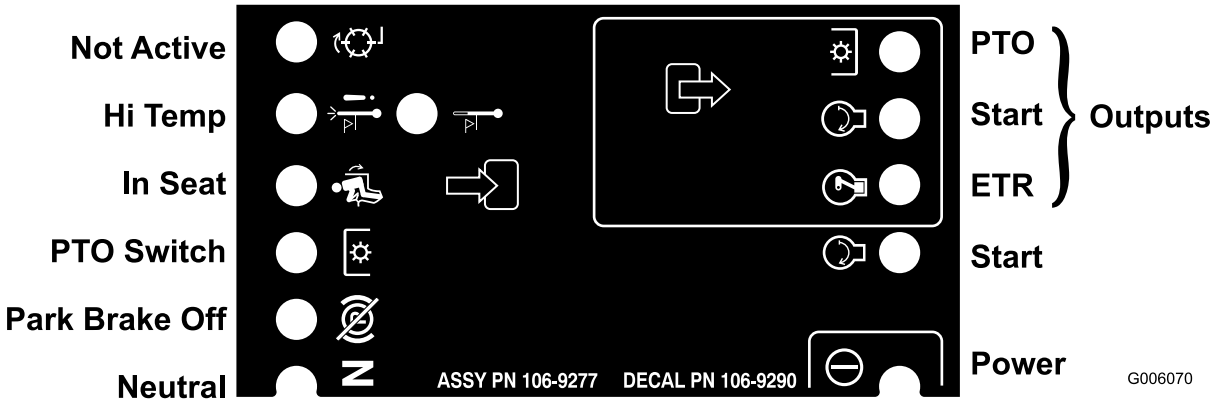


Figure 34

Here are the logical troubleshooting steps for the SCM device.

1. Determine the output fault you are trying to resolve (PTO, Start, or ETR).
2. Move the key switch to the ON position and ensure that the red power LED is illuminated.
3. Move all input switches to ensure all LEDs change state (SEAT, BRAKE, TRACTION PEDAL, PTO, and START).
4. Position the input devices in their appropriate positions to achieve the appropriate output. Use the following logic chart to determine the appropriate input condition.
5. If a specific output LED is illuminated without appropriate output function, check the output harness, connections, and component. Repair as required.
6. If a specific output LED is not illuminated, check both fuses.
7. If a specific output LED is not illuminated and the inputs are in their appropriate conditions, install a new SCM and determine if the fault disappears.

Each row in the logic chart below identifies input and output requirements for each specific product function. Product functions are listed in the left column. The symbols identify specific circuit conditions, including energized to voltage, closed to ground, and open to ground.

		Inputs								Outputs		
Function	Power On	In Neutral	Start On	Brake On	PTO On	In Seat	Hi Temp Shutdown	Hi Temp Warning	Back Lap	Start	ETR	PTO
Start	—	—	+	⊗	⊗	—	⊗	⊗	N/A	+	+	⊗
Run (Off Unit)	—	—	⊗	⊗	⊗	⊗	⊗	⊗	N/A	⊗	+	⊗
Run (On Unit)	—	⊗	⊗	—	⊗	—	⊗	⊗	N/A	⊗	+	⊗
Mow	—	⊗	⊗	—	—	—	⊗	⊗	N/A	⊗	+	+
Hi Temp Warning	—		⊗				⊗	— (A)	N/A	+	+	⊗
Hi Temp Shutdown	—		⊗				—		N/A	⊗	⊗	⊗

(-) Indicates a circuit closed to ground. (LED ON)

(⊗) Indicates a circuit open to ground or de-energized (LED OFF)

(+) Indicates an energized circuit (clutch coil, solenoid, or start input) (LED ON)

A Blank indicates a circuit that is not involved with the logic.

(A) PTO input must be re-initiated after engine cool down (cycle key on-off)

N/A Not applicable

To troubleshoot, turn on the key without starting the engine. Identify the specific function that does not work and work across the logic chart. Inspect the condition of each input LEDs to ensure that it matches the logic chart.

If the input LEDs are correct, check the output LED. If the output LED is illuminated but the device is not energized, measure the available voltage at the output device, the continuity of the disconnected device, and the potential voltage on the ground circuit (floating ground). Repairs will vary depending on your findings.

Operating Tips

- Practice driving before operating the machine, because it has a hydrostatic transmission and its characteristics are different than some turf-maintenance machines. When operating the machine and the deck, consider the transmission, engine speed, load on the cutting blades, and the importance of the brakes.
- To maintain enough power for the machine and deck while mowing, regulate the traction pedal to keep the engine speed (rpm) high and constant. A good rule to follow is to decrease the ground speed as the load on the cutting blades increases; and to increase ground speed as the load on the blades decreases. This allows the engine, working with the transmission, to sense the proper ground speed while maintaining a high blade-tip speed necessary for good quality-of-cut. Therefore, allow the traction pedal to move upward as the engine speed decreases, and press pedal slowly as the speed increases. By comparison, when driving from a work area to another (with no load and the deck raised) have throttle in the FAST position and press the traction pedal slowly but fully to attain the maximum ground speed.
- Another characteristic to consider is the operation of the brakes. You can use the brakes to assist in turning the machine; however, use them carefully, especially on soft or wet grass, because the turf may be torn accidentally. You can also use the brakes to control the direction of the deck when trimming along fences or similar objects. The other benefit of using the brakes is to maintain traction. For example; in some slope conditions, the uphill wheel slips and loses traction. If this happens, press the uphill brake pedal gradually and intermittently until the uphill wheel stops slipping; thus, increasing traction on the downhill wheel. If independent braking is not desired, engage the lever on left-brake pedal with right pedal. This provides simultaneous braking at both wheels.
- Before stopping the engine, disengage all controls and move the throttle to the SLOW position. Moving the throttle to the SLOW position reduces the high engine speed, noise, and vibration. Turn the ignition key to the OFF position to stop the engine.

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 10 hours	• Check and adjust the service brakes. • Check the tension on the alternator belt. • Check the tension on the PTO belt. • Change the hydraulic oil filter. Do not exceed 10 hours or you will damage the hydraulic system. • Torque wheel lug nuts.
After the first 50 hours	• Change the engine oil and filter. • Check and adjust the service brakes. • Check the tension on the PTO belt.
Before each use or daily	• Check the engine-oil level. • Check coolant level.
Every 50 hours	• Grease the bearings and bushings. • Check the battery cable connections. • Check the battery electrolyte level. • Lubricate the brake cables.
Every 150 hours	• Change the engine oil and filter.
Every 200 hours	• Check the torque on the steering-cylinder-mounting bolt (Model 30345 only). • Check the rear wheel toe-in. • Inspect the cooling-system hoses. • Check the tension on the alternator belt. • Check the condition of and tension on the PTO belt. • Check PTO clutch gap adjustment. • Change the hydraulic oil filter. • Torque wheel lug nuts.
Every 400 hours	• Grease the transmission bypass pins. • Grease the rear-axle bearings • Service the air cleaner. • Replace the fuel-filter canister. • Drain and clean the fuel tank • Inspect the fuel lines and connections. • Change the rear-axle lubricant. • Change the bidirectional-clutch lubricant (Model 30345 only).
Every 1,500 hours	• Replace any moving hoses. • Flush and replace the cooling-system fluid. • Replace the hydraulic oil.

⚠ 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.

Daily Maintenance Checklist

Duplicate this page for routine use.

Maintenance Check Item	For the week of:						
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Sun.
Check Safety Interlock Operation							
Make sure the ROPS is fully raised and locked in position							
Check Grass Deflector in Down Position							
Check Brake Operation							
Check Fuel Level							
Check Engine Oil Level							
Check Cooling System Fluid Level							
Check Drain Water/Fuel Separator							
Check Air Filter Restriction Indicator3							
Check Radiator & Screen for Debris							
Check Unusual Engine Noises1							
Check Unusual Operating Noises							
Check Transmission Oil Level							
Check Hydraulic Hoses for Damage							
Check Fluid Leaks							
Check Tire Pressure							
Check Instrument Operation							
Check Condition of Blades							
Lubricate All Grease Fittings2							
Touch-up Damaged Paint							

1. Check glow plug and injector nozzles, if hard starting, excess smoke or rough running is noted.
2. Immediately after every washing, regardless of the interval listed.
3. If indicator shows red

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

Notation for Areas of Concern		
Inspection performed by:		
Item	Date	Information

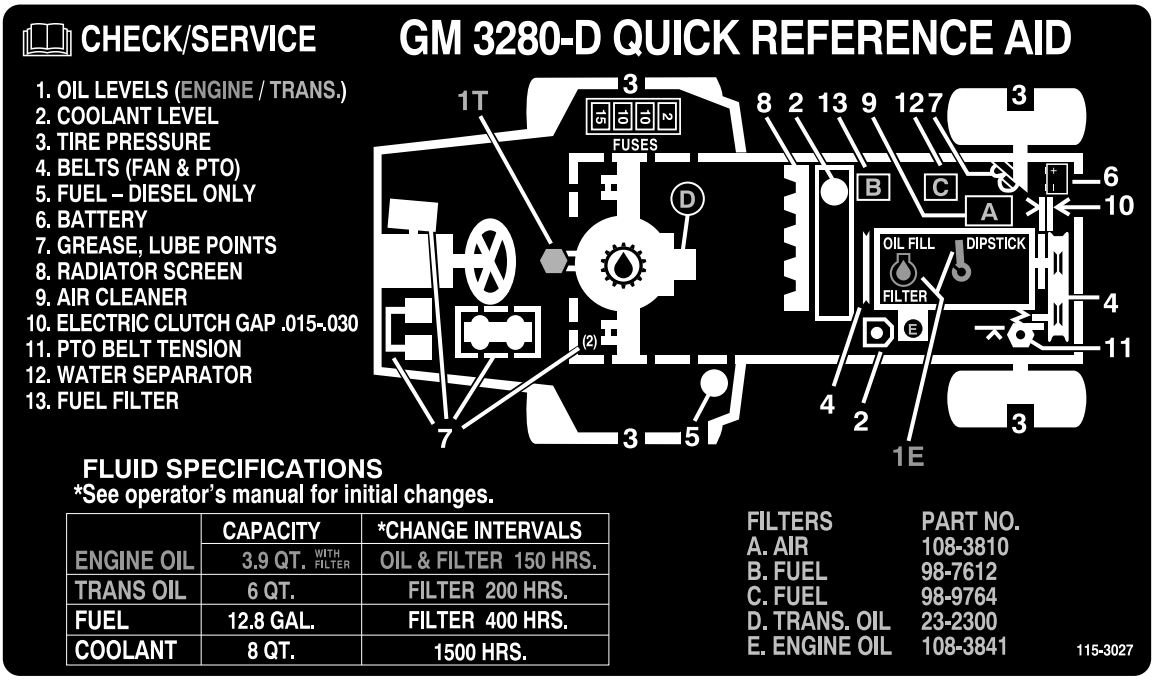


Figure 35

Service Interval Chart

Lubrication

Greasing the Bearings and Bushings

Service Interval: Every 50 hours—Grease the bearings and bushings.

Every 400 hours—Grease the transmission bypass pins.

Every 400 hours—Grease the rear-axle bearings (or yearly, whichever comes first)

The machine has grease fittings that you must lubricate regularly with no. 2 general-purpose, lithium-based grease. Bearings and bushings must be lubricated daily when operating conditions are extremely dusty and dirty. Dusty and dirty operating conditions could cause dirt to get into the bearings and bushings, resulting in accelerated wear. Lubricate grease fitting immediately after every washing, regardless of interval specified.

Apply a liberal coating of grease to the check-valve pins once each year (Figure 36).

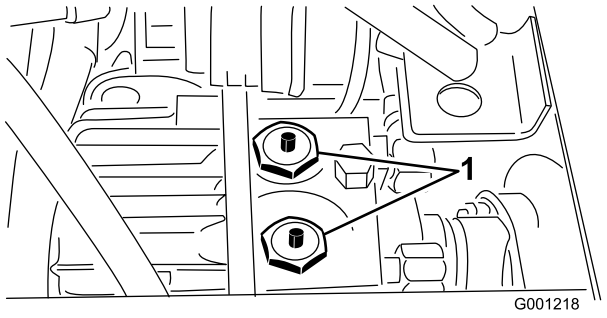


Figure 36

1. Transmission check valve by-pass pins (2)

1. Wipe grease fitting clean so foreign matter cannot be forced into the bearing or bushing.
2. Pump grease into the bearing or bushing.
3. Wipe up excess grease.

The bearing and bushing lubrication points are as follows:

- PTO universal shaft (Figure 37)

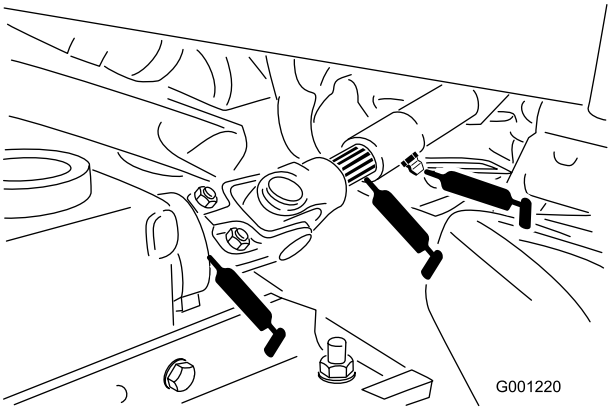


Figure 37

- Lift-arm pivot bushings (Figure 38)

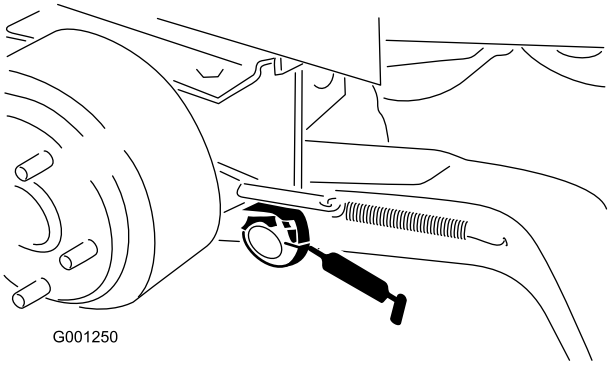


Figure 38

- Brake pivot bushings (Figure 39)

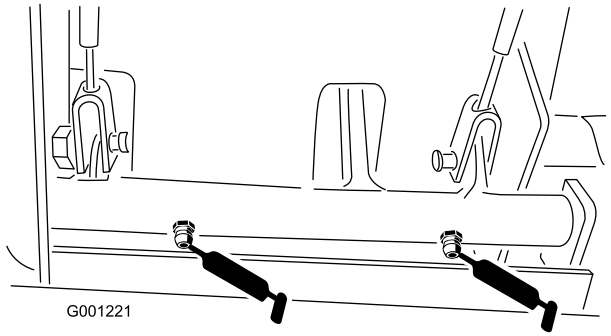


Figure 39

- Brake cables (drive wheel and brake pedal ends) (Figure 39)
- PTO tension pivot (Figure 40)

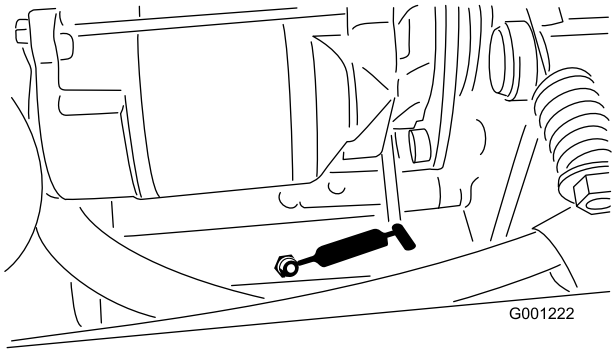


Figure 40

- Rear PTO bearing (Figure 40)
- Transmission-neutral shaft (Figure 41)

Note: For 2-wheel drive models only

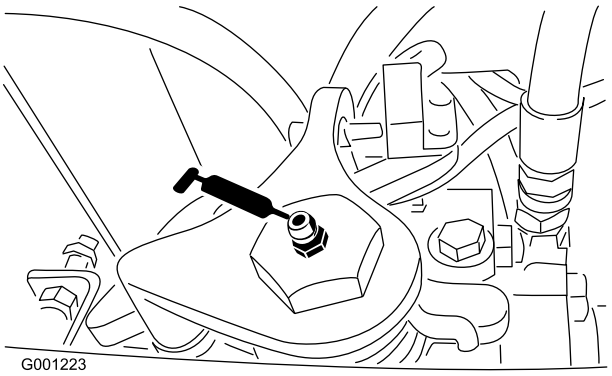


Figure 41

- Rear wheel spindle bushings (Figure 42)

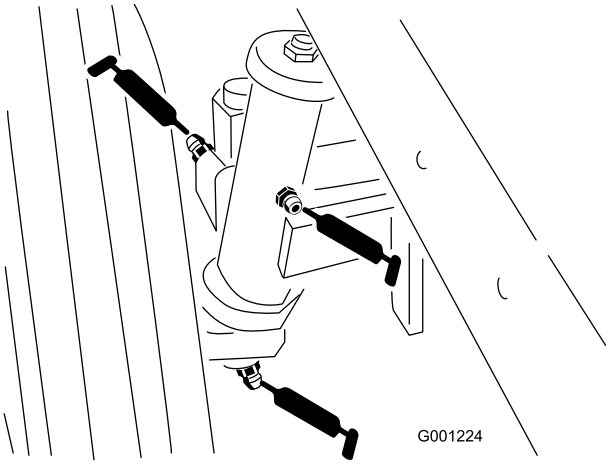


Figure 42

- Steering-plate bushings (Figure 43)

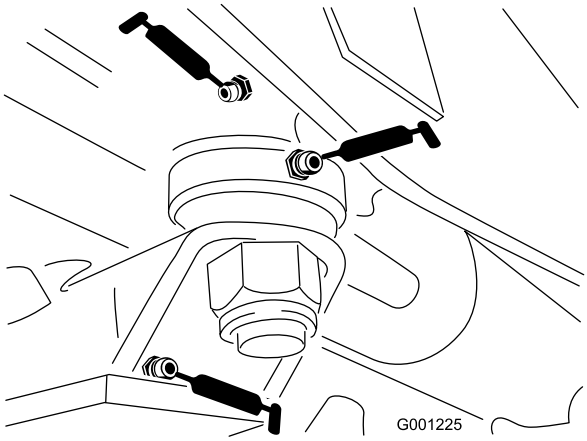


Figure 43

- Axle-pin bushing (Figure 43)
- Drive shaft (3) (Figure 44)

Note: 4-wheel-drive models only

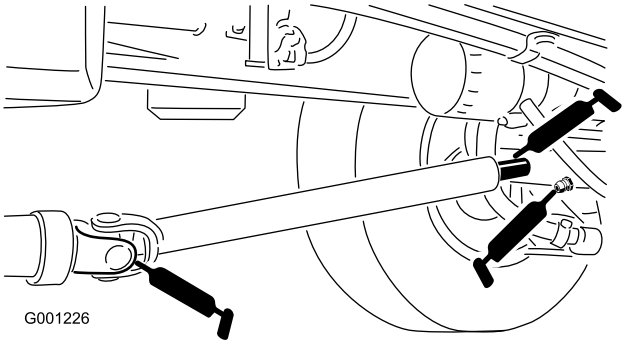


Figure 44

- Tie-rod ends (2) (Figure 45)

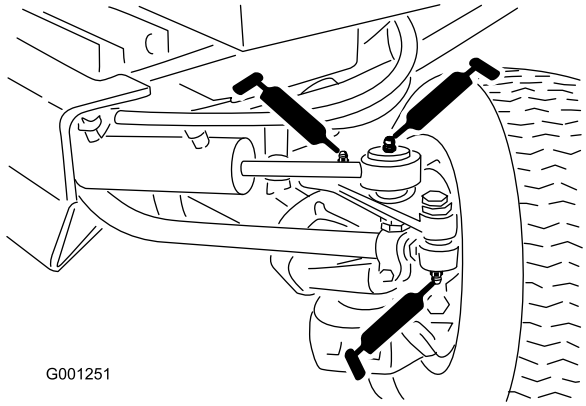


Figure 45

- Cylinder-rod ends (2) (Figure 45)
- Steering pivots (2) (Figure 45)
- Axle-pivot pin (Figure 45)

Note: Bearings rarely fail from defects in materials or workmanship. The most common reason for failure is moisture and contamination working its way past the protective seals. Bearings that are greased rely upon regular maintenance to purge harmful debris from the bearing area. Sealed bearings rely on an initial fill of special grease and a robust integral seal to keep contaminants and moisture out of the rolling elements.

The sealed bearings require no lubrication or short-term maintenance. This minimizes routine service required and reduces the potential of turf damage due to grease contamination. These sealed bearing packages will provide good performance and life under normal use, but periodic inspections of bearing condition and seal integrity should be conducted to avoid downtime. These bearings should be inspected seasonally and replaced if damaged or worn. Bearings should operate smoothly with no detrimental characteristics such as high heat, noise, looseness, or indications of corrosion (rust).

Due to the operating conditions, these bearing/seal packages are subject to (i.e., sand, turf chemicals, water, impacts, etc.) they are considered normal wear items. Bearings that fail due to causes other than defects in materials or workmanship are typically not covered under warranty.

Note: Bearing life can be negatively affected by improper wash-down procedures. Do not wash down the machine when it is still hot and avoid directing high-pressure or high-volume spray at the bearings.

Engine Maintenance

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

Servicing the Air Cleaner

- Check the air-cleaner body for damage which could possibly cause an air leak. Replace a damaged air-cleaner body. Check the whole intake system for leaks, damage, or loose hose clamps.
- Service the air-cleaner filter when the air-cleaner indicator (Figure 46) shows red or every 400 hours (more frequently in extremely dusty or dirty conditions). Do not over service the air filter.

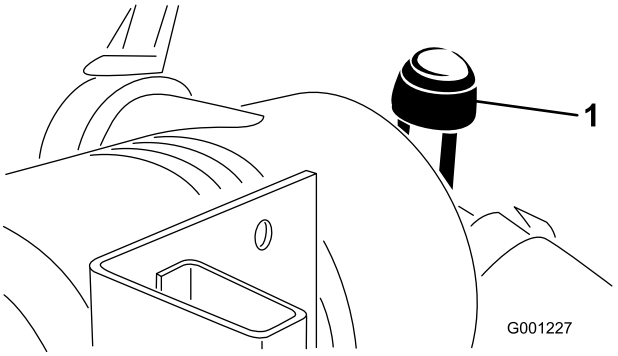


Figure 46

1. Air-cleaner indicator

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

Servicing the Air Cleaner

Service Interval: Every 400 hours

1. Pull the latch outward and rotate the air-cleaner cover counterclockwise (Figure 47).

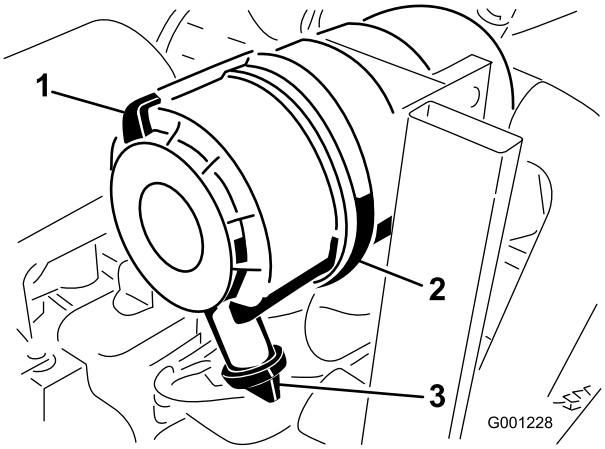


Figure 47

1. Air-cleaner latch
2. Air-cleaner cover
3. Rubber outlet valve

2. Remove the cover from the air-cleaner body (Figure 47).
3. Before removing the filter, use low-pressure air, 275 kPa (40 psi) or blow, clean, and dry the area to remove large accumulations of debris packed between outside of primary filter and the canister.

   Note: This cleaning process prevents debris from migrating into the intake when the primary filter is removed.

   Important: Avoid using high-pressure air, which could force dirt through the filter into the intake tract.
4. Remove and replace the primary filter (Figure 48).

   Important: Do not clean the used element to avoid damage to the filter media.

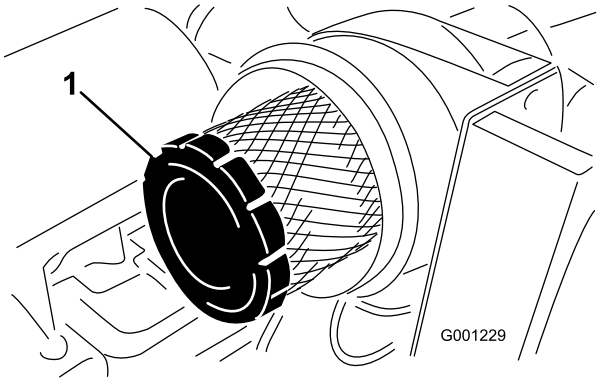


Figure 48

1. Filter

5. Inspect the new filter for shipping damage, checking the sealing end of the filter and the body.

   Important: Do not use a damaged element.
6. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister.

   Important: Do not apply pressure to the flexible center of the filter.
7. Clean the dirt-ejection port located in the removable cover as follows:
   A. Remove the rubber outlet valve from the cover.
   B. Clean the cavity.
   C. Replace the outlet valve.
8. Install the cover with the rubber outlet valve in a downward position, between approximately 5 o'clock to 7 o'clock when viewed from the end (Figure 47).
9. Reset the indicator (Figure 46) if it is showing red.

Changing the Engine Oil And Filter

Service Interval: After the first 50 hours

Every 150 hours

If possible, run engine just before changing oil because warm oil flows better and carries more contaminants than cold oil.

1. Position the machine on a level surface.
2. Open the hood.
3. Set a drain pan under the oil pan and in line with the drain plug (Figure 49).

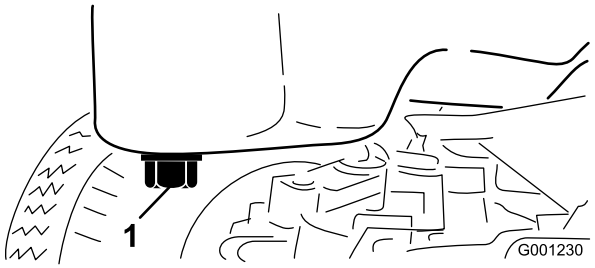


Figure 49

1. Drain plug

4. Clean the area around the drain plug.
5. Remove the drain plug and allow the oil to flow into the drain pan.
6. Remove and replace the oil filter (Figure 50).

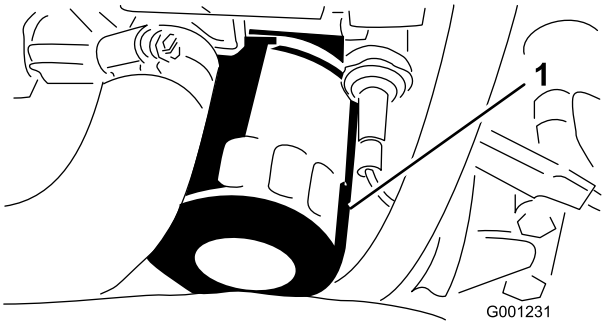


Figure 50

1. Oil filter

7. Install the drain plug and wipe up any spilled oil.
8. Fill the crankcase with oil; refer to Checking the Engine-Oil Level (page 27).

Fuel System Maintenance

Note: Refer to Adding Fuel (page 30) for proper the fuel recommendations.

Servicing the Water Separator

Service Interval: Every 400 hours

Drain the water or other contaminants from the water separator (Figure 51) daily. Replace the filter canister after every 400 operating hours.

1. Place a clean container under the fuel filter.
2. Loosen the drain plug on the bottom of the filter canister (Figure 51).

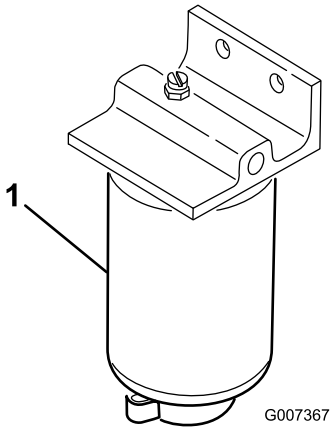


Figure 51

1. Filter canister

3. Clean the area where the filter canister mounts.
4. Remove the filter canister and clean the mounting surface.
5. Lubricate the gasket on the filter canister with clean oil.
6. Install the filter canister by hand until the gasket contacts mounting surface, then rotate it an additional 1/2 turn.
7. Tighten the drain plug on the bottom of the filter canister.

Cleaning the Fuel Tank

Service Interval: Every 400 hours—Drain and clean the fuel tank (or yearly, whichever comes first)

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

Inspecting the Fuel Lines and Connections

Service Interval: Every 400 hours (or yearly, whichever comes first)

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

Bleeding the Air from the Injectors

Note: Perform this procedure only if fuel system has been purged of air through normal priming procedures and engine does not start; refer to Bleeding the Fuel System (page 33).

1. Loosen the pipe connection to the No. 1 injector nozzle and holder assembly at the injection pump (Figure 52).

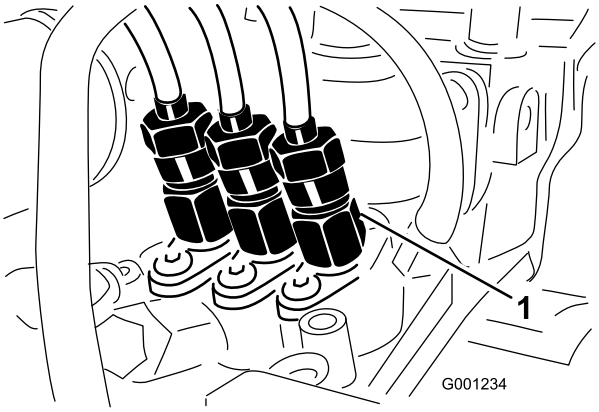


Figure 52

1. No. 1 injector nozzle

2. Move the throttle to the FAST position.
3. Turn the ignition key to the START position and watch the fuel flow around the connector.
4. Turn the key to the OFF position when it attains a solid flow.
5. Tighten the pipe connector securely.
6. Repeat this procedure for the remaining nozzles.

Electrical System Maintenance

Servicing the Battery

Service Interval: Every 50 hours—Check the battery cable connections.

Every 50 hours—Check the battery electrolyte level.

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.

Maintain the battery electrolyte level and keep the top of the battery clean. 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.

Check the electrolyte level every 50 operating hours or, if the machine is in storage, every 30 days.

Maintain the cell level with distilled or demineralized water. Do not fill the cells above the bottom of the split ring inside each cell.

⚠ 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 it. Do not remove the fill caps while cleaning the battery.

The battery cables must be tight on the terminals to provide good electrical contact.

If corrosion occurs at the terminals, 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.

⚠ WARNING

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

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

⚠ WARNING

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

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

Storing the Battery

- If you plant to store the machine more than 30 days, remove the battery and charge it fully.
- Store it on the shelf on the machine.
- Leave the cables disconnected if it is stored on the machine.
- Store the battery in a cool atmosphere to avoid quick deterioration of the charge in the battery.
- To prevent the battery from freezing, ensure that it is fully charged. The specific gravity of a fully charged battery is 1.265 to 1.299.

Servicing the Wiring Harness

Prevent corrosion of wiring terminals by applying Grafo 112X (Skin-over) grease, Toro Part No. 505-47, to the inside of all harness connectors whenever you replace the harness.

Important: Whenever working with the electrical system, always disconnect the battery cables, negative (-) cable first, to prevent possible wiring damage from short-outs.

Accessing the Fuses

The fuses are located under the control panel (Figure 53).

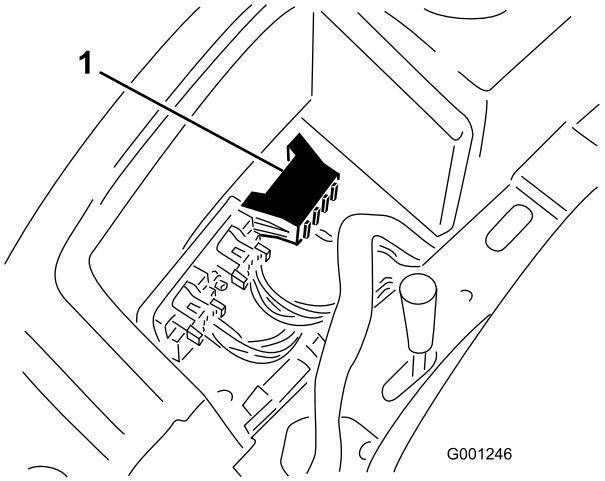


Figure 53

1. Fuse block

Drive System Maintenance

Changing the Rear Axle Lubricant (Model 30345 only)

Service Interval: Every 400 hours

1. Position the machine on a level surface.
2. Clean the area around the 3 drain plugs, 1 on each end and 1 in the center (Figure 54).

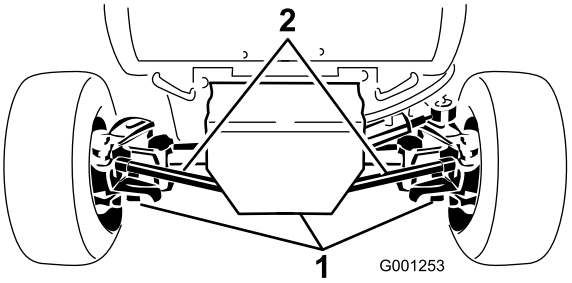


Figure 54

1. Drain plug (3)

3. Remove the plugs, allowing the oil to drain into drain pans.
4. Apply thread-locking compound on the drain-plug threads and install them in the axle.
5. Fill the axle with lubricant; refer to Changing the Rear Axle Lubricant (Model 30345 only) (page 46).

Checking the Torque on the Steering-Cylinder-Mounting Bolt (Model 30345 only)

Service Interval: Every 200 hours

1. Position the machine on a level surface.
2. Check the torque on the steering-cylinder-mounting bolts (Figure 55).

   Note: Torque should be 48 to 60 ft-lb.

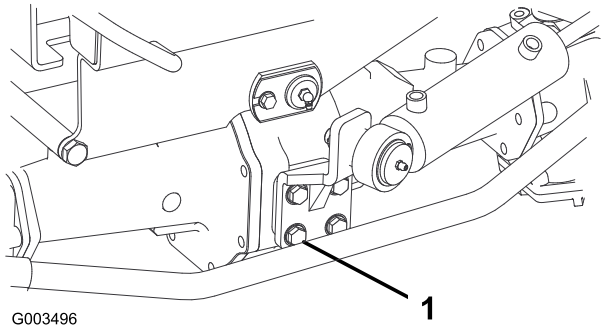


Figure 55

1. Steering-cylinder-mounting bolt (4)

3. If the torque is incorrect, torque the bolts to 48 to 60 ft-lb.

Changing the Bidirectional-Clutch Lubricant (Model 30345 only)

Service Interval: Every 400 hours

1. Position the machine on a level surface.
2. Clean the area around the check plug on the bidirectional clutch.
3. Rotate the clutch so that the check plug is positioned downward (Figure 56).

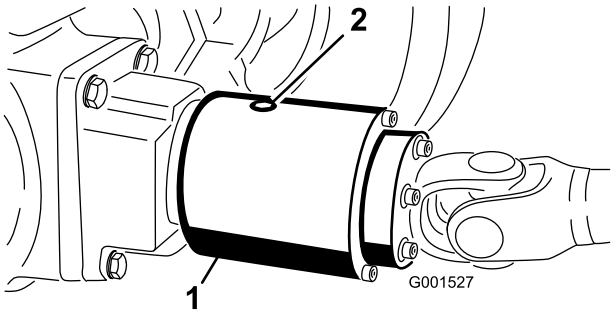


Figure 56

1. Bidirectional clutch
2. Check plug

4. Remove the check plug allowing all lubricant to flow into a drain pan.
5. Rotate the clutch so that the check plug is positioned at 4 o'clock.
6. Add Mobil Fluid 424 until the lubricant level is up to the hole in the clutch.

   Note: The clutch should be approximately 1/3 full.
7. Install the check plug.

   Note: Do not use engine oil (such as 10W30) in the bidirectional clutch. Anti-wear and extreme-pressure additives will cause undesirable clutch performance.

Adjusting the Traction Drive for Neutral

If the machine moves when the traction pedal is in the neutral position, adjust the traction cam.

1. Park the machine on a level surface and shut off the engine.
2. Raise 1 front wheel and 1 rear wheel off the floor and place support blocks under the frame.

⚠ WARNING

If the machine is not supported adequately, it may accidentally fall, injuring anyone under the machine.

One front wheel and 1 rear wheel must be raised off the ground or the machine will move during the adjustment.

3. Loosen the retaining screw on the opposite side of the traction-adjustment cam (Figure 57).

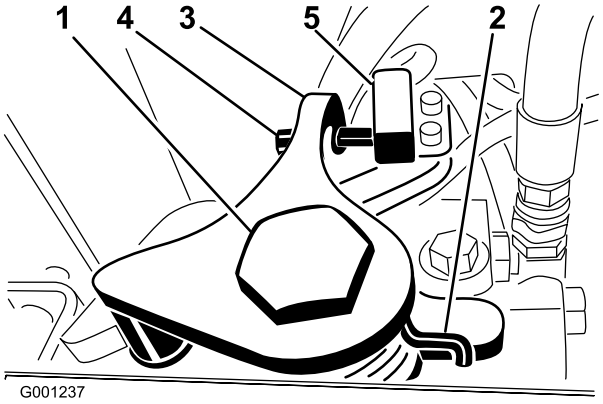


Figure 57

1. Traction-adjustment cam
2. Retaining screw
3. Neutral-return arm
4. Adjusting screw
5. NEUTRAL-RETURN switch

4. Start the engine.
5. Rotate the cam hex forward until the front wheel starts to rotate, then rotate the hex cam backward until the front wheel starts to rotate.

⚠ WARNING

The engine must be running so a final adjustment of the traction adjustment cam can be performed. Contact with hot or moving parts can result in personal injury.

Keep hands, feet, face, and other body parts away from the muffler, other hot parts of the engine, and other rotating parts.

6. Determine the middle position of the neutral span and tighten the retaining screw.

   Note: Perform this operation at low-speed idle and at high engine speed.

7. Tighten the screw securing the adjustment.
8. Stop the engine.
9. Adjust the screw on the neutral-return arm (Figure 57) until the gap between the end of the screw and the switch contact is 0.23 to 0.38 cm (0.090 to 0.120 inch).
10. Remove the support blocks and lower the machine to the shop floor.
11. Test drive the machine to ensure that it does not move when the traction pedal is in neutral.

Adjusting Rear Wheel Toe-in

Service Interval: Every 200 hours—Check the rear wheel toe-in.

Model 30344

The rear wheels should not toe-in or toe-out when they are adjusted correctly. To check the rear wheel toe-in, measure the center-to-center distance at wheel hub height, in front and in back of the rear tires. If the wheels toe-in or toe-out, adjust the wheels.

1. Rotate the steering wheel so that the rear wheels are straight ahead.
2. Loosen the jam nuts on both tie rods.
3. Adjust both tie rods until center-to-center distance at front and back of rear wheels is the same (Figure 58).
4. When rear wheels are adjusted correctly, tighten jam nuts against tie rods.

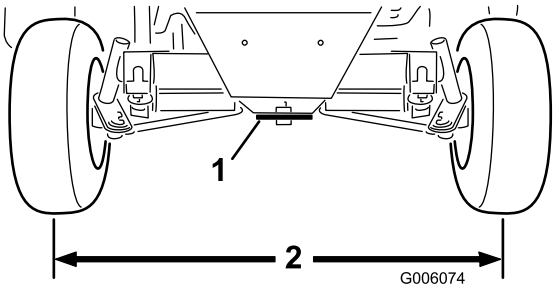


Figure 58

1. Steering plate
2. Same dimension at front and rear of wheels

Model 30345

The rear wheels should not toe-in or toe-out when they are adjusted correctly. To check the rear wheel toe-in, measure

the center-to-center distance at wheel hub height, in front and in back of the rear tires. If the wheels toe-in or toe-out, adjust the wheels.

1. Rotate the steering wheel so that the rear wheels are straight ahead.
2. Remove nuts securing 1 tie-rod ball joint to the mounting bracket on the axle and disconnect the ball joint from the axle (Figure 59).

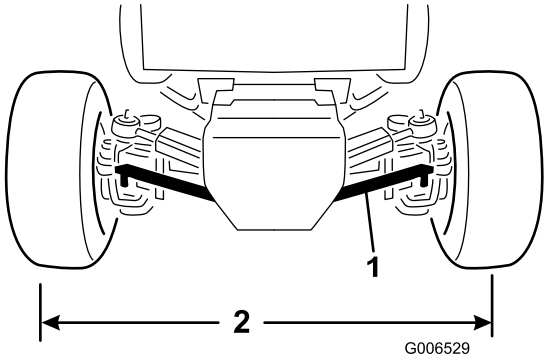


Figure 59

1. Tie rod
2. Same dimension at the front and rear of the wheels

3. Loosen the screw on the tie-rod clamp.
4. Rotate the tie-rod ball joint in or out until the center-to-center distance at front and back of the rear wheels is the same (Figure 59).
5. Install the ball joint to the mounting bracket and check the wheel toe-in.
6. After attaining the desired adjustment, tighten the screw on the tie-rod clamp and secure the ball joint to the mounting bracket.

Adjusting Steering Stops (Model 30345 only)

The rear-axle-steering stops help prevent over-travel of the steering cylinder in case of impact on the rear wheels. Adjust the stops so that there is 0.23 cm (0.090 inch) clearance between the bolt head and the knuckle on the axle when you turn the steering wheel completely to the left or to the right.

1. Thread the bolts in or out until you attain a clearance of 0.23 cm (0.090 inch) (Figure 60).

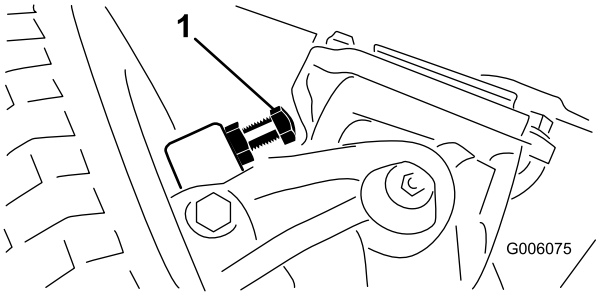


Figure 60

1. Steering stop (right side shown)

2. Loosen the screw on the tie-rod clamp.
3. Rotate the ball joint in or out to adjust the length of the tie rod.
4. Install the ball joint to the mounting bracket and check the wheel toe-in.
5. After attaining the desired adjustment, tighten the screw on the tie-rod clamp and secure the ball joint to the mounting bracket.

Cooling System Maintenance

Cleaning the Radiator and the Screen

Service Interval: Every 200 hours—Inspect the cooling-system hoses.

Every 1,500 hours—Replace any moving hoses.

Every 1,500 hours—Flush and replace the cooling-system fluid.

To prevent the engine from overheating, keep the screen and radiator clean. Check the screen and radiator daily and, if necessary, clean any debris off these parts. Check and clean the screen and radiator more frequently in extremely dusty and dirty conditions.

Note: If the PTO shuts off due to high engine temperature, first check the radiator and screen for an excessive buildup of debris. Clean the system before operating the machine. Do not shut off the engine immediately; allow the engine to cool by running it without a load.

Clean the radiator as follows:

1. Remove the screen.
2. Working from the fan side of the radiator, blow with low pressure, 172 kPa (25 psi), compressed air **(do not use water)**. Repeat this step from the front of the radiator and again from the fan side.
3. After the radiator is thoroughly cleaned, clean out any debris that may have collected in the channel at the radiator base.
4. Clean and install the screen.

Brake Maintenance

Adjusting the Parking-Brake-Interlock Switch

1. Shut the engine off and remove the ignition key. Do not engage the parking brake.
2. Remove the knob from the parking-brake rod and screws from the steering-tower cover (Figure 61).

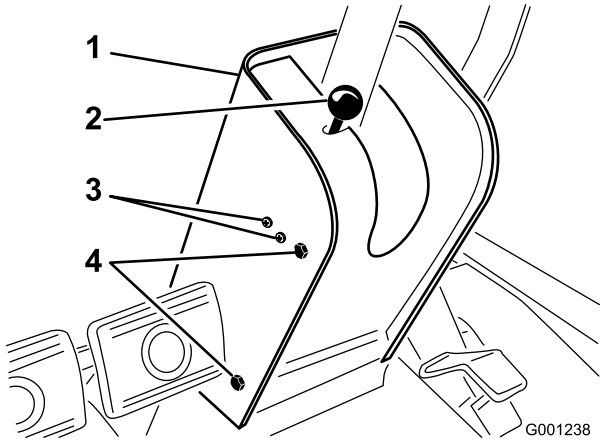


Figure 61

1. Steering-tower cover
2. Parking-brake knob/rod
3. Switch-mounting screws
4. Cover-mounting screws

3. Slide the cover up the steering shaft to expose the PARKING BRAKE switch (Figure 62).
4. Loosen the screws and nuts securing the PARKING BRAKE switch to the left side of the steering tower (Figure 61).
5. Align the parking brake rod paddle with the switch plunger (Figure 62)

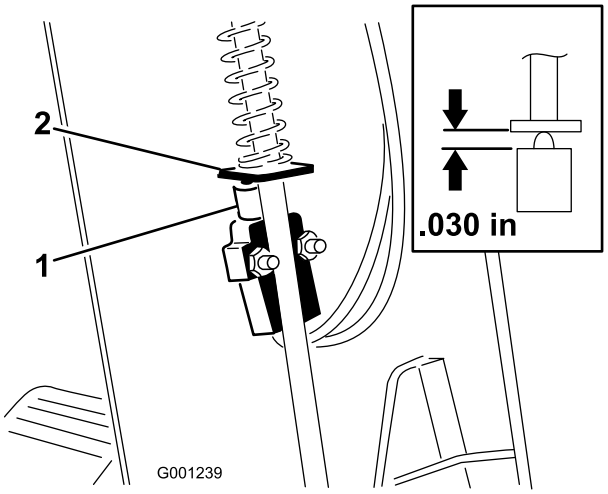


Figure 62

1. PARKING BRAKE interlock switch
2. Parking-brake-rod paddle

6. Press down on the parking-brake rod and push up the switch until the compressed length of the switch plunger is 0.7 mm (0.030 inches) (Figure 62, inset).

   Note: This is the distance between the brake-rod paddle and the switch-plunger housing.

7. Tighten the switch-mounting screws and nuts.
8. With the parking brake disengaged, the switch circuit should have continuity.

   Note: If there is no continuity, move the switch down slightly until there is continuity.

9. Check the adjustment as follows:
   A. Engage the parking brake.
   B. Press the traction pedal while the engine is running and the PTO lever is disengaged.

      Note: The engine should stop within 2 seconds. If engine stops, the switch is operating correctly. If engine does not stop, the interlock system is malfunctioning and require that you correct it.

10. Install the steering-tower cover and brake-rod knob.

Adjusting the Service Brakes

Service Interval: After the first 10 hours

After the first 50 hours

Every 50 hours

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

After the first 10 hours of operation, you should need to adjust the brakes only after considerable use thereafter. You can perform these periodic adjustments where the brake cable connects to the bottom of the brake pedals. When the cable is no longer adjustable, you can adjust the star nut on the inside of the brake drum to move the brake shoes outward. However, you will need to adjust the brake cables again to compensate for this adjustment.

1. Disengage the lock arm from the right-brake pedal so that both pedals work independently of each other.
2. To reduce the free travel of the brake pedals, tighten the brakes by loosening the jam front nuts on the threaded end of the brake cable (Figure 63).

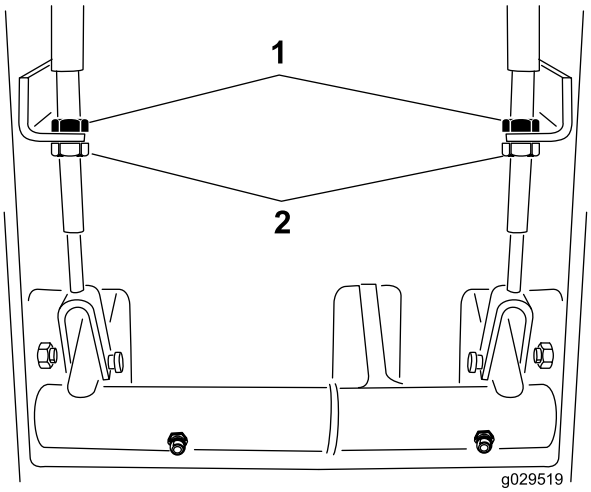


Figure 63

1. Rear jam nuts
2. Front jam nuts

3. Tighten the rear jam nuts to move the cable rearward until the brake pedals have 13 mm to 25 mm (1/2 to 1 inch) of free travel.
4. Tighten the front jam nuts after the brakes are properly adjusted.

Belt Maintenance

Checking the Alternator Belt

Service Interval: Every 200 hours

After the first 10 hours

Check condition and tension of alternator belt (Figure 64) after every 200 operating hours.

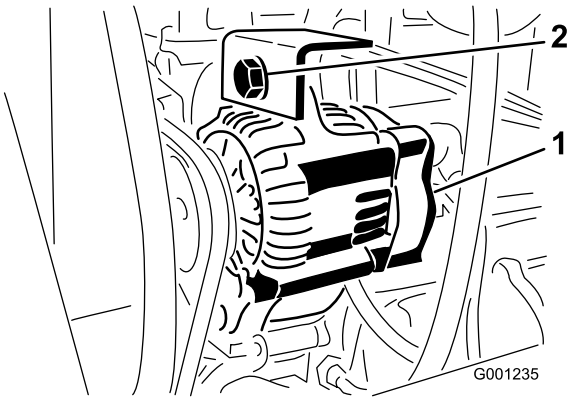


Figure 64

1. Alternator
2. Mounting bolt

1. A properly tensioned belt allows 10 mm (3/8 inch) deflection when you apply a force of 4.5 kg (10 lb) on the belt, midway between the pulleys.

   Note: If the deflection is not 10 mm (3/8 inch), loosen the alternator mounting bolts.

2. Increase or decrease the tension on the alternator belt and tighten the bolts.
3. Check the deflection of the belt again to ensure that the tension is correct.

Servicing the PTO Belt

Checking the PTO Belt Tension

Service Interval: After the first 10 hours

After the first 50 hours

Every 200 hours

1. Turn the engine off, set the parking brake, and remove the ignition key.
2. Raise the engine hood and allow the engine to cool.
3. Loosen the tensioning-rod jam nut (Figure 65).

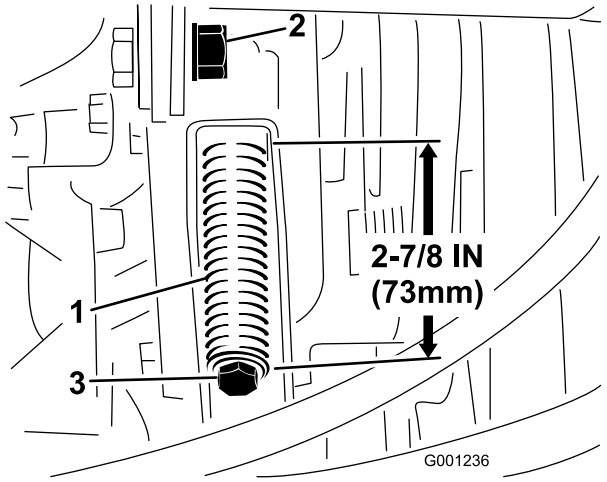


Figure 65

1. Belt-tensioning spring
2. Tensioning-rod jam nut
3. Tension-adjusting bolt

4. Use a 1/2-inch wrench to tighten or loosen the belt-tensioning spring (Figure 65). Adjust spring to a length of 273 mm (7/8 inches).
5. Tighten the jam nut.

Replacing the PTO Belt

1. Turn the engine off, set the parking brake, and remove the ignition key.
2. Raise the engine hood and allow the engine to cool.
3. Loosen the tensioning-rod jam nut (Figure 65).
4. Using a 1/2-inch wrench, loosen the belt-tensioning spring (Figure 65) all the way.
5. Rotate the PTO pulley toward the engine and remove the belt.
6. Install the new PTO belt and tension the pulley spring to 73 mm (2-7/8 inches) (Figure 65).
7. Tighten the jam nut (Figure 65) and close the hood.

Adjusting the PTO Clutch

Service Interval: Every 200 hours

1. Turn the engine off, set the parking brake, and remove the ignition key.
2. Raise the engine hood and allow the engine to cool.
3. Adjust the air gap so that a 0.4 mm (0.015 inch) feeler gauge slides in between the clutch lining and friction plate with light pressure (Figure 66).

   Note: You can decrease the gap by turning the adjusting nut clockwise (Figure 66). The maximum service gap is 0.7 mm (0.030 inch). Adjust all 3 air gaps.

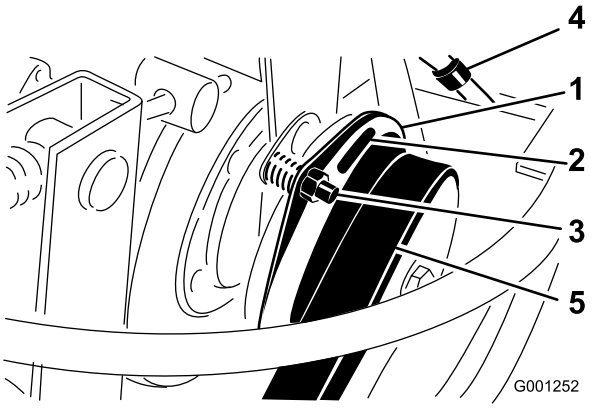


Figure 66

1. Clutch
2. 0.4 mm (0.015 inch) air gap (3)
3. Adjusting nut (3)
4. Electrical connector
5. PTO belt

4. After all 3 gaps have been set, check all 3 again.

   Note: Adjusting 1 gap can alter the other gaps.

Adjusting the Traction Pedal

You can adjust the traction pedal for operator comfort or to reduce the maximum reverse speed of the machine.

1. Check the adjustment of the traction-pedal stop.

   Note: The traction-pedal stop (Figure 67) should contact the frame slightly before the pump reaches full stroke.

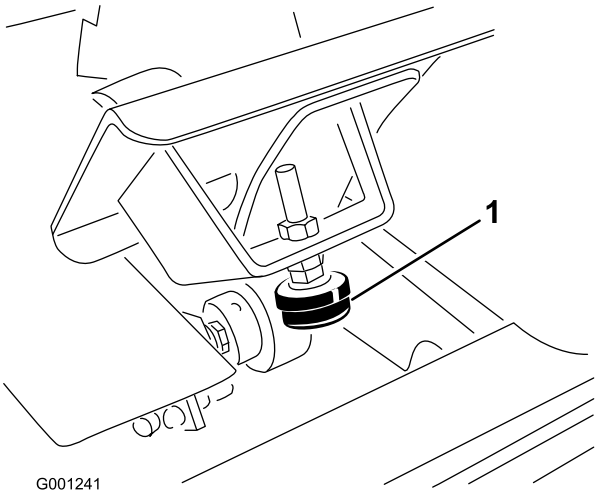


Figure 67

1. Traction-pedal stop

2. Loosen the jam nuts, push down the traction pedal, and tighten the jam nuts when you attain the proper adjustment.
3. If more adjustment is required, adjust the traction rod (Figure 68) as follows:
   A. Remove the bolt and nut securing traction rod end to the pedal.
   B. Loosen the jam nut securing rod end to the traction rod.
   C. Rotate the rod until you achieve the desired length.
   D. Tighten the jam nut and secure the rod end to the traction pedal with the bolt and nut removed to lock the angle of the foot pedal.

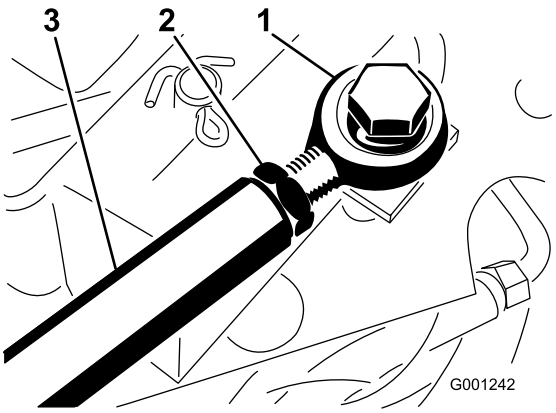


Figure 68

1. Rod end
2. Jam nut
3. Traction rod

Adjusting the Tilt-Steering Control

1. Remove the knob from the parking brake and the screws from the steering-column cover (Figure 69).

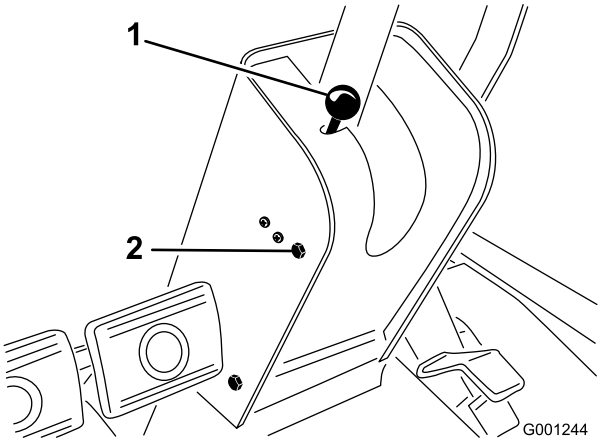


Figure 69

1. Parking-brake knob
2. Mounting screw (4)

2. Slide the cover up the steering shaft to expose the pivot bracket (Figure 70).

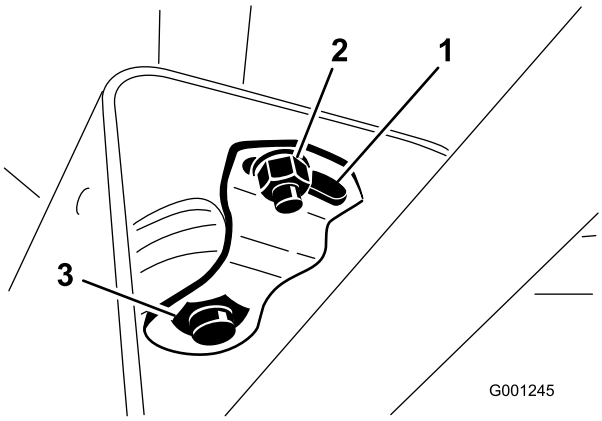


Figure 70

1. Pivot plate
2. Small nut
3. Large nut

3. Loosen the small nut and rotate the pivot bracket until it tightens the large nut below it (Figure 70).
4. Tighten the small nut.
5. Install the steering-column cover and the parking-brake knob.

Hydraulic System Maintenance

Changing the Hydraulic Oil And Filter

Service Interval: After the first 10 hours—Change the hydraulic oil filter. Do not exceed 10 hours or you will damage the hydraulic system.

Every 200 hours—Change the hydraulic oil filter.

Every 1,500 hours—Replace the hydraulic oil.

The axle housing acts as the reservoir for the system. The transmission and axle housing are shipped from the factory with approximately 5.6 L (6 qt) of high-quality hydraulic fluid. Check the level of hydraulic oil before the engine is first started and daily thereafter. The recommended replacement oil is as follows:

Toro PremiumTransmission/Hydraulic Tractor Fluid
(Available in 5-gallon pails or 55-gallon drums. See parts catalog or Toro distributor for part numbers.)

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

Note: Toro will not assume responsibility for damage caused by improper substitutions, so use only products from reputable manufacturers who will stand behind their recommendation.

Material Properties:

Viscosity, ASTM D445	cSt @ 40°C 55 to 62 cSt @ 100°C 9.1 to 9.8
Viscosity Index ASTM D2270	140 to 152
Pour Point, ASTM D97	-35°F to -46°F

Industry Specifications:

API GL-4, AGCO Powerfluid 821 XL, Ford New Holland FNHA-2-C-201.00, Kubota UDT, John Deere J20C, Vickers 35VQ25, and Volvo WB-101/BM

Note: The hydraulic fluid needed to operate the power steering is supplied by the transmission-charge pump.

Operating the steering system in cold weather may be stiff operation until the hydraulic system has warmed up. Using the proper weight hydraulic oil in the system will minimize this condition.

Note: Many hydraulic fluids are almost colorless, making it difficult to spot leaks. A red dye additive for the hydraulic system oil is available in 20 ml (2/3 oz) bottles. One bottle is sufficient for 15 to 22 L (4 to 6 gallons) of hydraulic oil. Order part number 44-2500 from your Authorized Toro Distributor.

1. Lower the deck to the shop floor, set the parking brake, and turn engine off.
2. Block the 2 rear wheels.
3. Jack up both sides of the front axle and support it with jack stands.
4. Clean the area around the hydraulic oil filter and remove the filter (Figure 71).

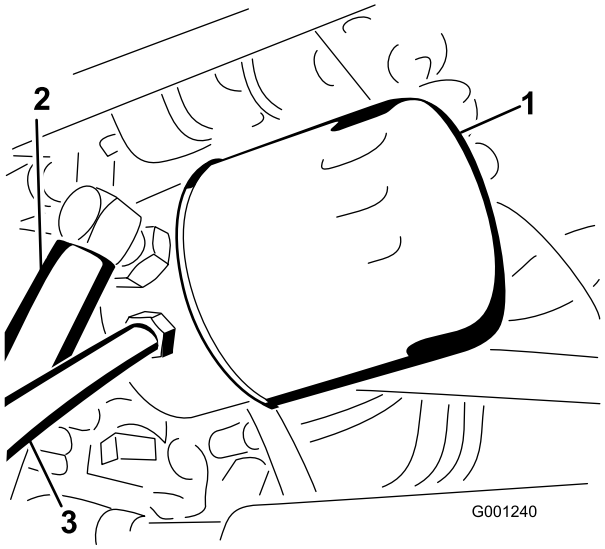


Figure 71

1. Filter
2. Return line
3. Suction line

5. Remove the tube that connects the axle housing to the transmission and allow the oil to flow into a drain pan.
6. Install a new hydraulic-oil filter and connect the tube between axle housing and the transmission.
7. Fill the axle (reservoir) to the proper level; refer to Checking the Hydraulic System (page 28).
8. Remove jack stands.
9. Start the engine, cycle the steering and lift cylinders, and check for oil leaks. Allow the engine to run for about 5 minutes, then shut it off.
10. After 2 minutes, check the level of the hydraulic fluid; refer to Checking the Hydraulic System (page 28).

Storage

Machine

1. Thoroughly clean the machine, deck and the engine, paying special attention to these areas:
   - Radiator and radiator screen
   - Underneath the deck
   - Under the deck belt covers
   - Counterbalance springs
   - PTO shaft assembly
   - All grease fittings and pivot points
   - Remove the control panel and clean out inside of the control box
   - Beneath the seat plate and top of the transmission
2. Check the tire pressure. Inflate all machine tires to 138 kPa (20 psi).
3. Remove, sharpen, and balance the mower blades. Install the blades and torque the blade fasteners to 85-110 ft-lb (115-149 N-m).
4. Check all fasteners for looseness and tighten them as necessary.
5. Grease or oil all grease fittings, pivot points, and transmission bypass-valve pins. Wipe off any excess lubricant.
6. Lightly sand and use touch-up paint on painted areas that are scratched, chipped or rusted. Repair any dents in the metal body.
7. Service the battery and cables as follows:
   A. Remove the battery terminals from the battery posts.
   B. Clean the battery, terminals, and posts with a wire brush and baking-soda solution.
   C. Coat the cable terminals and battery posts with Grafo 112X skin-over grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.
   D. Slowly charge the battery for 24 hours every 60 days to prevent lead sulfation of the battery.

Engine

1. Drain the engine oil from the oil pan and replace the drain plug.
2. Remove and discard the oil filter and install a new filter.
3. Refill the engine with 3.8 L (4 qt) of recommended motor oil. Refer to Changing the Engine Oil And Filter (page 43).
4. Start the engine and run it at idle speed for 2 minutes.
5. Drain the fuel from the fuel tank, fuel lines, pump, filter, and separator.

6. Flush the fuel tank with clean diesel fuel and connect all fuel lines.
7. Thoroughly clean and service the air-cleaner assembly.
8. Seal the air-cleaner inlet and the exhaust outlet with weatherproof masking tape.
9. Check the oil-filler cap and fuel-tank cap to ensure that they are securely in place.

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International Distributor List

Distributor:	Country:	Phone Number:	Distributor:	Country:	Phone Number:
Agrolanc Kft	Hungary	36 27 539 640	Maquiver S.A.	Colombia	57 1 236 4079
Balama Prima Engineering Equip.	Hong Kong	852 2155 2163	Maruyama Mfg. Co. Inc.	Japan	81 3 3252 2285
B-Ray Corporation	Korea	82 32 551 2076	Mountfield a.s.	Czech Republic	420 255 704 220
Casco Sales Company	Puerto Rico	787 788 8383	Mountfield a.s.	Slovakia	420 255 704 220
Ceres S.A.	Costa Rica	506 239 1138	Munditol S.A.	Argentina	54 11 4 821 9999
CSSC Turf Equipment (pvt) Ltd.	Sri Lanka	94 11 2746100	Norma Garden	Russia	7 495 411 61 20
Cyril Johnston & Co.	Northern Ireland	44 2890 813 121	Oslinger Turf Equipment SA	Ecuador	593 4 239 6970
Cyril Johnston & Co.	Republic of Ireland	44 2890 813 121	Oy Hako Ground and Garden Ab	Finland	358 987 00733
Equiver	Mexico	52 55 539 95444	Parkland Products Ltd.	New Zealand	64 3 34 93760
Femco S.A.	Guatemala	502 442 3277	Perfetto	Poland	48 61 8 208 416
ForGarder OU	Estonia	372 384 6060	Pratoverde SRL.	Italy	39 049 9128 128
G.Y.K. Company Ltd.	Japan	81 726 325 861	Prochaska & Cie	Austria	43 1 278 5100
Geomechaniki of Athens	Greece	30 10 935 0054	RT Cohen 2004 Ltd.	Israel	972 986 17979
Golf international Turizm	Turkey	90 216 336 5993	Riversa	Spain	34 9 52 83 7500
Guandong Golden Star	China	86 20 876 51338	Lely Turfcare	Denmark	45 66 109 200
Hako Ground and Garden	Sweden	46 35 10 0000	Solvert S.A.S.	France	33 1 30 81 77 00
Hako Ground and Garden	Norway	47 22 90 7760	Spypros Stavrinides Limited	Cyprus	357 22 434131
Hayter Limited (U.K.)	United Kingdom	44 1279 723 444	Surge Systems India Limited	India	91 1 292299901
Hydroturf Int. Co Dubai	United Arab Emirates	97 14 347 9479	T-Markt Logistics Ltd.	Hungary	36 26 525 500
Hydroturf Egypt LLC	Egypt	202 519 4308	Toro Australia	Australia	61 3 9580 7355
Irrimac	Portugal	351 21 238 8260	Toro Europe NV	Belgium	32 14 562 960
Irrigation Products Int'l Pvt Ltd.	India	0091 44 2449 4387	Valtech	Morocco	212 5 3766 3636
Jean Heybroek b.v.	Netherlands	31 30 639 4611	Victus Emak	Poland	48 61 823 8369

European Privacy Notice

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

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

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

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

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

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

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

Australian Consumer Law

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

Toro General Commercial Product Warranty

A Two-Year Limited Warranty

Conditions and Products Covered

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

Instructions for Obtaining Warranty Service

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

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

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

Owner Responsibilities

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

Items and Conditions Not Covered

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

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

Parts

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

Deep Cycle and Lithium-Ion Battery Warranty:

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

Maintenance is at Owner's Expense

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

General Conditions

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

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

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

Note regarding engine warranty:

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

Countries Other than the United States or Canada

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

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