



Count on it.

Operator's Manual

Groundsmaster® 328-D

2 & 4 Wheel Drive Traction Units

Model No. 30626—Serial No. 280000201 and Up

Model No. 30627—Serial No. 280000201 and Up

Model No. 30630—Serial No. 280000201 and Up

Model No. 30631—Serial No. 280000201 and Up

Warning

CALIFORNIA Proposition 65 Warning

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

Important: The engine in this product is not equipped with a spark arrester muffler. It is a violation of California Public Resource Code Section 4442 to use or operate this engine on any forest-covered, brush-covered, or grass-covered land as defined in CPRC 4126. Other states or federal areas may have similar laws.

Introduction

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

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

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

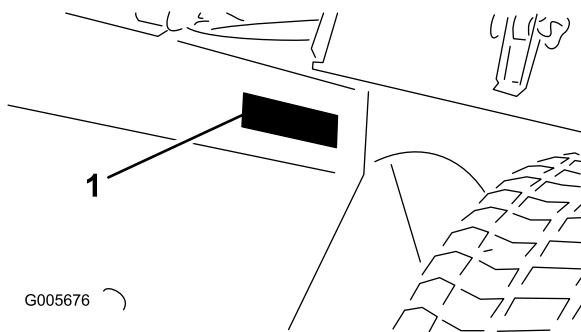


Figure 1

1. Model and serial number location

Model No. _____
Serial No. _____

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



Figure 2

1. Safety alert symbol

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

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Safety

Models 30630 and 30631 meet or exceed CEN standard EN 836:1997, ISO standard 5395:1990, and ANSI B71.4-2004 specifications in effect at the time of production, when weights are installed according to chart in the Setup section.

Models 30626 and 30627 meet or exceed the B71.4 2004 specifications of the American National Standards Institute, in effect at time of production, when weights are installed according to chart in the Setup section.

Note: The addition of attachments made by other manufacturers that do not meet American National Standards Institute certification will cause noncompliance of this machine.

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

The following instructions are from the CEN standard EN 836:1997, ISO standard 5395:1990, and ANSI B71.4-2004.

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 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.
- Warning-Fuel is highly flammable. Take the following precautions:
 - Store fuel in containers specifically designed for this purpose.
 - Refuel outdoors only and do not smoke while refueling.
 - Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot.
 - If fuel is spilled, do not attempt to start the engine but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
 - Replace all fuel tanks and container caps securely.
- 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.



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 wheel leaves the ground, steering is lost.

Operation

- Do not operate the engine in a confined space where dangerous carbon monoxide fumes can collect.



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
- 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.

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 one 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.

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 one 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 all hydraulic line connectors are tight and all hydraulic hoses and lines are in good condition before applying pressure to the system.
- Keep your body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not your hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate 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

This unit has a guaranteed sound power level of 105 dBA, based on measurements of identical machines per ISO 11094.

Sound Pressure

This unit has a maximum sound pressure level at the operator's ear of 89 dBA, based on measurements of identical machines per EN 836 and ISO 11201.

Vibration

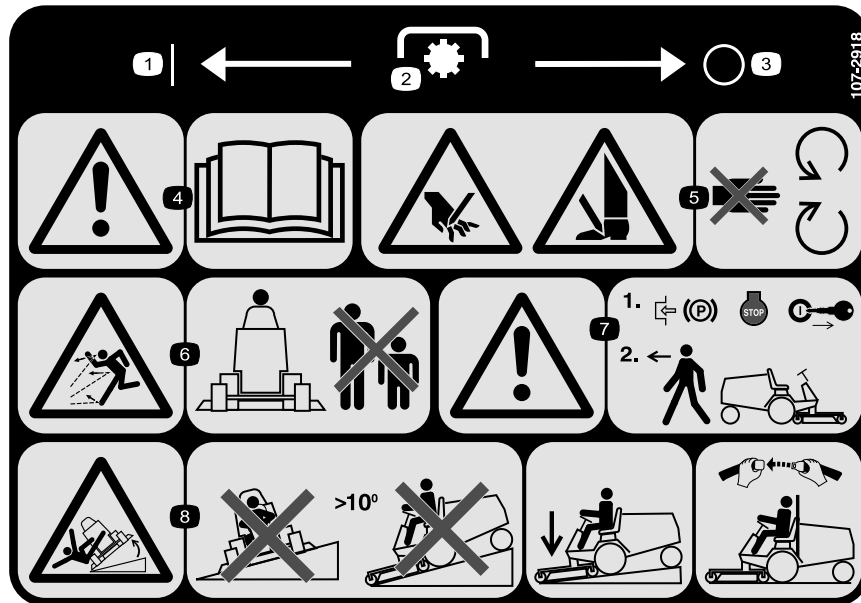
This unit does not exceed a hand/arm vibration level of 2.5 m/s², based on measurements of identical machines per EN 836 and EN 1033.

This unit does not exceed a whole body vibration level of 0.5 m/s², based on measurements of identical machines per EN 836 and EN 1032.

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.

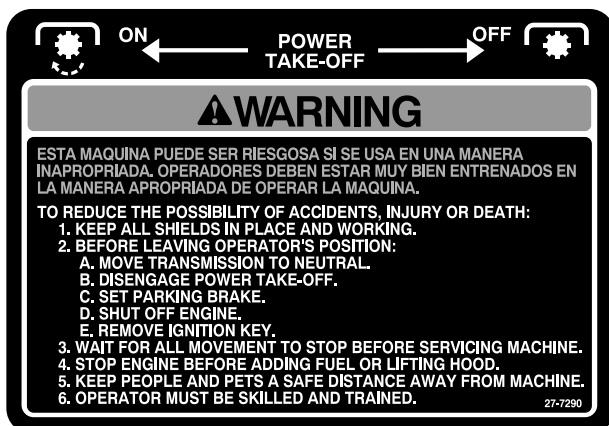


107-2918

(Models 30630 & 30631)

* This safety decal includes a slope warning required on the machine for compliance to the European Lawn Mower Safety Standard EN836:1997. The conservative maximum slope angles indicated for operation of this machine are prescribed by and required by this standard.

- | | | | |
|-------------------------|--|---|---|
| 1. On | 3. Off | 5. Cutting hazard of hand or foot—stay away from moving parts. | 7. Warning—lock the parking brake, stop the engine, and remove the ignition key before leaving the machine. |
| 2. Power take-off (PTO) | 4. Warning—read the <i>Operator's Manual</i> . | 6. Thrown object hazard—keep bystanders a safe distance from the machine. | 8. Tipping hazard—do not drive the machine on a slope greater than 10 degrees, lower the cutting unit when driving down slopes, and if the roll bar is installed, wear the seat belt. |



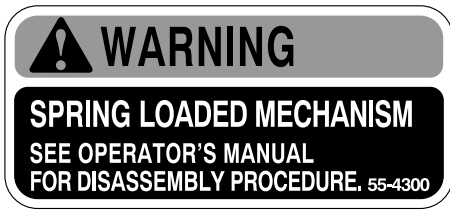
27-7290

(Models 30630 & 30631)



27-7310

(Models 30626 & 30627)



55-4300

(Models 30626 & 30627)



67-1710

(Models 30626 & 30627)



70-2560

(Model 30627)



72-3700

(Models 30626 & 30627)



77-3100

(Models 30626 & 30627)

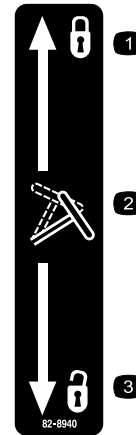
1. Fan blades can cause injury—stay away from moving parts.



82-8930

(Models 30626 & 30627)

1. Parking brake—read the *Operator's Manual* for further instructions.



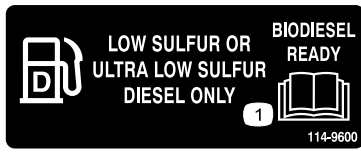
82-8940

1. Locked
2. Tilt steering
3. Unlocked



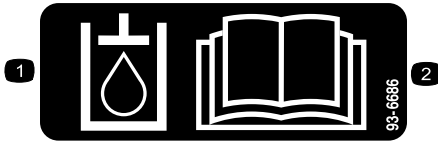
83-9150

(Models 30626 & 30627)



114-9600

1. Read the *Operator's Manual*.



93-6686

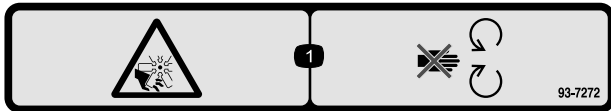
1. Hydraulic oil
2. Read the *Operator's Manual*.



93-6697

(Model 30631)

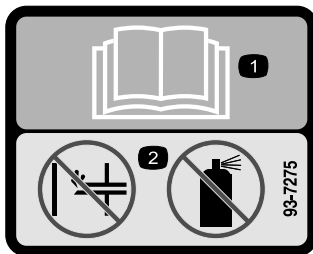
1. Read the *Operator's Manual*.
2. Add SAE 80w-90 (API GL-5) oil every 50 hours.



93-7272

(Models 30630 & 30631)

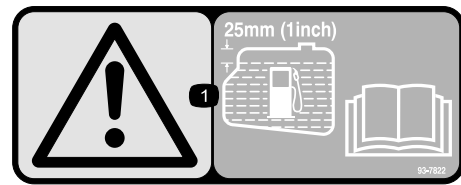
1. Cutting/dismemberment hazard; fan—stay away from moving parts.



93-7275

(Model 30630 & 30631)

1. Read the *Operator's Manual*.
2. Do not use starting aids.



93-7822

(Models 30630 & 30631)

1. Caution—fill fuel tank to 1 in (25 mm) below filler neck. Read the *Operator's Manual* for further instructions.



93-7830

1. Caution—read the *Operator's Manual* for further instructions.
2. Torque wheel fasteners to 45-55 ft-lb (62-75 N-m)



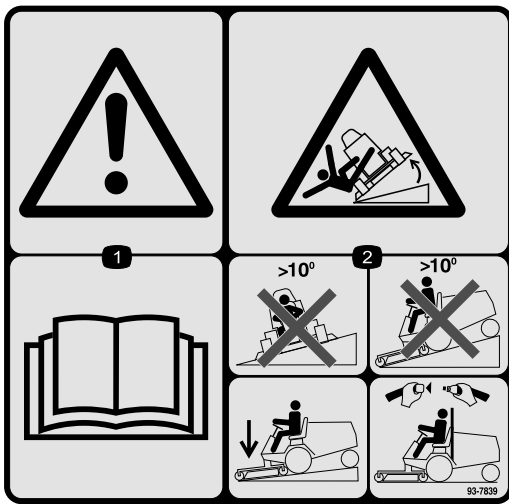
93-7831

1. Parking brake—read the *Operator's Manual* for further instructions.



93-7836

1. To move the traction unit forward or backward, depress the traction pedal.



93-7839

(Model 30630 & 30631)

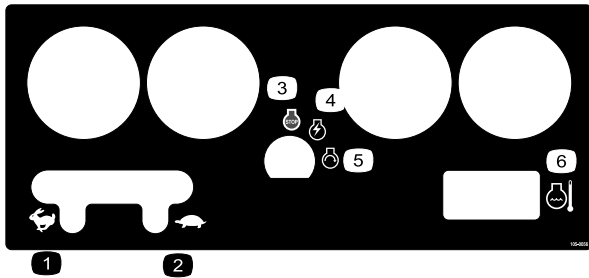
*This safety decal includes a slope warning required on the machine for compliance to the European Lawn Mower Safety Standard EN836:1997. The conservative maximum slope angles indicated for operation of this machine are prescribed by and required by this standard.

1. Warning—read the *Operator's Manual*.
2. 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 installed, wear the seat belt.



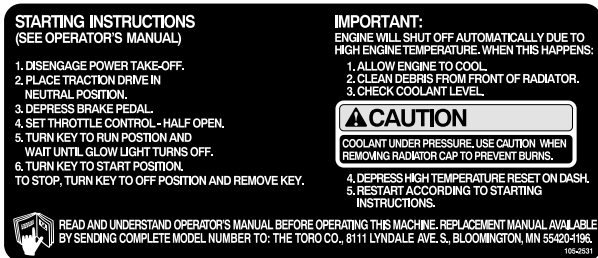
105-7822

(Models 30626 & 30627)



105-0056

- | | |
|----------------|-----------------------|
| 1. Fast | 4. Engine—run |
| 2. Slow | 5. Engine—start |
| 3. Engine—stop | 6. Engine temperature |



105-2531

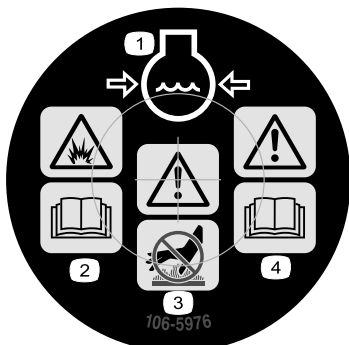
(Model 30626 & 30627)



105-7823

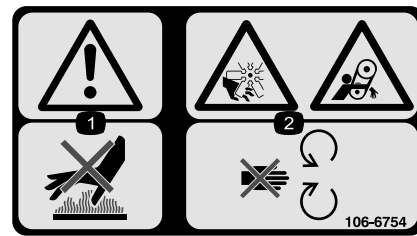
(Models 30630 & 30631)

1. Traction drive—to drive forward, press the top of the traction control pedal forward and down; to drive in reverse, press the bottom of the traction control pedal rearward and down.
2. Warning—disengage the power take-off (PTO) before raising the cutting unit(s).
3. Float the cutting unit(s) over the ground.
4. Lower the cutting unit(s).
5. Raise the cutting unit(s).



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*.



106-6754

(Models 30630 & 30631)

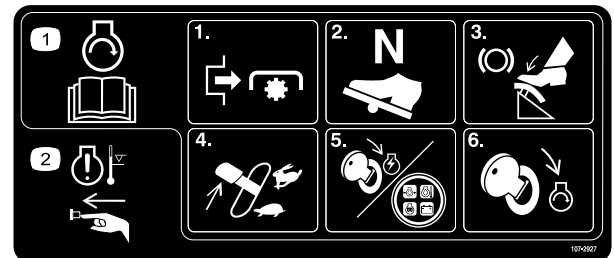
1. Warning—do not touch the hot surface.
2. Cutting/dismemberment hazard, fan and entanglement hazard, belt—stay away from moving parts.



106-8120

(Models 30626 & 30627)

1. Thrown object hazard—keep bystanders a safe distance from the machine.
2. Cutting hazard of hand and foot—stay away from moving parts.



107-2927

(Models 30630 & 30631)

1. To start the engine, read the *Operator's Manual*, disengage the power take-off (PTO), place the traction drive in neutral, press the brake, move the throttle lever to the Fast position, turn the key to the Engine—power position until the glow plug light illuminates, and then turn the key to the Engine—start position.
2. To over-ride the engine temperature warning, press the button.



Manufacturer's Mark

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



Battery Symbols

Some or all of these symbols are on your battery

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

Setup

Loose Parts

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

Procedure	Description	Qty.	Use
1	Screw, M10 x 30 mm	4	Install the steering cylinder.
	Washer	4	
2	Tie rod	1	Install the tie rod.
3	Bumper	1	Install the rear bumper.
	Capscrew, 1/4 x 1/2 inch	1	
	Flange nut 1/4 inch	1	
4	Rear wheel	2	Install the front and rear wheels.
	Front wheel	2	
5	No parts required	–	Remove the battery from the chassis.
6	Manual tube (shipped in tool box)	1	Install the seat.
	R-clamp	2	
7	Seat belt	1	Install the seat belt.
	Bolt, 7/16 x 1 inch	2	
	Lock washer, 7/16 inch	2	
8	Roll Bar (ROPS)	1	Install the roll bar.
	Bolt, 3/4 x 5-1/2 inch	4	
	Lock washer, 3/4 inch	4	
	Nut, 3/4 inch	4	
9	No parts required	–	Push the traction unit off of the pallet.
10	No parts required	–	Activate and charging the battery.
11	No parts required	–	Installing the battery in the chassis.
12	Right-hand ball joint (shipped in tool box)	1	Install the ball joint and connecting the lift cylinder.
13	No parts required	–	Install the rear weight.
14	Hydraulic oil filter	1	Finish the setup.
	Parts catalog	1	
	Operator's Manual (traction unit)	2	
	Operator Training Material	1	
	Certificate of Quality	1	

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

Note: Some models may have already been set-up at factory.

1

Installing the Steering Cylinder (Models 30627 & 30631 only)

Parts needed for this procedure:

4	Screw, M10 x 30 mm
4	Washer

Procedure

1. Remove screw and R-clamp securing steering cylinder to packaging. Retain R-clamp for future installation.
2. Mount cylinder support bracket to rear of axle with 4 screws (M10 x 30) screws and washers (Figure 3). Apply Loctite 242, or equivalent, and torque screws to 48-60 ft-lb. (65-81 N-m).

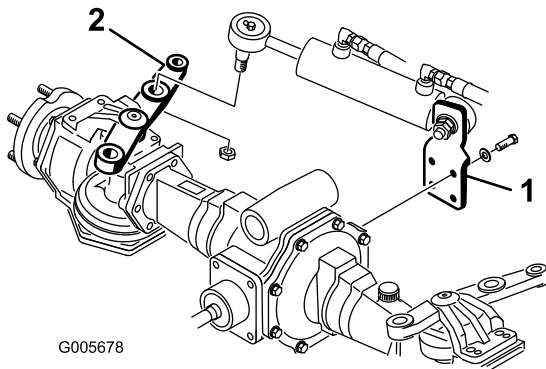


Figure 3

1. Cylinder support bracket
2. Steering arm

3. Remove castle nut and cotter pin from ball joint end of steering cylinder. Insert ball joint end into center hole of axle steering arm. Insert the ball joint from the top of the steering arm.
4. Secure ball joint end to steering arm with castle nut (Figure 3) and torque it to 70-90 ft-lb. (94-122 N-m). Install cotter pin.

2

Installing the Tie Rod (Models 30627 & 30631 only)

Parts needed for this procedure:

1	Tie rod
---	---------

Procedure

1. Remove cotter pins and castle nuts from ball joint ends of tie rod. Insert ball joint ends into rear hole of each axle steering arm. Insert ball joints from bottom of each steering arm (Figure 4).

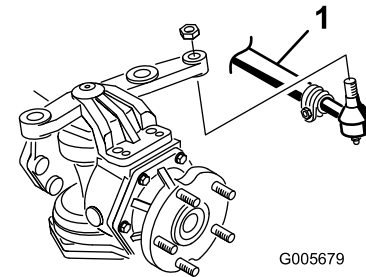


Figure 4

1. Tie rod

2. Secure ball joint ends to steering arms with a castle nut and torque it to 40-60 ft-lb. (54-81 N-m). Install a cotter pin.

3

Installing the Rear Bumper (Models 30627 & 30631 only)

Parts needed for this procedure:

1	Bumper
1	Capscrew, 1/4 x 1/2 inch
1	Flange nut 1/4 inch

Procedure

1. Remove 2 capscrews (1/2 x 3/4 inch), lock washers, and flat washers securing rear weight to axle support (Figure 5).

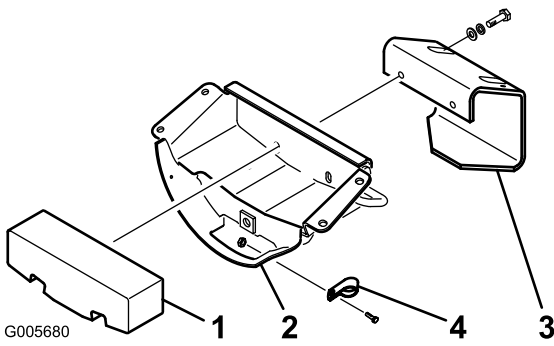


Figure 5

- | | |
|-----------------|------------|
| 1. Rear weight | 3. Bumper |
| 2. Axle support | 4. R-clamp |

- Using capscrews, lock washers and flat washers previously removed, mount bumper and rear weight to axle support.
- Using R-clamp previously removed, secure steering hoses to axle support with a capscrew (1/4 x 1/2 inch) and flange nut supplied, in loose parts.

4

Installing the Front and Rear Wheels

Parts needed for this procedure:

2	Rear wheel
2	Front wheel

Procedure

- Remove and discard fasteners securing wheels to packaging.
- Remove wheel nuts from studs on axles.
Note: Front wheel nuts are English and rear wheel nuts are metric.
- Mount wheels and torque mounting nuts to 45-55 ft-lb. (61-75 N-m).

5

Removing the Battery from the Chassis

No Parts Required

Procedure

- Release the two latches holding instrument cover in place. Carefully remove instrument cover to expose the battery.
- Remove two wing nuts and hold down strap that secures battery (Figure 6). Lift battery out of chassis. Keep wing nuts and hold down strap in safe place for later use.

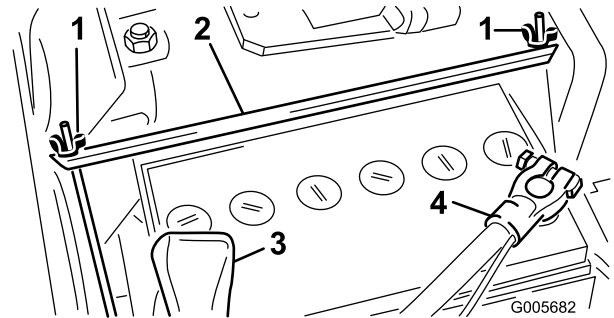


Figure 6

- | | |
|--------------------|----------------------|
| 1. Wing nuts | 3. Positive terminal |
| 2. Hold down strap | 4. Negative terminal |

6

Installing the Seat

Parts needed for this procedure:

1	Manual tube (shipped in tool box)
2	R-clamp

Seat Kit, Model No. 30623, Standard Seat

The machine is shipped without the seat assembly. Either optional Seat Kit, Model No. 30623 or 30625 must be installed.

- Loosely secure (2) R-clamps to right side of seat bottom with 2 capscrews and flat washers supplied

in kit (Fig. 6). Install manual tube into R-clamps and tighten capscrews (Figure 7).

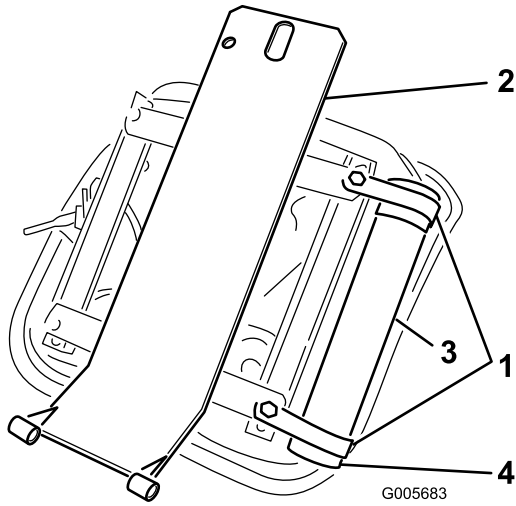


Figure 7

- | | |
|-----------------|----------------|
| 1. R-clamps | 3. Manual tube |
| 2. Seat support | 4. Cap |

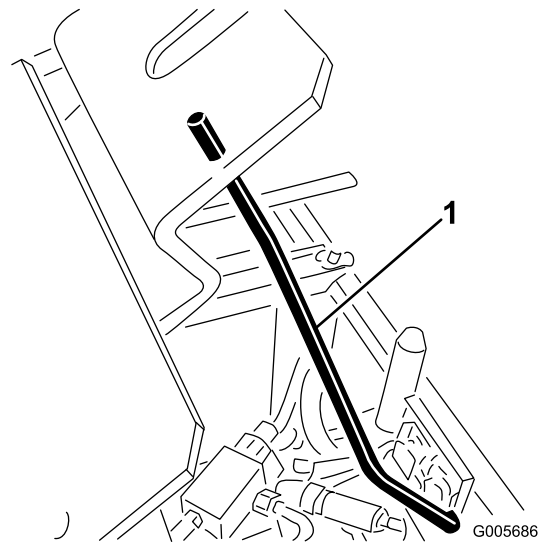


Figure 10

1. Seat support rod

2. Mount seat pivot bracket to frame with 2 flange screws supplied in kit (Figure 8).

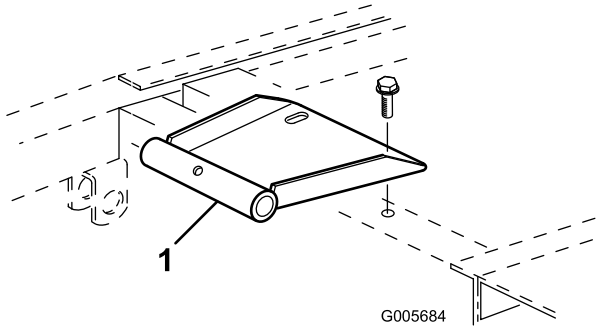


Figure 8

1. Seat pivot bracket

3. Mount seat and seat support to seat pivot bracket with pivot shaft and roll pin (Figure 9).

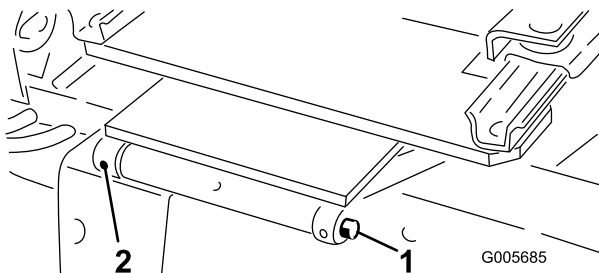


Figure 9

- | | |
|----------------|-------------|
| 1. Pivot shaft | 2. Roll pin |
|----------------|-------------|

4. Hold seat up with seat support rod (Figure 10).

5. Plug wire harness connector into seat switch connector on bottom of seat.

6. Disengage seat support rod and pivot downward. Pivot seat down and push lynch pin through seat latch stud. Flip wire end of pin over latch stud (Figure 11).

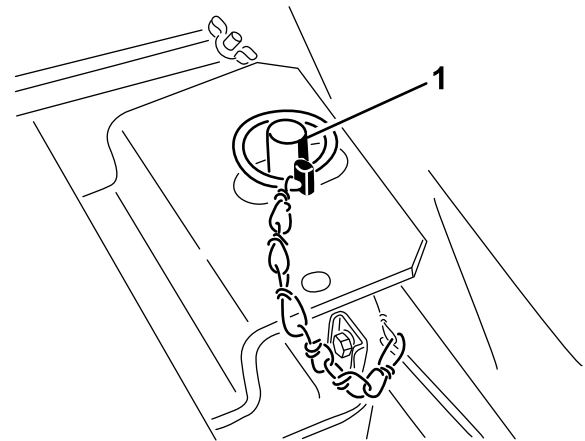


Figure 11

1. Lynch pin

7. Slide seat completely forward and backward to ensure proper operation and that seat switch wires and connectors are not pinched or do no contact any moving parts.

Seat Kit, Model No. 30625, Deluxe Seat with Model No. 30628 Seat Adapter Kit

The machine is shipped without the seat assembly. Either optional Seat Kit, Model No. 30623 or 30625 must be installed.

1. Mount seat suspension assembly to 4 capscrews on seat bottom and secure with 4 lock washers, flat washers, and nuts (Figure 12).

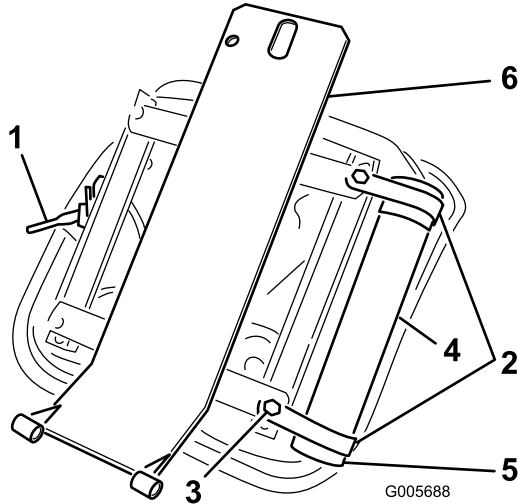


Figure 12

- | | |
|--------------------------------------|-------------------------|
| 1. Seat suspension assembly | 4. Manual tube |
| 2. R-clamps | 5. Cap |
| 3. Lock washer, flat washer, and nut | 6. Seat support and nut |

2. Loosely secure 2 R-clamps to right side of seat bottom with 2 capscrews and flat washers supplied in kit (Figure 12). Install manual tube into R-clamps and tighten capscrews (Figure 12).
3. Mount seat support over four threaded studs at the bottom of seat suspension assembly and secure in place with flange nuts (Figure 12).
4. Mount seat pivot bracket to frame with (2) flange screws supplied in kit (Figure 8)
5. Mount seat and seat support to seat pivot bracket with pivot shaft and roll pin (Figure 9).
6. Hold seat up with seat support rod (Figure 10).
7. Route seat switch harness through holes in seat support and seat suspension (Figure 13). Plug wire harness connector into seat switch connector on bottom of seat.

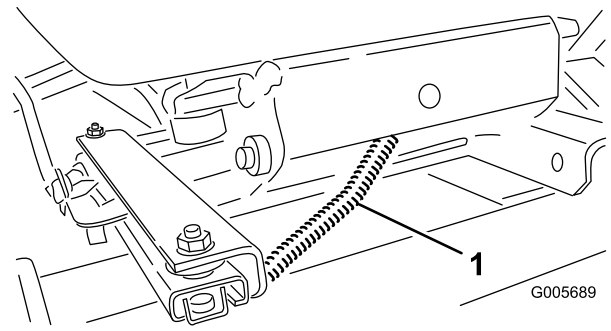


Figure 13

1. Seat switch wire harness

8. Disengage seat support rod and pivot downward. Pivot seat down and push lynch pin through seat latch stud. Flip wire end of pin over latch stud (Figure 11).
9. Slide seat completely forward and backward to ensure proper operation and that seat switch wires and connectors are not pinched or do no contact any moving parts.

7

Installing the Seat Belt

Parts needed for this procedure:

1	Seat belt
2	Bolt, 7/16 x 1 inch
2	Lock washer, 7/16 inch

Procedure

Install seat belt to holes in back of seat with 2 bolts (7/16 x 1 inch) and lock washers (Figure 14). Tighten securely.

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

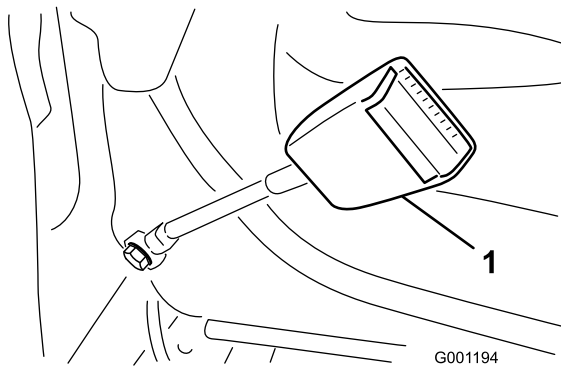


Figure 14

1. Seat belt

9

Pushing the Traction Unit Off of the Pallet

No Parts Required

Procedure

1. Reach in and rotate bypass valve on transmission (Figure 16) counterclockwise 1/2 to 1 turn. Opening the valve opens an internal passage in the pump, thereby bypassing transmission oil. Because fluid is bypassed, the machine can be pushed without damaging the transmission.

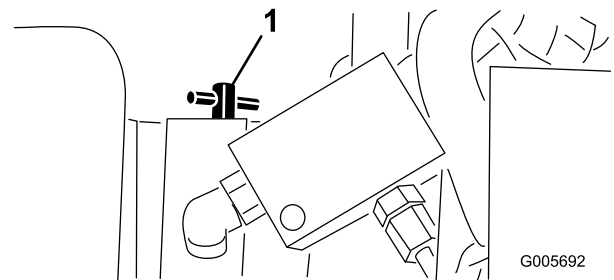


Figure 16

1. Bypass valve

2. Lift machine over shipping braces and push machine off pallet.
3. Close bypass valve by rotating it clockwise until it is securely seated. Do not exceed 5 to 8 ft-lb. (7 to 11 N-m). Do not start engine when valve is open.

10

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.

8

Installing the Roll Bar

Parts needed for this procedure:

1	Roll Bar (ROPS)
4	Bolt, 3/4 x 5-1/2 inch
4	Lock washer, 3/4 inch
4	Nut, 3/4 inch

Procedure

1. Lower roll bar onto frame, aligning mounting holes as shown in Figure 15.
2. Secure roll bar to frame with 4 bolts (3/4 x 5-1/2 inch), lock washers, and nuts (Figure 15). Tighten securely.

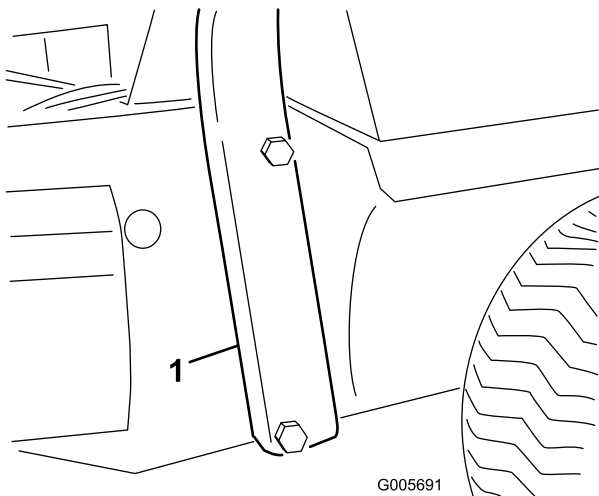


Figure 15

1. Roll bar

2. Clean the top of the battery and remove the vent caps (Figure 17).

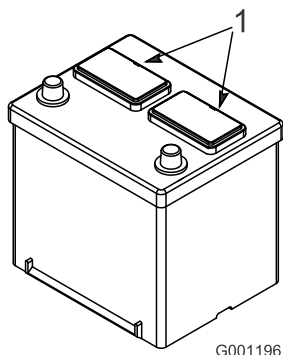


Figure 17

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

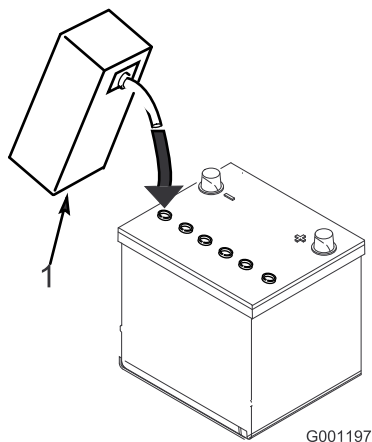


Figure 18

4. Allow approximately 20 to 30 minutes for the electrolyte to soak into the plates. Refill as necessary to bring the electrolyte to within about 1/4 inch (6 mm) of the bottom of the fill well (Figure 18).



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 60 degrees F (16 degrees C) with all cells gasing freely.
6. When the battery is charged, disconnect the charger from the electrical outlet and battery posts.

Note: After the battery has been activated, add only distilled water to replace normal loss, although maintenance-free batteries should not require water under normal operating conditions.

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.



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.

11

Installing the Battery in the Chassis

No Parts Required

Procedure



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.

1. Install battery and secure with hold down strap and wing nuts (Figure 6). Remove tape over ends of each cable.
2. Slide the red, positive battery cable (Figure 6) onto positive battery post and tighten nut securely.



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.

3. Slide the black, negative battery cable (Figure 6) onto negative battery post and tighten nut securely.
4. Coat both battery connections with either Grafo 112X (skin-over) grease, Toro Part No. 505-47, petroleum jelly or light grease to prevent corrosion

and slide rubber boot over positive terminal (Figure 6).

5. Install the instrument cover and lock the two latches.

12

Installing the Ball Joint and Connecting the Lift Cylinder

Parts needed for this procedure:

- | | |
|---|---|
| 1 | Right-hand ball joint (shipped in tool box) |
|---|---|

Procedure

Note: Ball joints are not required for all implements; refer to implement operator's manual for requirements.

1. Thread jam nut fully onto right-hand ball joint.
2. Screw ball joint into right hand push arm until center of ball joint is 2-3/8 inch (60 mm) away from front of push arm (Figure 19). Do not tighten jam nut.

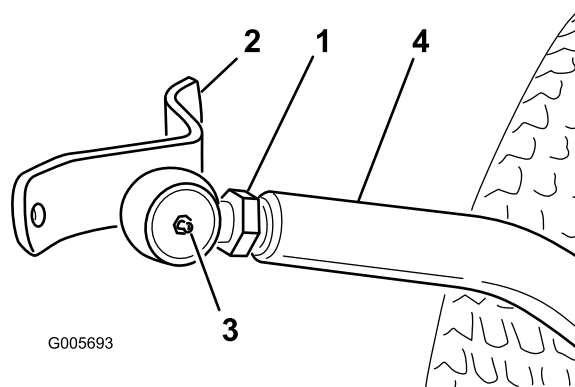


Figure 19

- | | |
|---------------------|------------------------|
| 1. Jam nut | 3. 2-3/8 inch (60 mm) |
| 2. Ball joint mount | 4. Right-hand push arm |



Sudden release of the spring-loaded push arms could cause injury.

Acquire the help of another person to help push the arms down during installation of the ball joints or other implements.

3. Have a helper push down on the left push arm. Then insert a 2 x 4 inch (51 x 102 mm) block of wood between the frame and top of the push arm (Figure 20). Screw ball joint into left hand push arm

until center of ball joint is 2-3/8 inch (60 mm) away from front of push arm (Figure 20). Do not tighten jam nut.

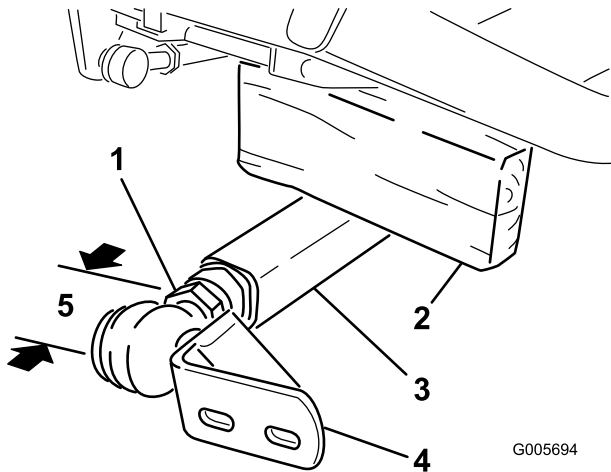


Figure 20

- | | |
|-----------------------------------|-----------------------|
| 1. Jam nut | 4. Ball joint mount |
| 2. 2 x 4 inch (51 x 102 mm) block | 5. 2-3/8 inch (60 mm) |
| 3. Left-hand push arm | |

5. Remove spring pin from cylinder pin and slide cylinder pin out of cylinder.
6. Raise front of lift arm until hole in movable end of cylinder lines up with holes in lift arm brackets. Use caution as lift arm is spring-loaded. Hold parts together with cylinder pin, spring pin, and cotter pin. Cotter pin must be to the outside.
7. Install implement; refer to implement *Operator's Manual* for proper installation procedures.

4. Carefully remove 2 x 4 inch (51 x 102 mm) block of wood from between frame and push arm.

13

Installing the Rear Weight

No Parts Required

Procedure

To comply with CEN standard EN 836:1997, ISO standard 5395:1990 and ANSI/OPEI B71.4–2004 Standard, rear weight must be added to rear of two wheel drive traction units. Use chart below to determine weight requirements. Order parts from your local Authorized Toro Distributor. No additional weight is required on four wheel drive models.

Note: A rear weight kit, part no. 24–5780 is supplied with Model No. 30630.

Two Wheel Drive

Cutting Unit Description	Rear Weight Required	Weight Part Number	Weight Description	Qty.
72" Side Discharge (Model No. 30722)	70 lb.	24–5780	Rear Weight Kit (two 35 lb. weights and mounting hardware)	1
72" Rear Discharge (Model No. 30710)	70 lb.	24–5780	Rear Weight Kit (two 35 lb. weights and mounting hardware)	1
Guardian 72" Recycler (Model No. 30716)	70 lb.	24–5780	Rear Weight Kit (two 35 lb. weights and mounting hardware)	1

14

Finishing the Setup

Parts needed for this procedure:

1	Hydraulic oil filter
1	<i>Parts catalog</i>
2	<i>Operator's Manual</i> (traction unit)
1	Operator Training Material
1	Certificate of Quality

Procedure

Checking the Tire Pressure

The tires are over-inflated for shipping. Therefore, release some of the air to reduce the pressure. Correct air pressure in the front and rear tires is 21 psi (145 kPa).

Checking the Torque of the Front Wheel Nuts



Failure to maintain proper torque of the front wheel nuts could result in failure, loss of wheel, or personal injury.

Torque the front wheel nuts to 45–55 ft-lb. (61–75 N-m) after 1–4 hours of operation and again after 10 hours of operation. Torque every 250 hours thereafter.

Greasing the Traction Unit

Before the machine is operated, it must be greased to assure proper operating characteristics; refer to Lubrication Maintenance. Failure to grease the machine will result in premature failure of critical parts.

Note: After setup has been completed, remove protective edging (used for shipping) from fenders.

Review the following loose parts

- Hydraulic oil filter
Change after 10 hours
- *Parts catalog*:
Save for reference.
- *Operator's Manual* (traction unit) Read before operating the machine.

- Operator Training Material. Review before operating the machine.
- Certificate of Quality: Save for reference.

Product Overview

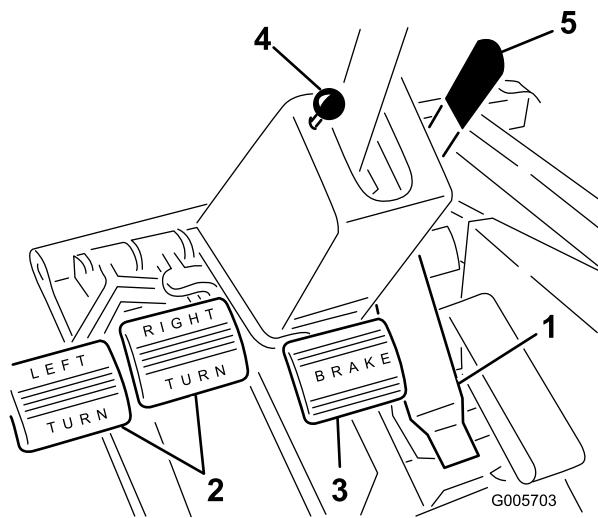


Figure 21

- | | |
|-------------------|--------------------------|
| 1. Traction pedal | 4. Parking brake knob |
| 2. Turn pedals | 5. Tilt steering control |
| 3. Brake pedal | |

Controls

Traction Pedal

The traction pedal (Figure 21) has two functions; one is to make the machine move forward, the other is to make it move backward. Using the heel and toe of the right foot, depress top of pedal to move forward and bottom of pedal to move backward. Ground speed is proportionate to how far pedal is depressed. For maximum ground speed with no load, traction pedal must be fully depressed while throttle is in FAST position. Maximum speed forward is approximately 9.5 mph (15 km/h). To get maximum power under heavy load or when ascending a hill, have throttle in FAST position while depressing traction pedal slightly to keep engine rpm high. When engine rpm begins to decrease, release traction pedal slightly to allow engine rpm to increase.



When foot is removed from the traction pedal, machine should stop; it must not creep in either direction. If machine does creep, do not operate until neutral assembly has been repaired and adjusted; refer to Adjusting Traction Drive for Neutral.

Turn Pedals

The left and right turn pedals (Figure 21) are connected to the left and right front wheel brakes since both brakes work independently of each other. The brakes can be used to turn sharply or to increase traction if one wheel tends to slip while operating on a hillside. However, wet grass or soft turf could be damaged when brakes are used to turn.

Tilt Steering Control

The tilt steering control is a lever on right side of steering column (Figure 21). Pull lever rearward to adjust steering wheel to desired fore or aft operating position and push lever forward to lock adjustment.



Do not leave lever in unlocked position.

Brake Pedal

Whenever the engine is shut off, the parking brake (Figure 21) must be engaged to prevent accidental movement of the machine.

The hydrostatic transmission will not, at any time, act as a parking brake for the machine. To engage parking brake, push down fully on brake pedal and pull parking brake knob out; then release the pedal. To release parking brake, depress brake pedal until parking brake knob retracts. To stop quickly, remove right foot from traction pedal and depress the brake pedal. To permit straight stops, brake cables must be evenly adjusted.

Lift Lever

The hydraulic lift lever (Figure 22) has three positions: FLOAT, TRANSPORT, and RAISE. To lower implement to the ground, move lift lever forward into detent, which is the FLOAT position. The FLOAT position is used for operation and also when machine is not in operation. To raise implement, pull lift lever backward to the RAISE position. After implement is raised, allow lift lever to move to the TRANSPORT position. Normally, implement should be raised when driving from one work area to another, except when descending steep slopes.



The exposed, rotating blades of the cutting unit or other implements are hazardous.

Never raise a cutting unit or implement while the blades or other components are rotating.

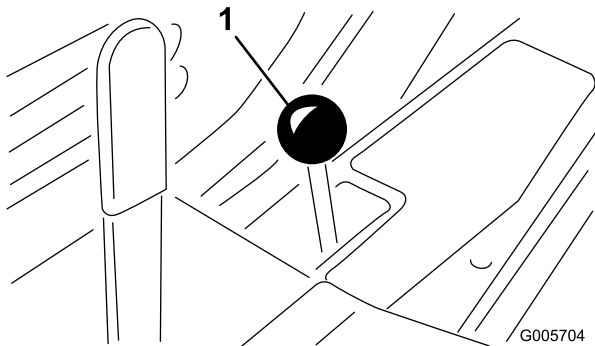


Figure 22

1. Lift lever

PTO Lever

The PTO lever (Figure 23) has two positions: ON (engage) and OFF (disengage). Slowly push PTO lever fully forward to ON position to start the implement or cutting unit blades. Slowly, pull lever backward to OFF position to stop implement operation. The only time PTO lever should be in the ON position is when implement or cutting unit is down in operating position.

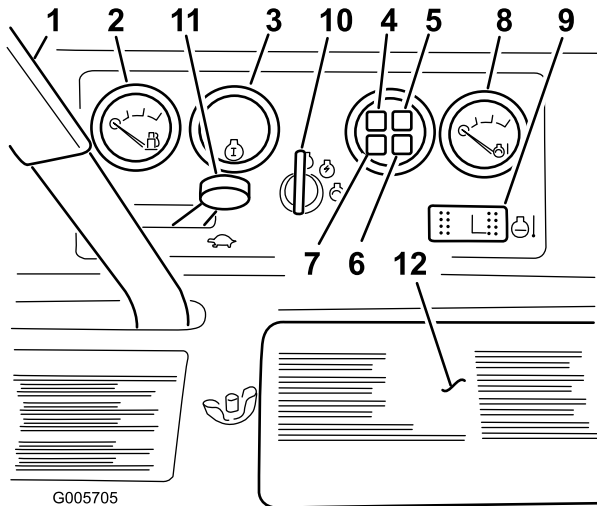


Figure 23

- | | |
|---------------------------|--------------------------------|
| 1. PTO lever | 7. Charge indicator |
| 2. Fuel gauge | 8. Temperature gauge |
| 3. Hour meter | 9. Temperature override switch |
| 4. Oil pressure indicator | 10. Key switch |
| 5. Engine temperature | 11. Throttle control |
| 6. Glow plug indicator | 12. Battery cover |

Fuel Gauge

The fuel gauge (Figure 23) indicates quantity of fuel remaining in fuel tank.

Hour Meter

The hour meter (Figure 23) registers accumulated hours of engine operation.

Oil Pressure Warning Light

The oil pressure warning light (Figure 23) glows when oil pressure in engine drops below a safe level. If low oil pressure ever occurs, stop engine and determine the cause. Repair the damage before starting the engine again.

Charge Indicator

Illuminates when system charging circuit malfunctions (Figure 23).

Engine Coolant Temperature Warning Light

The light illuminates and engine shuts down when coolant reaches a excessively high temperature (Figure 23).

Temperature Gauge

The temperature gauge (Figure 23) registers the temperature of the coolant in the cooling system. If temperature of coolant gets too high the engine will shut off automatically.

Temperature Override Switch

Press and hold override switch to start engine after high temperature shut down. Use only for emergency operation.

Glow Plug Indicator

When lit, indicates glow plugs are on (Figure 23).

Key Switch

Three positions: OFF, ON / Preheat and START (Figure 23).

Throttle Control

The throttle (Figure 23) is used to operate engine at various speeds. Moving throttle forward increases engine speed—FAST; backward decreases engine speed—SLOW. The throttle regulates the speed of the

cutter blades or other implement components and, in conjunction with traction pedal, controls ground speed of the traction unit.

Seat Adjusting Lever

To adjust standard seat, push lever (Figure 24) backward and slide seat to the desired position. Release lever to lock seat in place. The suspension seat may be adjusted forward or rearward by pulling out the lever at the left side of the seat, sliding the seat to the desired position, and releasing the lever. The weight adjustment knob may be adjusted for any operator's comfort.

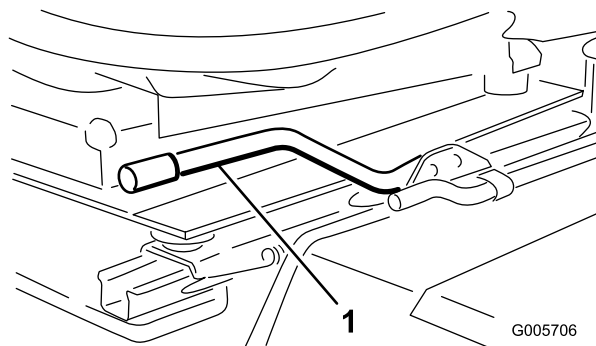


Figure 24

1. Seat adjusting lever

Specifications

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

Dimensions and Weights (approx.)

Width of 4 wheel drive models (measured from outside of rear tires)	47.6 inches (121 cm)
Width of 2 wheel drive models (measured from outside of front tires)	46 inches (117 cm)
Length of 4 wheel drive models	94 inches (239 cm)
Length of 2 wheel drive models	91 inches (231 cm)
Height with ROPS of all models	78.5 inches (199 cm)
Dry Weight of 4 Wheel Drive models (without cutting deck)	1665 lb. (755 kg)
Dry Weight of 2 Wheel Drive models (without cutting deck)	1385 lb. (628 kg)
Wheel Base of 4 Wheel Drive models	51 inches (130 cm)
Wheel Base of 2 Wheel Drive models	49 inches (124 cm)

Attachments/Accessories

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

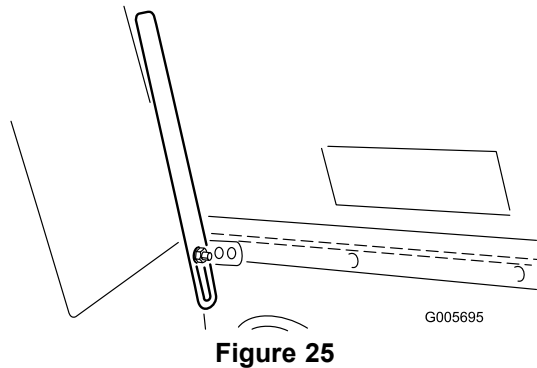
Operation

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

Before Operating

Hood Prop (Models 30626 & 30627 only)

1. Position the machine on a level surface.
2. Disengage hood latch and open the hood.
3. Slide bottom of hood prop (Figure 25) out of retaining bracket. Lower hood prop, pivot upward, then downward to prop up hood.



1. Hood prop

Checking the Crankcase Oil

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

Crankcase capacity is approximately 3.25 qt. (3.1 l) 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)

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 machine on a level surface, stop engine and remove key from ignition switch. Open hood and install hood prop.

2. Remove dipstick (Figure 26), wipe clean and reinstall dipstick. Remove dipstick and check oil level. Oil level should be up to FULL mark on dipstick.

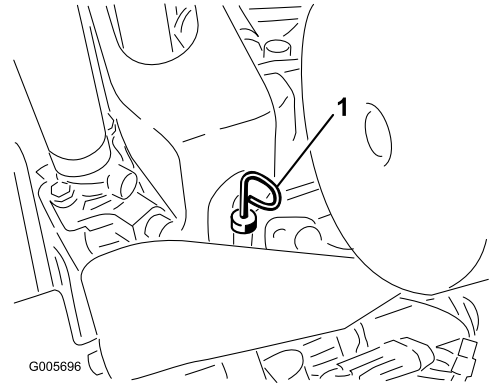


Figure 26

1. Dipstick

3. If oil is below FULL mark, remove fill cap and add oil until level reaches FULL mark on dipstick. DO NOT OVERFILL.

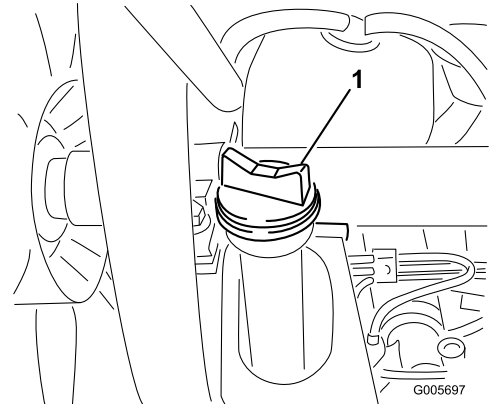


Figure 27

1. Oil fill

4. Install oil fill cap and close hood.

Important: Be sure to keep the engine oil level between the upper and lower limits on the oil gauge. Engine failure may occur as a result of over filling or under filling the engine oil.

Filling the Fuel Tank

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

Fuel tank capacity: 6.5 U.S. gallons (25 l)

Use summer grade diesel fuel (No. 2-D) at temperatures above 20 degrees F (-7 degrees 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 degrees F (-7 degrees C) will contribute toward longer fuel pump life and increased power compared to winter grade fuel.



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 1/4 to 1/2 inch (6 to 13 mm) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.
- Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in a clean, sealed, safety-approved container.

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.

Tip seat forward and prop it with the support rod so it cannot fall accidentally. Using a clean rag, clean area around fuel tank cap (Figure 28).

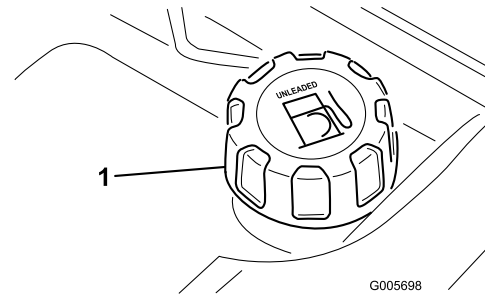


Figure 28

1. Fuel tank cap

Check Cooling System

Clean debris off screen and radiator/oil cooler daily, more often if conditions are extremely dusty and dirty.

The cooling system is filled with a 50 / 50 solution of water and permanent ethylene glycol anti-freeze. Check level of coolant in expansion tank at beginning of each day before starting the engine. Capacity of cooling system is 6 quarts (5.6 l).



If engine has been running, pressurized hot coolant can escape when radiator cap is removed and cause burns.

1. Check level of coolant in expansion tank. Coolant level should be between the marks on side of tank.

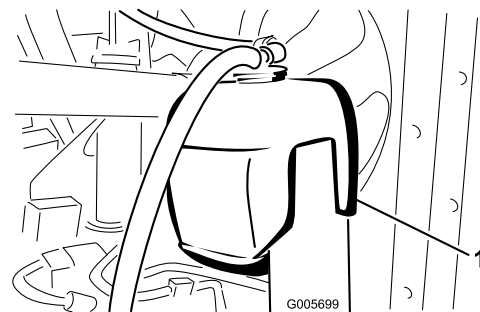


Figure 29

1. Expansion tank
2. If coolant level is low, remove expansion tank cap and replenish the system. **DO NOT OVERFILL.**
3. Install expansion tank cap.

Checking the Hydraulic System Fluid

The front axle housing acts as the reservoir for the system. The transmission and axle housing are shipped from the factory with approximately 5 quarts (4.7 l) of high quality hydraulic fluid. However, check fluid level before engine is first started and daily thereafter.

Note: Fluid to operate the power steering is supplied by the hydraulic system transmission charge pump. Cold weather start-up may result in “stiff” operation of the steering until the hydraulic system has warmed up.

The following list is not assumed to be all-inclusive. Hydraulic fluids produced by other manufacturers may be used if they can cross reference to find an equivalent to the products listed. Toro will not assume responsibility for damage caused by improper substitutions, so use only products from reputable manufacturers who will stand behind their recommendation.

Checking the Hydraulic System

The front axle housing acts as the reservoir for the system. The transmission and axle housing are shipped from the factory with approximately 5 quarts (4.7 l) 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:

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

Industry Specifications:

Industry Specifications: (cont'd.)

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 2/3 oz. (20 ml) bottles. One bottle is sufficient for 4–6 gal (15–22 l) of hydraulic oil. Order part no. 44-2500 from your authorized Toro distributor.

1. Position machine on a level surface, raise the implement, and stop the engine.
2. Unscrew dipstick cap (Figure 30) from the filler neck and wipe it with a clean rag. Screw dipstick cap finger tight onto filler neck. Unscrew the dipstick and check level of fluid. If level is not within 1/2 inch (13 mm) from the groove in the dipstick (Figure 30), add enough fluid to raise level to groove mark. Do not overfill by more than 1/2 inch (13 mm) above groove.

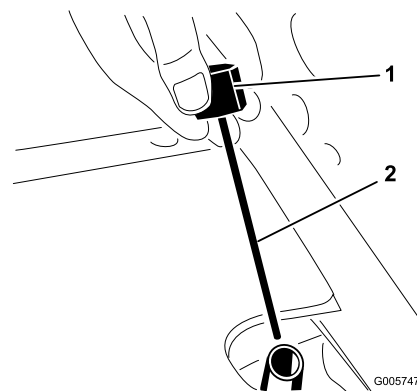


Figure 30

1. Dipstick cap
2. Groove

Important: When adding oil to the hydraulic system, use a funnel with a fine wire screen—200 mesh—and ensure funnel and oil are immaculately clean. This procedure prevents accidental contamination of the hydraulic system.

3. Screw dipstick filler cap finger-tight onto filler neck. It is not necessary to tighten cap with a wrench.
4. Lower the implement.

Checking the Rear Axle (Models 30627 & 30631 only)

The rear axle has three separate reservoirs which use SAE 80W-90 wt. 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 check plugs from axle and make sure lubricant is up to bottom of each hole. If level is low, remove fill plugs and add enough lubricant to bring the level up to the bottom of the check plug holes (Figure 31).

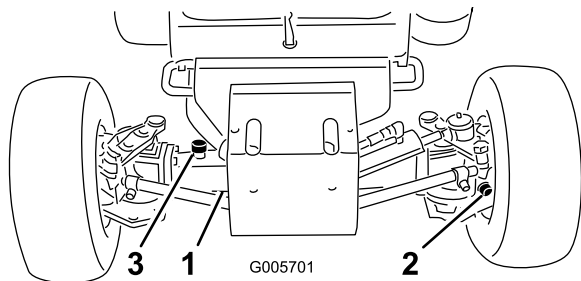


Figure 31

1. Check plug
2. Fill/check plug (one on each end of axle)
3. Fill plug

Check Bidirectional Clutch Lubricant (Models 30627 & 30631 only)

1. Position the machine on a level surface.
2. Rotate clutch (Figure 32) so check plug (shown in 12 o'clock position) is positioned at 4 o'clock.

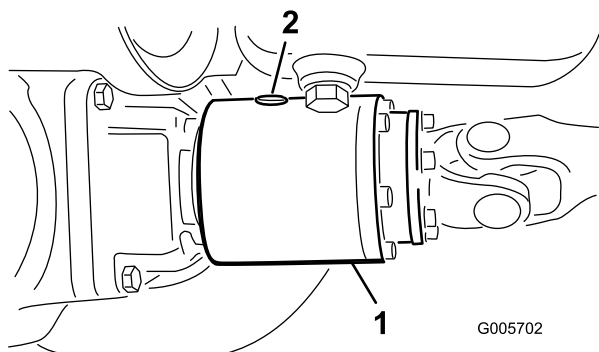


Figure 32

1. Bidirectional clutch
2. Check plug

3. Remove check plug. Fluid level should be up to hole in clutch. If fluid level is low, add Mobil Fluid 424. Clutch should be approximately 1/3 full.
4. Install check plug.

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

Starting/Stopping Engine

Important: The fuel system must be bled if any of the following situations have occurred.

- Initial start up of a new machine.
- Engine has ceased running due to lack of fuel.
- Maintenance has been performed upon fuel system components; i.e., filter replaced, separator serviced, etc.

Refer to Bleeding The Fuel System.

1. Ensure parking brake is set, PTO switch is in OFF position and lift lever is in TRANSPORT or FLOAT position. Remove foot from traction pedal and insure it is in neutral.
2. Move throttle control to 1/2 throttle position.
3. Turn ignition switch to ON / Preheat position. An automatic timer will control preheat for 10 seconds. After preheat, turn key to START position. CRANK ENGINE FOR NO LONGER THAN 15 SECONDS. Release key when engine starts. If additional preheat is required, turn key to OFF position then to ON / preheat position. Repeat process as required.
4. Run engine at idle speed or partial throttle until engine warms up.

Note: Move throttle to 1/2 throttle position when restarting a warm engine.

5. When engine is started for the first time, or after engine oil change, or overhaul of engine, transmission or axle, operate the machine in forward and reverse for one to two minutes. Also operate the lift lever and PTO lever to assure proper operation of all parts. Turn power steering wheel to the left and right to check steering response. Then shut engine off and check fluid levels, check for oil leaks, loose parts and any other noticeable malfunctions.



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

6. To stop engine, move throttle control backward to SLOW position, move PTO switch to OFF position and rotate ignition key to OFF. Remove key from switch to prevent accidental starting.

Bleeding Fuel System

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



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 1 inch (25 mm) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.
- Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in a clean, safety-approved container and keep the cap in place.

3. Open the air bleed screw on the fuel injection pump (Figure 33).

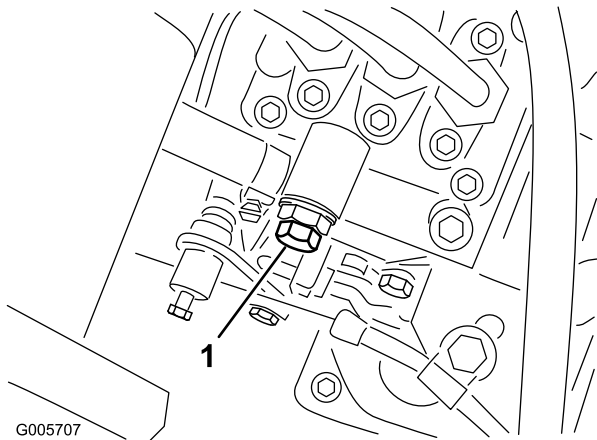


Figure 33

1. Fuel injection pump bleed screw

4. Turn key in ignition switch to the ON position. Electric fuel pump will begin operation, thereby forcing air out around air bleed screw. Leave key in ON position until solid stream of fuel flows out around screw. Tighten screw and turn key to OFF.

Note: Normally, engine should start after above bleeding procedures are followed. However, if

engine does not start, air may be trapped between injection pump and injectors; refer to Bleeding Air From Injectors.

Checking the Interlock Switches



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

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

The machine has interlock switches in the electrical system. These switches are designed to stop the engine when operator gets off the seat while either the PTO lever is engaged or traction pedal is depressed. However, operator may get off the seat while engine is running. Although engine will continue to run if PTO lever is disengaged and traction pedal is released, it is strongly recommended that the engine be stopped before dismounting from the seat.

To check operation of interlock switches:

1. Drive the machine slowly to a large, relatively open area. Lower cutting unit, stop the engine and apply parking brake.
2. Sit on seat. Move PTO lever to ON position. With the traction pedal in neutral position, try to start the engine. The engine should not crank. If the engine cranks, there is a malfunction in the interlock system that should be corrected before beginning operation.
3. Sit on seat. Move PTO lever to OFF and depress the traction pedal. Try to start the engine. The engine should not crank. If the engine cranks, there is a malfunction in the interlock system that should be corrected before beginning operation.



Do not operate the machine without an implement unless the PTO drive shaft is also removed.

4. Sit on seat and start the engine. Disengage the parking brake. Raise off the seat and move the

PTO lever to ON. The engine should stop within 2–3 seconds. If the engine does not stop, there is a malfunction in the interlock system that should be corrected before beginning operation.

- 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 interlock system that should be corrected before beginning operation.

Pushing or Towing the Traction Unit

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

Important: Do no push or tow the traction unit faster than 2 to 3 MPH (3 to 4.8 km/h) because transmission may be damaged. If traction unit must be moved a considerable distance, transport it on a truck or trailer. Whenever traction unit is pushed or towed, bypass valve must be open.

- Reach under traction unit and rotate bypass valve (Figure 34) 1/2 to 1 turn counterclockwise. Opening the valve opens an internal passage in the transmission, thereby bypassing transmission oil. Because fluid is bypassed, traction unit can be moved without damaging the transmission.

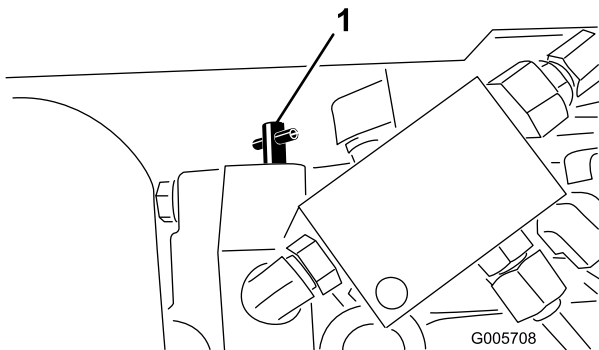


Figure 34

- Bypass valve
- Before starting engine, close bypass valve by rotating it clockwise until it is securely seated. Do not exceed 5 to 8 ft-lb. (7 to 11 N-m). Do not start engine when valve is open.

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

Operating Characteristics

Practice driving the machine because it has a hydrostatic transmission and its characteristics are different than many turf maintenance machines. Some points to consider when operating the traction unit, cutting unit, or other implement are the transmission, engine speed, load on the cutting blades or other implement components, and the importance of the brakes.

To maintain enough power for the traction unit and implement while operating, regulate traction pedal to keep engine rpm high and somewhat constant. A good rule to follow is: decrease ground speed as the load on the implement increases, and increase ground speed as the load decreases.

Therefore, allow traction pedal to move backward as engine rpm decrease, and depress pedal slowly as rpm increase. By comparison, when driving from one work area to another—with no load and cutting unit raised—have throttle in FAST position and depress traction pedal slowly but fully to attain maximum ground speed.

Another characteristic to consider is the operation of the turning pedals that are connected to the brakes. The brakes can be used to assist in turning the machine. However, use them carefully, especially on soft or wet grass because the turf may be torn accidentally. Another benefit of the turning brakes is to maintain traction. For example: in some slope conditions, the uphill wheel slips and loses traction. If this situation occurs, depress uphill turn pedal gradually and intermittently until the uphill wheel stops slipping, thus, increasing traction on the downhill wheel.

Use extra care when operating machine on slopes. Always have seat pivot retaining pin installed. Drive slowly and avoid sharp turns on slopes to prevent roll overs. The cutting deck must be lowered when going downhill for steering control.

The grass deflector must always be installed and in lowest position on the side discharge cutting unit.



Careless operation, combined with terrain angle, ricochets, or improperly positioned safety guards can lead to thrown object injuries.

A person or pet may suddenly appear in or near the mowing area.

Stop mowing and do not resume mowing until the area is cleared.

Before stopping the engine, disengage all controls and move throttle to SLOW. Moving throttle to SLOW reduces high engine rpm, noise, and vibration. Turn key to OFF to stop engine.

Maintenance

Recommended Maintenance Schedule(s)

Maintenance Service Interval	Maintenance Procedure
After the first 2 hours	<ul style="list-style-type: none">• Torque the front wheel nuts
After the first 10 hours	<ul style="list-style-type: none">• Check belt tension• Check PTO belt tension• Change hydraulic fluid filter• Torque the front wheel nuts
After the first 50 hours	<ul style="list-style-type: none">• Change the engine oil and filter• Check PTO belt tension• Check engine RPM
Before each use or daily	<ul style="list-style-type: none">• Check the screen and radiator More frequently in extremely dusty and dirty conditions
Every 50 hours	<ul style="list-style-type: none">• Inspect air cleaner• Check battery condition and electrolyte level
Every 100 hours	<ul style="list-style-type: none">• Change the engine oil and filter• Inspect the hoses• Check belt tension• Check PTO belt tension• Inspect the cooling system hoses
Every 200 hours	<ul style="list-style-type: none">• Check rear wheel toe-in• Change hydraulic fluid filter
Every 250 hours	<ul style="list-style-type: none">• Torque the front wheel nuts
Every 400 hours	<ul style="list-style-type: none">• Service air cleaner filter• Check fuel lines and connections• Replace the fuel filter canister.• Pack the rear wheel bearings• Change the rear axle oil• Change the bidirectional clutch oil• Torque, head, adjust valves and check engine RPM
Every 1,000 hours	<ul style="list-style-type: none">• Drain and clean fuel tank• Flush and replace the coolant system fluid• Change the hydraulic system fluid• Replace moving hoses



If you leave the key in the ignition switch, someone could accidentally 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							
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 Indicator ³							
Check Radiator & Screen for Debris							
Check Unusual Engine Noises ¹							
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 Fittings ²							
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

Lubrication

The traction unit must be lubricated regularly. If machine is operated under normal conditions, lubricate all bearings and bushings after every 50 hours of operation.

The traction unit bearings and bushings that must be lubricated are:

All Models

- PTO shaft and yokes (3) (Figure 35)
- Lift arm pivots (Figure 35)
- Right and left push arm ball joints (Figure 35)
- Push arm pivot bushings (Figure 36)
- PTO pivot housing blocks (Figure 37)
- Brake pivot bushings (Figure 38)
- Engine output shaft bearing (Figure 39)

Four Wheel Drive Models

- Axle tie rod (2) (Figure 40)
- Axle pivot pin (Figure 40)
- Axle steering pivots (2) (Figure 40)
- Cylinder rod ends (4) (Figure 40)
- Drive shaft (3) (Figure 41)
- Clutch housing (Figure 41)

Two Wheel Drive Models

- Rear wheel spindle bushings (Figure 42)
- Steering plate bushings (Figure 42)
- Axle pin bushing (Figure 42)

Note: Apply grease to both brake cables at the drive wheel and brake pedal ends.

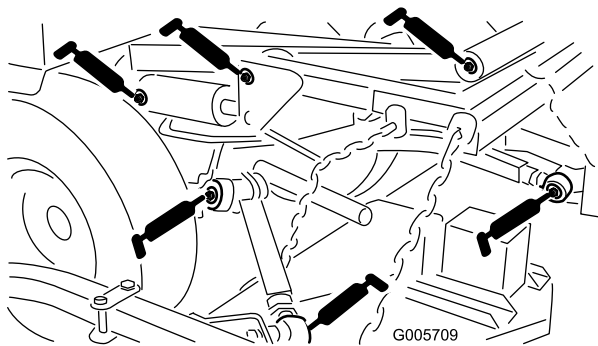


Figure 35

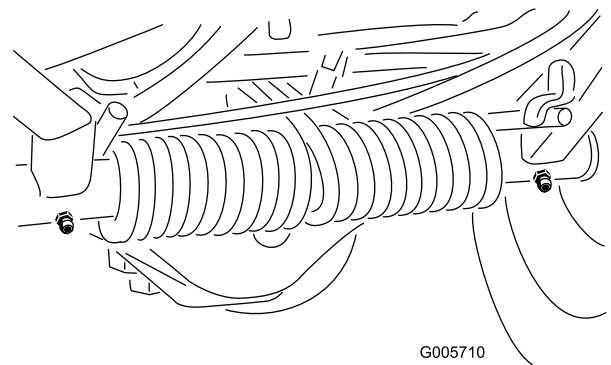


Figure 36

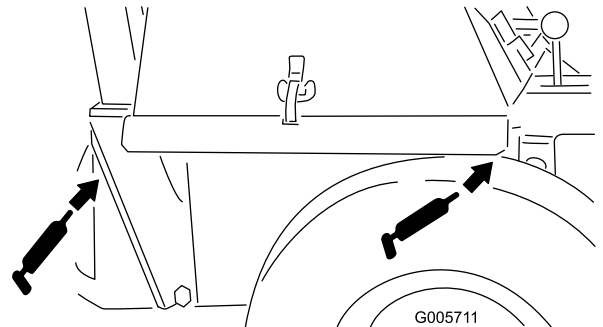


Figure 37

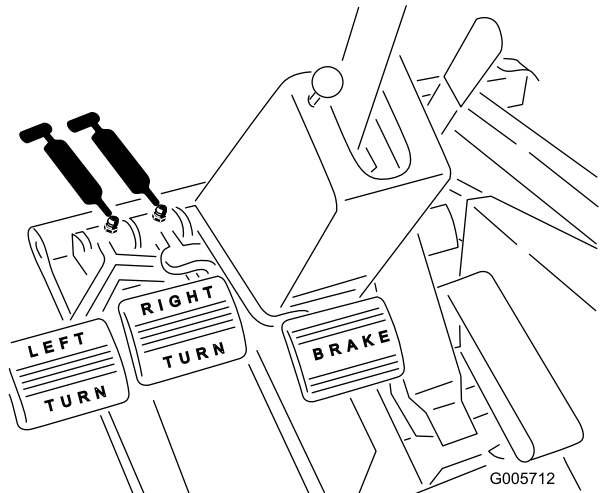


Figure 38

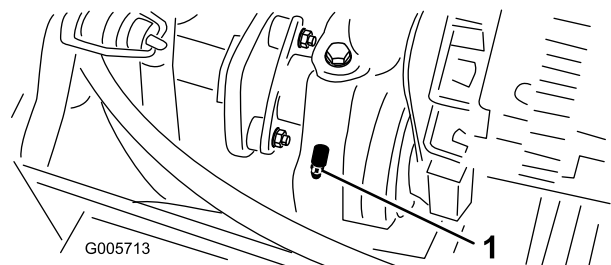


Figure 39

Engine Maintenance

General Air Cleaner Maintenance

Service Interval: Every 50 hours—Inspect air cleaner
Every 400 hours—Service air cleaner filter

- Check air cleaner body for damage which could possibly cause an air leak. Replace a damaged air cleaner body.
- Service the air cleaner filters when air cleaner indicator (Figure 43) shows red or every 400 hours (more frequently in extreme dusty or dirty conditions). Do not over service air filter.

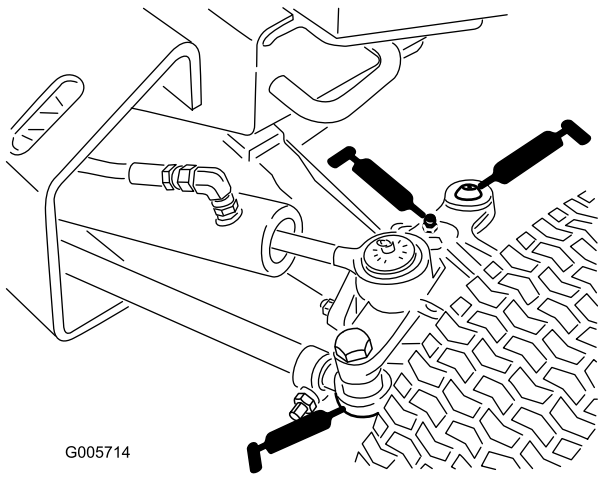


Figure 40

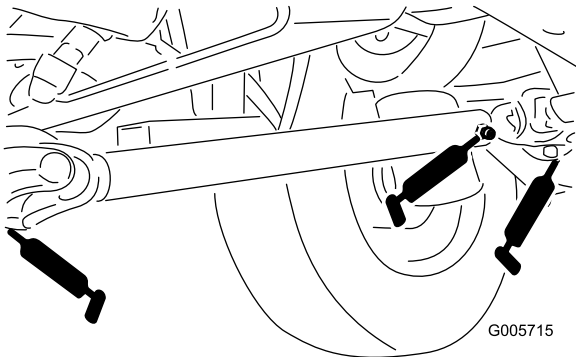


Figure 41

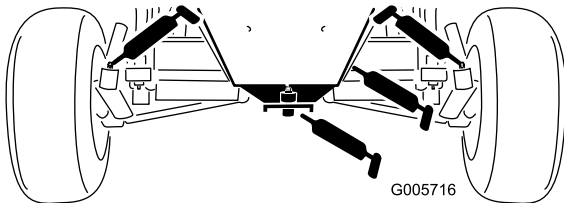


Figure 42

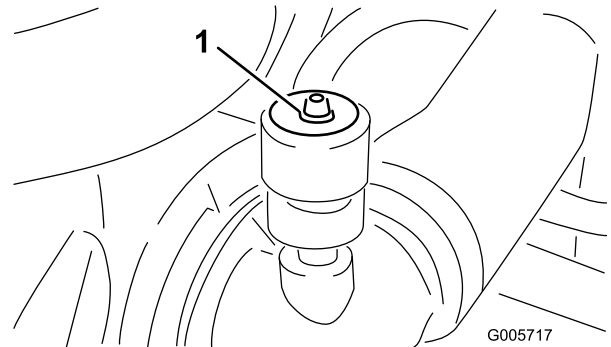


Figure 43

1. Air cleaner indicator

Servicing Air Cleaner

1. Pull latch outward and rotate air cleaner cover counter-clockwise (Figure 44).

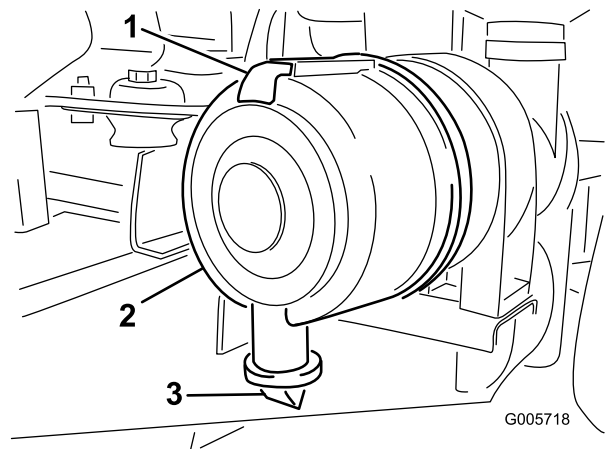


Figure 44

1. Air cleaner latch
2. Air cleaner cover
3. Dirt ejection port

2. Remove the cover from the air cleaner body. Before removing the filter, use low pressure air (40 psi, clean and dry) to help remove large accumulations of debris packed between outside of primary filter and the canister. Avoid using high pressure air which could force dirt through the filter into the intake tract. This cleaning process prevents debris from migrating into the intake when the primary filter is removed.
3. Remove and replace the primary filter (Figure 45). Cleaning of the used element is not recommended due to the possibility of damage to the filter media. Inspect the new filter for shipping damage, checking the sealing end of the filter and the body. Do not use a damaged element. Insert the new filter by applying pressure to the outer rim of the element to seat it in the canister. Do not apply pressure to the flexible center of the filter.
4. Clean the dirt ejection port located in the removable cover (Figure 44). Remove the rubber outlet valve from the cover, clean the cavity and replace the outlet valve.
5. Install the cover orienting the rubber outlet valve in a downward position – between approximately 5:00 to 7:00 when viewed from the end.

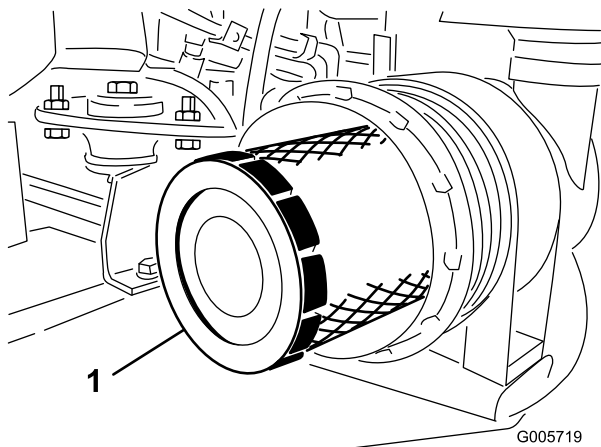


Figure 45

1. Primary filter

6. Reset indicator (Figure 43) if showing red.

Cleaning the Radiator and Screen

The screen and front of the radiator must be kept clean to prevent the engine from overheating. Normally, check the screen and front of radiator daily and, if necessary, clean any debris off these parts. However, it will be necessary to check and to clean the screen each quarter

hour and radiator checked every hour in extremely dusty and dirty conditions.

Note: This situation may be particularly prevalent if the rear discharge cutting unit is being used. The front of the radiator can be cleaned thoroughly by blowing with compressed air from the fan side of the radiator. Make sure to clean out any debris that settles to the bottom of the screen. The screen in front of radiator can be removed—by loosening wing nuts at top of screen—to make cleaning easier.

Changing Engine Oil And Filter

Service Interval: After the first 50 hours

Every 100 hours

Check oil level after each day's operation or each time machine is used. Change oil and filter initially after first 50 hours of operation; change oil and filter after every 100 hours of operation thereafter. If possible, run engine just before changing oil because warm oil flows better and carries more contaminants than cold oil.

1. Position machine on a level surface.
2. Open the hood. Set drain pan under the oil pan and in line with drain plug (Figure 46).

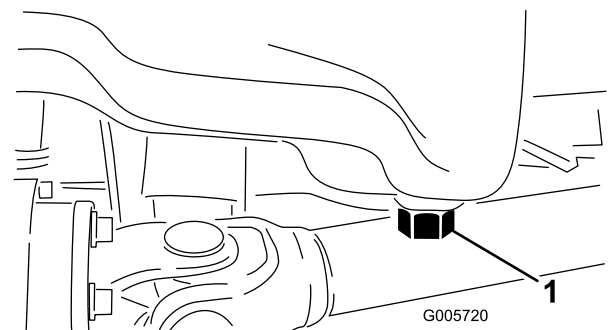


Figure 46

1. Drain plug

3. Clean area around drain plug.
4. Remove oil drain plug and allow oil to flow into drain pan.
5. Remove and replace oil filter (Figure 47).

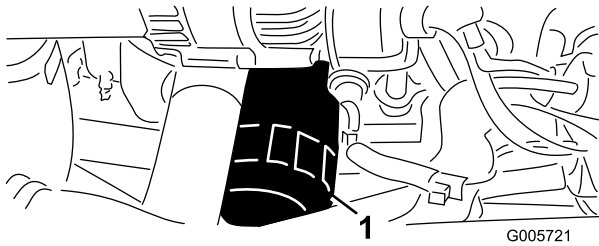


Figure 47

1. Oil filter

6. After oil is drained, reinstall drain plug and wipe up any oil that is spilled.
7. Fill crankcase with oil; refer to Check Crankcase Oil.

Bleeding Air From Injectors

Note: This procedure should be used only if fuel system has been purged of air through normal priming procedures and engine will not start; refer to Bleeding Fuel System.

1. Loosen the pipe connection to the No. 1 injector nozzle and holder assembly at injection pump (Figure 48).

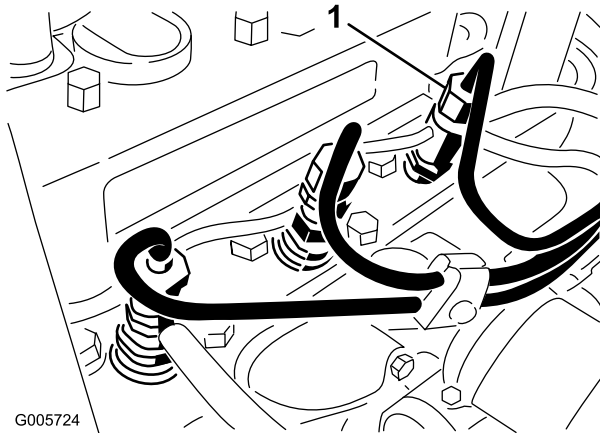


Figure 48

1. No. 1 injector nozzle
-
2. Move throttle to FAST position.
 3. Turn key in key switch to START position and watch fuel flow around connector. Turn key to OFF position when solid flow is observed.
 4. Tighten pipe connector securely
 5. Repeat steps on remaining nozzles.

Fuel System Maintenance

Note: Refer to Fill Fuel Tank With Diesel Fuel for proper fuel recommendations.



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 1 inch (25 mm) below the bottom of the filler neck. This empty space in the tank allows the fuel to expand.
- Never smoke when handling fuel, and stay away from an open flame or where fuel fumes may be ignited by a spark.
- Store fuel in a clean, safety-approved container and keep the cap in place.

Fuel Tank

Service Interval: Every 1,000 hours

Drain and clean fuel tank every 1000 hours operation or every 2 years, whichever comes first. Also, drain and clean tank if fuel system becomes contaminated or if machine is to be stored for an extended period. Use clean diesel fuel to flush out the tank.

Fuel Lines and Connections

Service Interval: Every 400 hours

Check lines and connections every 400 hours or yearly, whichever comes first. Inspect for deterioration, damage or loose connections.

Servicing the Water Separator

Service Interval: Every 400 hours

Drain water or other contaminants from water separator (Figure 49) daily. Replace filter canister after every 400 hours of operation.

1. Place a clean container under the fuel filter.

- Loosen the drain plug on the bottom of the filter canister.

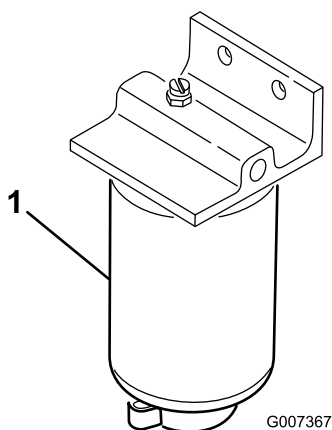


Figure 49

- Water separator filter canister

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

Electrical System Maintenance

Fuses

The fuse block is located below control panel.

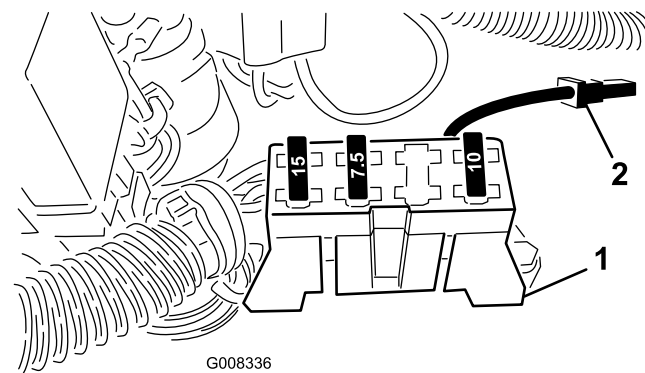


Figure 50

- Fuse block
- Accessory connector

Servicing the Battery

Service Interval: Every 50 hours



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.*

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

Note: Check battery condition and electrolyte level weekly or after every 50 hours of operation. Keep terminals and entire battery case clean because a dirty battery will discharge slowly. To clean the battery, wash the entire case with solution of baking soda and water. Rinse with clear water. Coat the battery posts and cable connectors with Grafo 112X (skin-over) grease (Toro Part No. 505-47) or petroleum jelly to prevent corrosion.

Drive System Maintenance

Adjusting Rear Wheel Toe-in (Models 30626 & 30630 only)

Service Interval: Every 200 hours

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, an adjustment is required.

1. Rotate the steering wheel so rear wheels are straight ahead.
2. Loosen the jam nuts on both tie rods. Adjust both tie rods until center-to-center distance at front and back of rear wheels is the same (Figure 51).
3. When rear wheels are adjusted correctly, tighten jam nuts against tie rods.

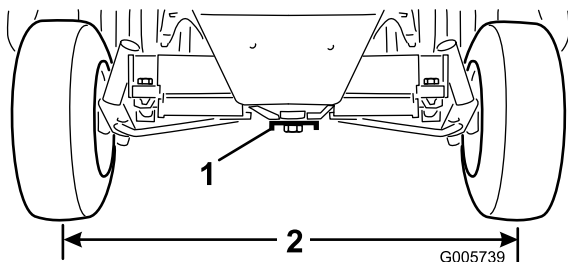


Figure 51

1. Steering plate

Adjusting Steering Stops (Models 30627 & 30631 only)

The rear axle steering stops help prevent over travel of the steering cylinder in case of impact on rear wheels. The stops should be adjusted so there is .090 inch clearance between the bolt head and the knuckle on the axle when the steering wheel is completely turned left or right.

Thread the bolts in or out until the .090 inch clearance is attained (Figure 52).

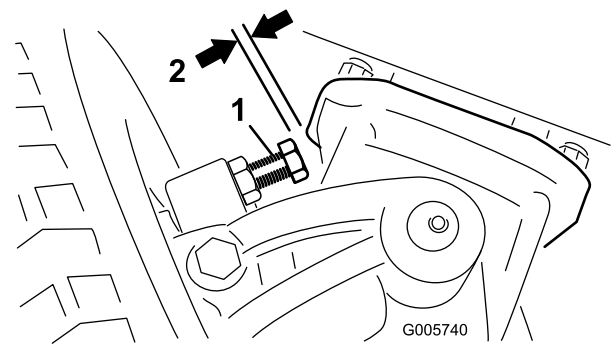


Figure 52

1. Steering stop (Right side
2. .090 inch clearance shown)

Adjusting the Rear Wheel Bearings (Models 30626 & 30630 only)

Service Interval: Every 400 hours

1. Jack up rear of machine until wheel is off shop floor. Use jack stands or block the machine to prevent it from accidentally falling.
2. Remove dust cap from end of wheel spindle. Also remove cotter pin securing retainer (Figure 53).

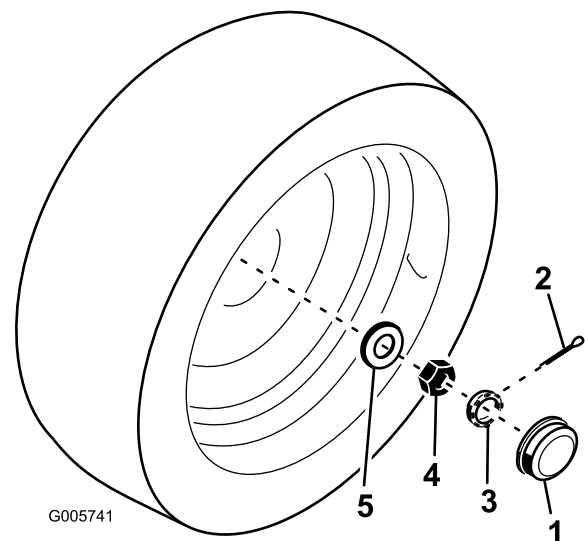


Figure 53

1. Dust cup
2. Cotter pin
3. Nut retainer
4. Jam nut
5. Flatwasher

3. Tighten the jam nut (Figure 53) to approximately 75–100 in-lbs using a hand wrench.
4. Turn the wheel hub to seat the bearings.
5. Loosen the jam nut until it is away from the flatwasher and the wheel hub has end play.

6. Tighten the jam nut to 15–20 in–lbs while rotating the wheel hub.
7. Place the nut retainer over the jam nut. If the cotter pin hole is not aligned with the retainer slot, remove the retainer nut and reorientate until alignment occurs.
8. Insert cotter pin. The wheel hub must not have any free play.
9. Install dust cap on end of wheel spindle.
10. Remove jack stands and lower machine to shop floor.

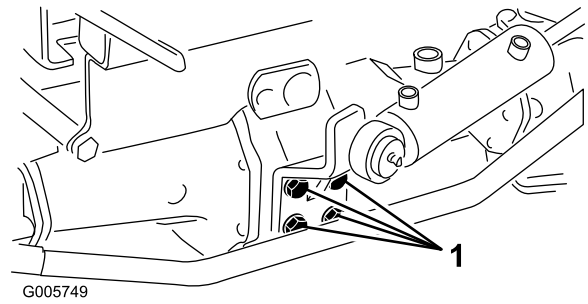


Figure 55

1. Mounting bolt (4)

Changing Rear Axle Lubricant (Models 30627 & 30631 only)

Service Interval: Every 400 hours

After every 400 hours of operation, the oil in the rear axle must be changed.

1. Position machine on a level surface.
2. Clean area around the drain plugs (Figure 54).

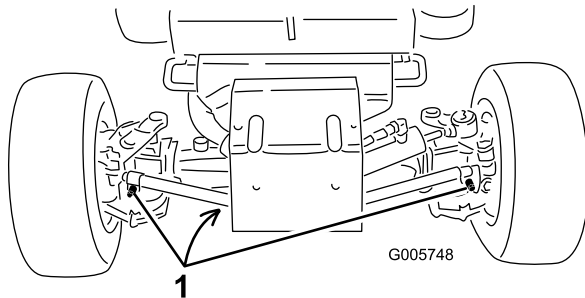


Figure 54

1. Drain plugs

3. Remove plug allowing oil to drain into drain pans.
4. **After oil is drained, apply thread locking compound on drain plug threads and reinstall in axle.**
5. Fill axle with lubricant; refer to Check Rear Axle.

Checking Steering Cylinder Bolt Torque (Models 30627 & 30631 only)

Check the steering cylinder mounting bolt torque every 200 hours of operation.

1. Position the machine on a level surface.
2. Check the torque on the steering cylinder mounting bolts. Torque should be 48–60 ft–lb. (65–81 N–m).

Changing Bidirectional Clutch Lubricant (Models 30627 & 30631 only)

Service Interval: Every 400 hours

After every 400 hours of operation, the oil in the bidirectional clutch must be changed.

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

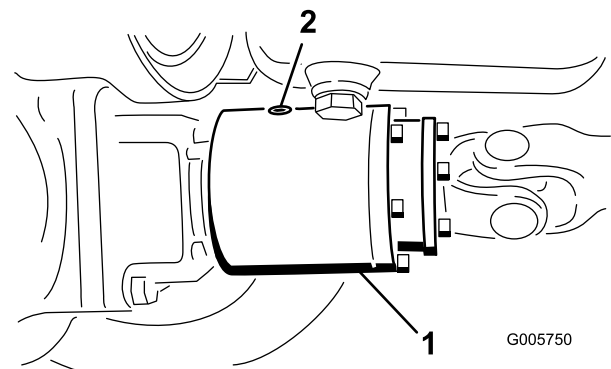


Figure 56

1. Bidirectional clutch
2. Check plug

4. Remove check plug allowing all lubricant to flow into drain pan.
5. Rotate clutch so check plug is positioned at 4 O'clock.
6. Add Mobil Fluid 424 until lubricant level is up to hole in clutch. Clutch should be approximately 1/3 full.
7. Install check plug.

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

Cooling System Maintenance

Cleaning Radiator And Screen

Service Interval: Before each use or daily More frequently in extremely dusty and dirty conditions

Every 100 hours

To prevent the engine from overheating, the screen and radiator must be kept clean. Normally, check the screen and radiator daily and, if necessary, clean any debris off these parts. However, it will be necessary to check and clean the screen and radiator frequently in extremely dusty and dirty conditions.

Note: If engine shuts off due to overheating, first check the radiator and screen for excessive buildup of debris.

To thoroughly clean the radiator:

1. Remove the screen.
2. Working from the fan side of the radiator, either spray the radiator with a water hose or blow with compressed air.
3. After the radiator is thoroughly cleaned, clean out debris that may have collected in the channel at the radiator base.
4. Clean and install the screen.

Note: Inspect the hoses after every 100 hours of operation.

Changing Coolant In Cooling System

Service Interval: Every 1,000 hours

Capacity of cooling system is approximately 6 quarts (5.7 L). The cooling system must be filled with a 50/50 solution of water and permanent ethylene glycol anti-freeze. After every 1000 hours of operation or two years, drain the coolant from the radiator by opening the drain cock (Figure 57). After coolant is drained, flush the entire system and refill it with a 50/50 solution of water and anti-freeze.

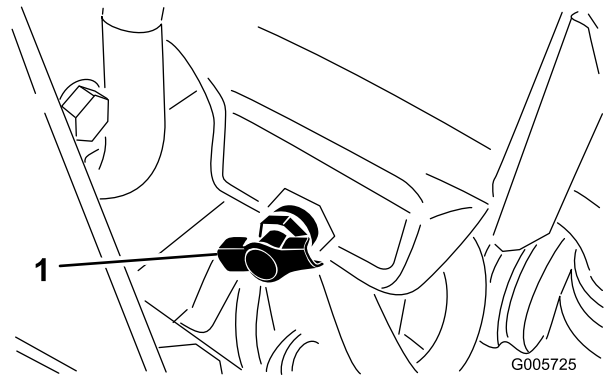


Figure 57

1. Drain cock

When filling the radiator, level of coolant must be above the core and 1 inch (25 mm) below bottom of filler neck. **DO NOT OVERFILL.** Always install radiator cap (Figure 58) securely.

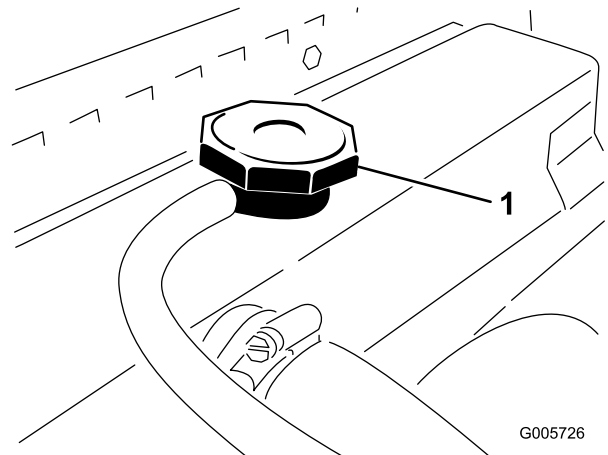


Figure 58

1. Radiator cap

Level of coolant in expansion tank (Figure 59) should be between the marks on side of tank.

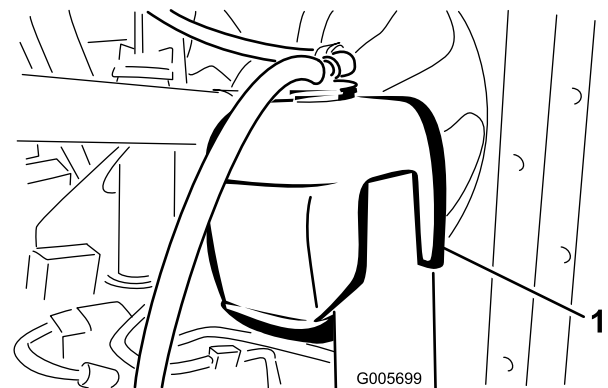


Figure 59

1. Expansion tank

Brake Maintenance

Adjusting the Brakes

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

The brakes should only need adjusting after considerable use. These periodic adjustments can be performed where the brake cables connect to the brake pedal mount. When the cables are no longer adjustable, the star nut on the inside of the brake drum must be adjusted to move the brake shoes outward. However, the brake cables must be adjusted again to compensate for this adjustment.

1. To reduce free travel of turn pedals—tighten the brakes—loosen front nut on threaded end of brake cable (Figure 60). Then tighten rear nut to move cable backward until turn pedals have 1/2 to 1 inch (13 to 25 mm) of free travel. Tighten front nut after brakes are adjusted correctly.

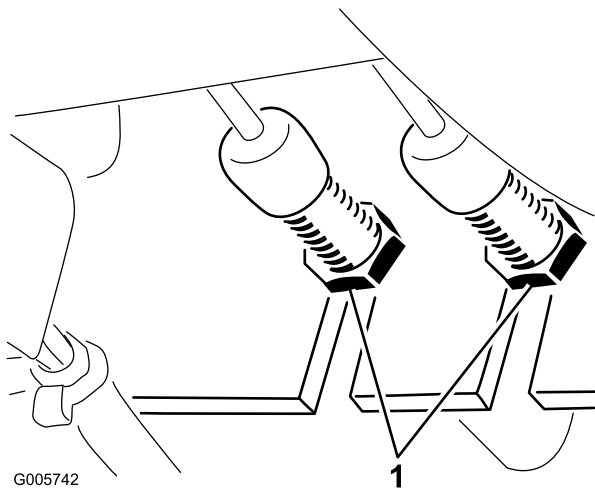


Figure 60

1. Jam nuts

2. When adjustment of brake cable cannot get free travel within 1/2 to 1 inch (13 to 25 mm), the star nut inside the brake drum must be adjusted. However, before adjusting the star nut, loosen brake cable nuts to prevent unnecessary strain on the cables.
3. Loosen five wheel nuts holding wheel and tire assembly on wheel studs.
4. Jack up machine until front wheel is off the shop floor. Use jack stands or block the machine to prevent it from falling accidentally.
5. Remove wheel nuts and slide wheel and tire assembly off studs. Rotate brake drum until adjusting slot is at

bottom and centered over star nut that adjusts brake shoes (Figure 61).

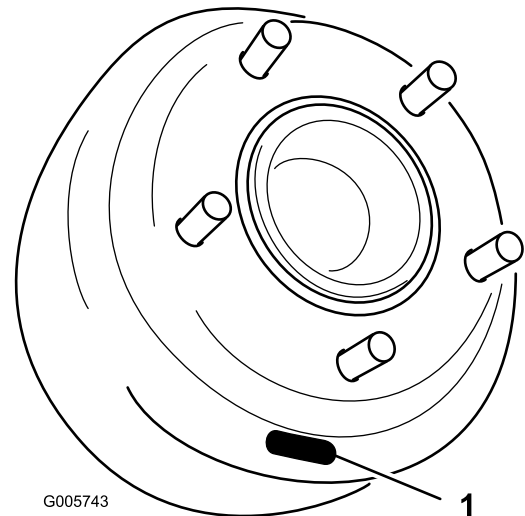


Figure 61

1. Slot

6. Using a brake adjusting tool or screwdriver, rotate star nut (Figure 61) down until brake drum (Figure 62) locks because of outward pressure of brake shoes (Figure 62).

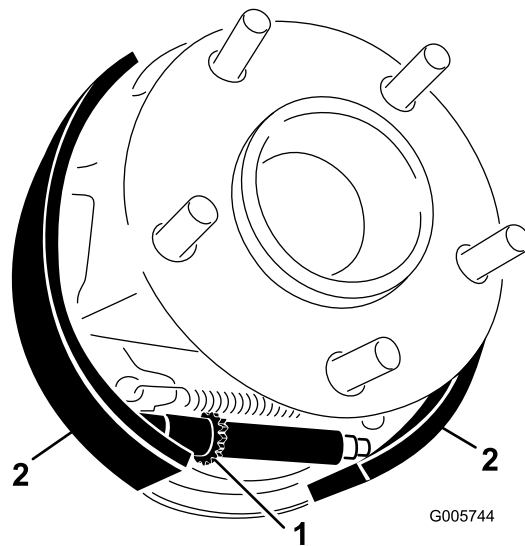


Figure 62

1. Star nut
2. Brake shoes

7. Loosen star nut about 12 to 15 notches or until brake drum rotates freely.
8. Install wheel and tire assembly on studs with five wheel nuts. Tighten nuts to 45-55 ft-lb (61-75 N-m).
9. Remove jack stands or blocking and lower machine to the shop floor.
10. Adjust the brake cables using step 1.

Belt Maintenance

Servicing the Engine Belts

Service Interval: After the first 10 hours

Every 100 hours

Check tension of all belts initially after the first day of operation and every 100 hours thereafter.

Alternator Belt

1. Unlatch and open hood.
2. Proper tension will allow 3/8 inch (10 mm) deflection when a force of 10 lbs. is applied on the belt (Figure 63) midway between the pulleys.

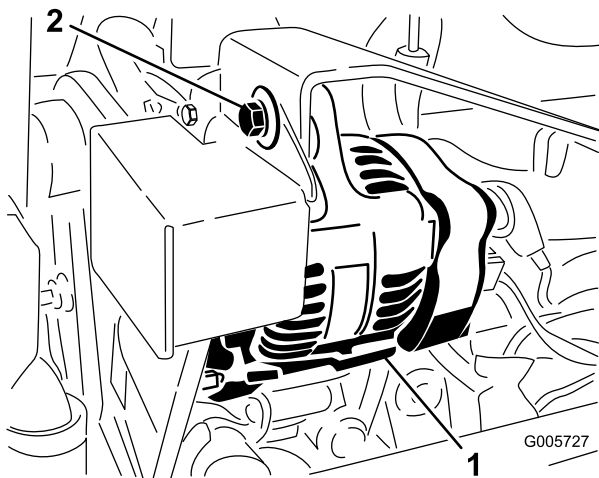


Figure 63

1. Alternator
2. Mounting bolt

3. deflection is not 3/8 inch (10 mm), loosen alternator mounting bolts. Increase or decrease alternator belt tension and tighten bolts. Check deflection of belt again to assure tension is correct.

Cooling Fan Belt

1. Unlatch and open hood.
2. Remove capscrews (5) securing fan belt guard and remove guard (Figure 64).

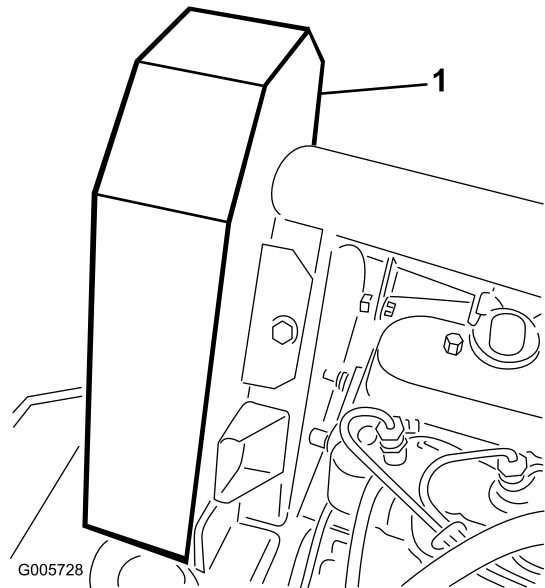


Figure 64

1. Fan belt guard

3. Belt should deflect 1/4 inch (6 mm) midway between the pulleys with 5 lb. force (22 n) (Figure 65). If deflection is incorrect, proceed to step 4. If correct, proceed to step 5.

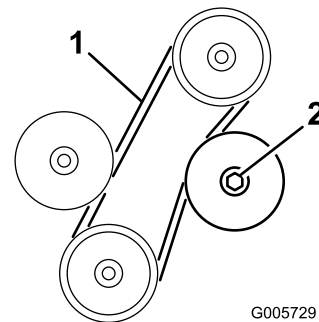


Figure 65

1. 1/4 inch (6 mm) deflection here
2. Adjustable Idler pulley locknut

4. Loosen locknut securing adjustable idler pulley (Figure 65). Push idler pulley against belt until proper deflection is achieved and tighten idler pulley locknut (Figure 65).
5. Install fan belt guard and secure with capscrews (Figure 64). Close and latch hood.

To replace belt:

1. Follow procedures in step 1 and 2 above.
2. Loosen locknut securing adjustable idler pulley, slide pulley away from belt, and remove belt from pulleys (Figure 65).
3. Install new belt and adjust for proper tension. Push idler pulley against belt until belt deflects 1/4 inch (6 mm) with 5 lb. force (22 N·m) midway between top

pulley and stationary idle pulley. Tighten idler pulley locknut to secure adjustments (Figure 65).

4. Install fan belt guard and secure with capscrews (Figure 64). Close and latch hood.

Note: Check fan belt tension after first day's operation. Readjust tension, if necessary. Follow regular maintenance check procedure thereafter.

Adjusting PTO Drive Belt Tension

Service Interval: After the first 10 hours

After the first 50 hours

Every 100 hours

Important: Check PTO belt tension initially after first 10 hours and 50 hours of operation and after every 100 hours of operation thereafter.

If belt begins to slip because it has stretched or because of worn linkage adjust as follows:

1. Unlatch and remove instrument cover.
2. Move PTO control lever to ON position.
3. Measure length of PTO spring between flat-washers (Figure 66). There should be a spring length of 3-3/16 inches (81 mm).

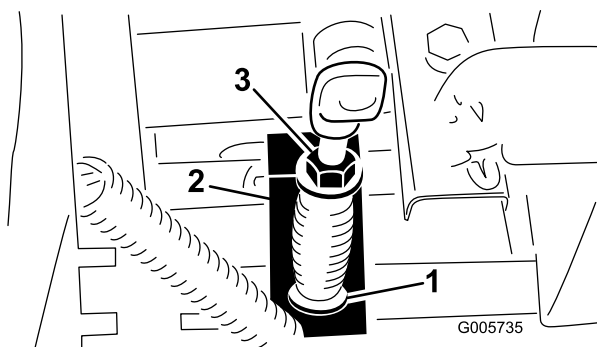


Figure 66

1. 3-3/16 inches (81 mm)
2. PTO actuating arm
3. Locknut

4. To adjust, hold head of adjusting screw with wrench (under PTO actuating arm) and turn locknut (Figure 66).
5. Move PTO lever to OFF position and install instrument cover.

Controls System Maintenance

Adjusting Throttle

Adjust throttle cable (Figure 67) so governor lever on engine contacts low and high speed set bolts before throttle lever contacts slot in control panel.

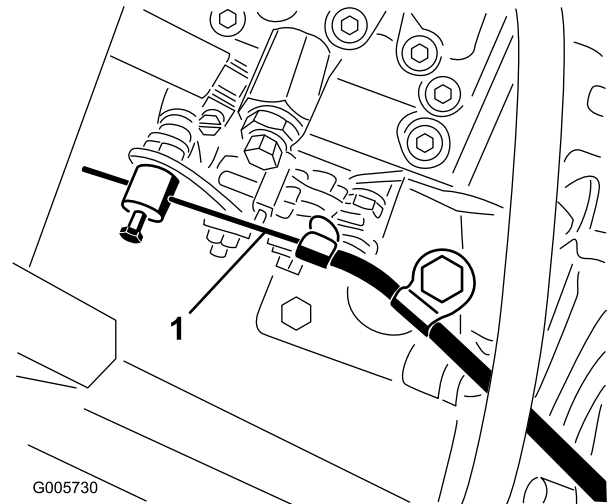


Figure 67

1. Throttle cable

Adjusting Traction Control Rod

1. Check traction drive neutral position to assure front wheels do not creep; refer to Adjusting Traction Drive for Neutral.
2. Loosen lock nuts and adjust traction pedal stop screw (Figure 68) to a length of 3.00 inches.

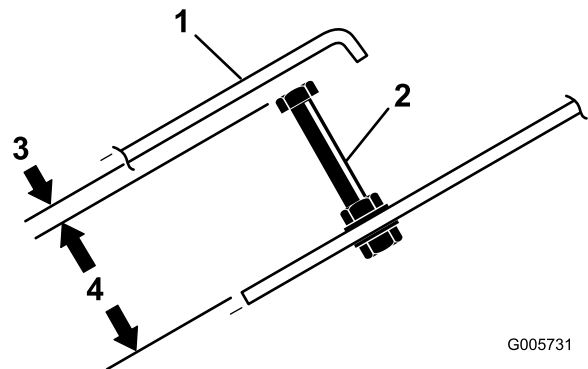


Figure 68

1. Traction pedal
2. Stop screw

3. Rotate pump lever to full forward speed location.
4. Adjust control rod end (Figure 69) until there is a .12" gap between top of traction pedal stop screw and pedal. Tighten lock nuts.

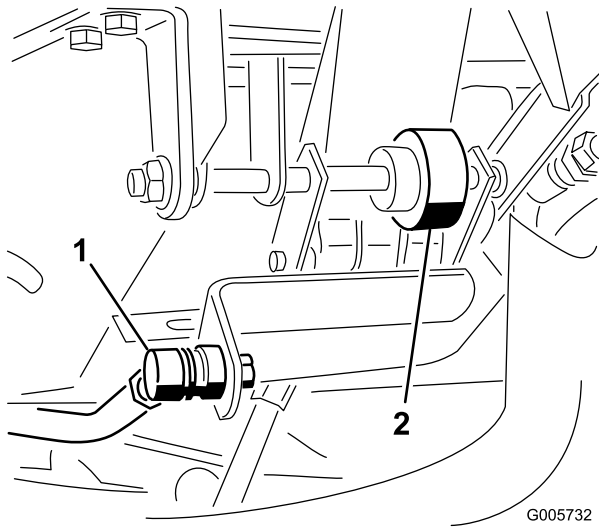


Figure 69

1. Control rod
2. Friction wheel

Adjusting Traction Pedal Friction Wheel

1. Loosen two nuts securing traction pedal shaft on right side of pedal (Figure 69).
2. Rotate shaft to relocate worn surface of friction wheel away from underside of traction pedal.
3. Tighten nuts to secure shaft and wheel in position.

Adjusting the Traction Drive for Neutral

1. Park vehicle on a level surface and turn engine off. Apply the parking brake, tip seat forward, and actuate pump lever (Figure 70) to ensure assembly is properly seated and operating freely. Correct any discrepancy.

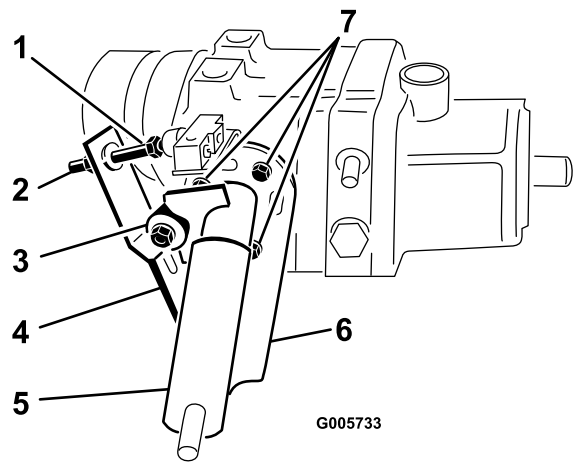


Figure 70

1. Switch adjusting screw
2. Jam nut
3. Ball bearing
4. Leaf springs
5. Pump lever
6. Cap screws
7. Pump plate

2. Block right front tire and both rear tires so vehicle cannot roll forward or backward.
3. Jack up frame so left front wheel is off the shop floor. Use a jack stand to support the frame. On four wheel drive machines, make sure that at least one rear wheel is off the ground.
4. Start engine and allow it to idle for 5 minutes to heat oil in transmission to operating temperature.
5. Release parking brake; then check left front wheel that is off shop floor. Wheel must not be rotating. If wheel is rotating, proceed to step 6 for an adjustment. If wheel is not rotating, proceed to step 8. Verify the adjustment with throttle in SLOW and FAST position.
6. Because the wheel is rotating, the pump plate must be adjusted. But before adjusting the pump plate, move throttle to SLOW. If wheel is rotating forward, loosen capscrews, and lightly tap bottom of pump plate counterclockwise (Figure 70). By contrast, tap pump plate clockwise if wheel is rotating backward (Figure 70). When wheel stops rotating, tighten capscrews holding pump plate against side of transmission. Verify the adjustment with throttle in SLOW and FAST position.
7. Should front wheel continue to rotate, check for the following:
 - Ball bearing is loose or worn out (Figure 70).
 - Plunger on interlock switch is sticking.
 - Loose or missing fasteners.
 - Worn bolt securing pump lever to transmission.
 - Pump lever loose on control shaft. (Correct by applying Loctite 680 to shaft.)

- Weak or damaged leaf springs (Figure 70). Replace.
 - Internal transmission component malfunction. Contact your local Toro distributor for assistance.
8. Shut engine off.
 9. Adjust traction control rod; refer to Adjusting the Traction Control Rod.

Adjusting the Traction Interlock Switch

1. Adjust transmission for neutral; refer to Adjusting the Traction Drive for Neutral.
2. Actuate the pump lever (Figure 70) to ensure all parts are operating freely and seated properly.
3. Loosen jam nut. Rotate switch adjusting screw (Figure 70) until there is a gap between head of screw and switch button.
4. Rotate adjusting screw until it contacts the switch button. Continue to rotate the screw until the circuit is completed (switch “clicks”). After the switch clicks, rotate the adjusting screw an additional 1/2 turn. Tighten jam nut.

Replacing the PTO Switch

1. Remove instrument cover and disconnect negative battery cable from battery.
2. Move PTO lever forward to ON position.
3. Remove boot from button end of PTO switch (Figure 71). Retain boot for reinstallation. Separate switch wire connectors.

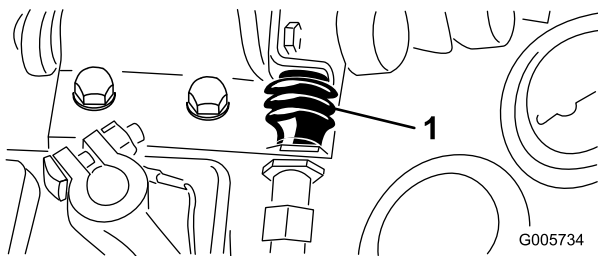


Figure 71

4. Remove front jam nut securing switch to mounting bracket and remove switch.
5. Install new PTO switch to mounting bracket. Adjust switch so it is depressed 1/2 inch (13 mm) when PTO lever is moved to OFF position. Tighten jam nuts to 75 in-lb. Install boot to switch.

Important: Switch threads will be damaged if jam nuts are over tightened.

6. Connect a continuity tester or ohm meter to switch connector. With PTO lever in the ON position the switch circuit **should not have** any continuity. If there is continuity, recheck switch installation. If there is no continuity, proceed to next step.
7. Move PTO lever to the OFF position. When PTO lever is in its normal, released position, the PTO switch **should have** continuity. If there is no continuity, recheck switch installation. If there is no continuity, proceed to next step.
8. Push switch connectors together.
9. Connect battery cable and install instrument cover.

Adjusting the Parking Brake Interlock Switch

1. Gap between parking brake shaft pivot paddle and bottom of interlock switch (Figure 72) should be approximately 1/16” (Paddle must not contact switch).

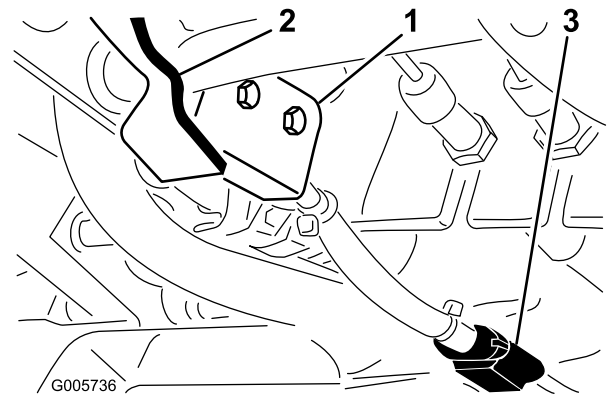


Figure 72

- | | |
|-------------------------------------|---------------------------|
| 1. Parking brake interlock switch | 3. Wire harness connector |
| 2. Parking brake shaft pivot paddle | |
2. To adjust gap, loosen switch mounting screws, adjust gap and tighten screws.
 3. Disconnect switch pigtail connector from wire harness.
 4. Pull up on parking brake lever and depress brake pedal to lock pedal into first click on latch.
 5. Connect a continuity tester or ohm meter to switch harness connector. With parking brake engaged, the switch circuit should not have continuity. If there is continuity, recheck switch or switch installation.

Adjusting the Tilt Steering Control

If steering wheel tilt control lever must be adjusted, proceed as follows:

1. Remove knob from parking brake and self tapping screws from steering column cover. Slide cover up steering shaft to expose pivot bracket (Figure 73).
2. Loosen small nut, rotate pivot bracket until it tightens large nut below (Figure 73). Retighten small nut.
3. Reinstall steering column cover and parking brake knob.

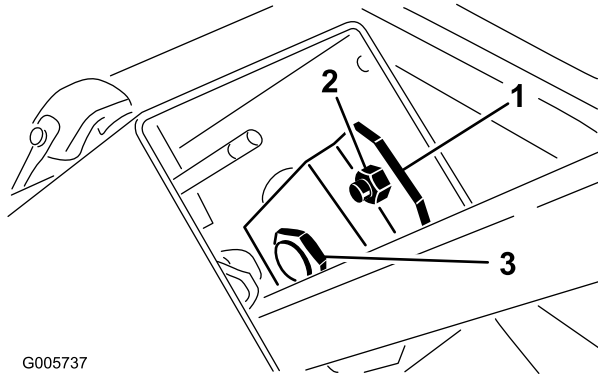


Figure 73

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

Hydraulic System Maintenance

Replacing the Hydraulic Fluid Filter

Service Interval: After the first 10 hours

Every 200 hours

The hydraulic fluid filter keeps the hydraulic system relatively free of contaminants and must be serviced at regular intervals. **Initially, change filter after first ten hours of engine operation, and thereafter, after every 200 hours of operation or yearly, whichever comes first.** Use Toro oil filter, Part No. 23-9740, as a replacement.

1. Clean area where hydraulic fluid filter mounts. Remove filter from base (Figure 74) and clean filter mounting surface.

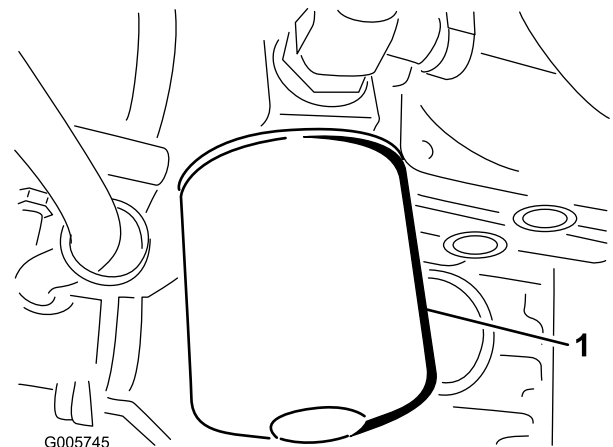


Figure 74

1. Hydraulic oil filter
-
2. Lubricate filter gasket with proper type of hydraulic fluid. Then fill filter using the same hydraulic fluid.
 3. Install filter by hand until gasket contacts mounting head. Then rotate an additional 1/2 turn.
 4. Start engine and check for hydraulic fluid leaks. Allow engine to run for about two minutes so any air in the system is purged (removed).
 5. Shut engine off and check level of hydraulic system; refer to Checking the Hydraulic System Oil.

Changing the Hydraulic System Fluid

Service Interval: Every 1,000 hours

The hydraulic system fluid must be changed after every 1000 hours of normal operation or every two years, whichever comes first.

The recommended replacement fluid is:

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

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 2/3 oz. (20 ml) bottles. One bottle is sufficient for 4–6 gal (15–22 l) of hydraulic oil. Order part no. 44-2500 from your authorized Toro distributor.

1. Start engine, park machine on a level surface, lower implement to the shop floor, set the parking brake, and shut engine off. Block the two rear wheels.
2. Jack up both sides of front axle and support it with jack stands.
3. Clean area around hydraulic fluid filter and remove filter.

4. Remove drain plug from fitting between axle housing and oil filter and allow fluid to flow into drain pan (Figure 75).

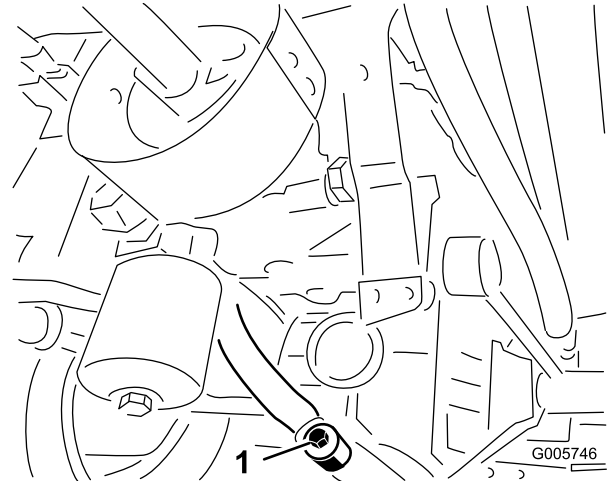


Figure 75

1. Drain plug
-
5. Install new filter; refer to steps 1–2 in Replacing Hydraulic Oil Filter, for proper procedures.
 6. Install drain plug in fitting between axle housing and filter (Figure 75).
 7. Remove dipstick from axle filler tube (Figure 76) and fill axle to proper level with correct type of hydraulic fluid; refer to table above.
 8. Start and run the engine at idle speed for about two minutes and turn the steering wheel lock to lock to purge air trapped in the system. Shut the engine off.
 9. Leave machine set for two additional minutes, then remove dipstick and check fluid level in axle (Figure 76). If level is low, add fluid until level matches groove in dipstick (Figure 76). If level is too high, remove drain plug (Figure 75) and drain fluid until level matches groove in dipstick.

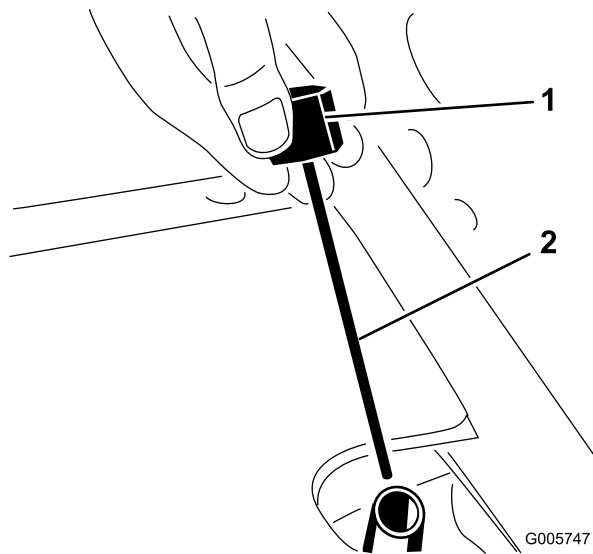


Figure 76

1. Dipstick

2. Groove

Storage

Traction Unit

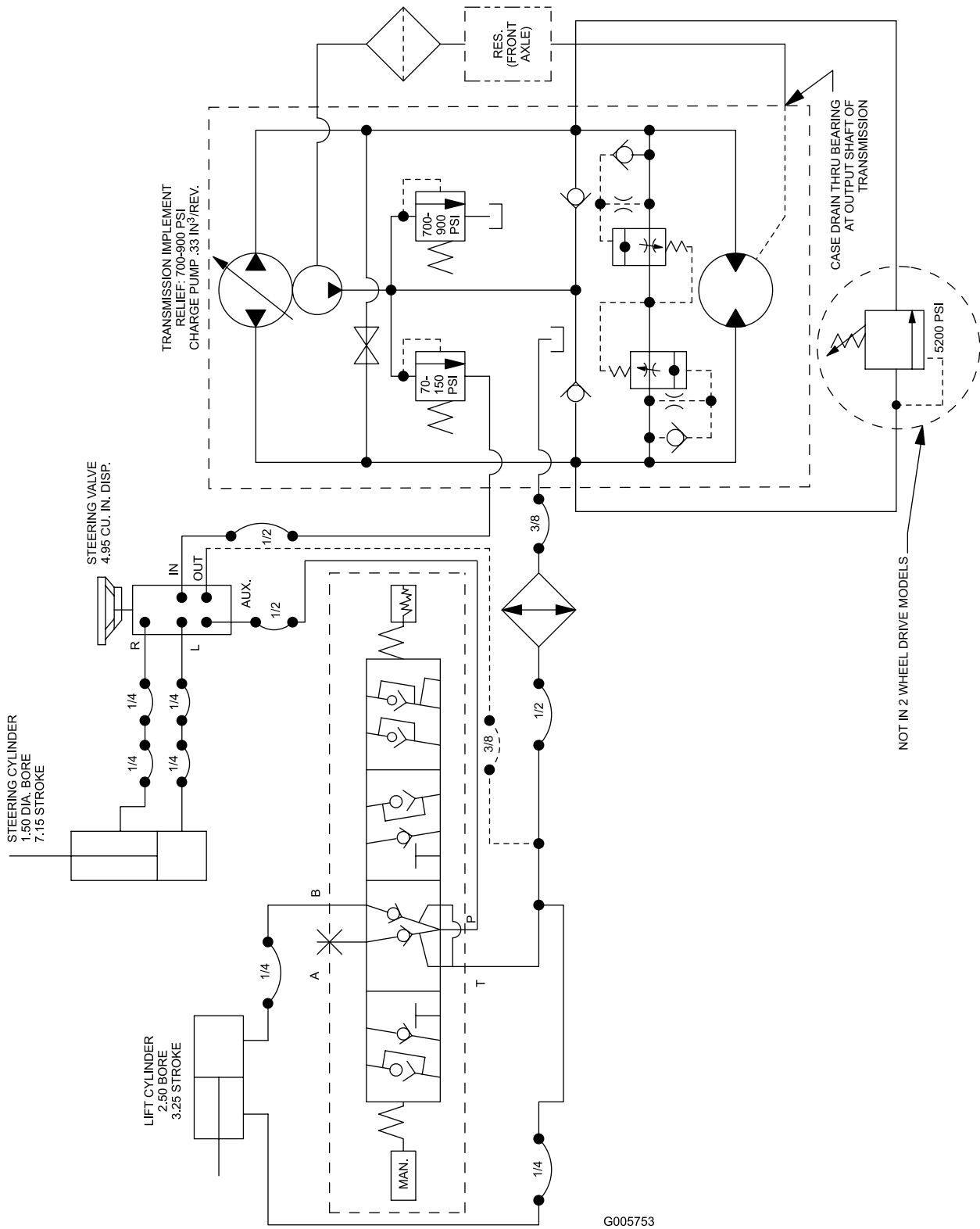
1. Thoroughly clean the traction unit, cutting unit and the engine, paying special attention to these areas:
 - radiator screen
 - underneath the cutting unit
 - under the cutting unit belt covers
 - counterbalance springs
 - P.T.O. Shaft Assembly
 - all grease fittings and pivot points
2. Check the tire pressure. Inflate all traction unit tires to 21 psi (145 kPa).
3. Remove, sharpen, and balance the cutting unit's blades. Reinstall the blades and torque the blade fasteners to specifications.
4. Check all fasteners for looseness; tighten as necessary.
5. Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.
6. Ensure that the P.T.O. belt remains in the disengaged position so that the P.T.O. belt does not take a "set."
7. Lightly sand and use touch-up paint on painted areas that are scratched, chipped, or rusted. Repair any dents in the metal body.
8. 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 recharge the battery every 60 days for 24 hours 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. Install a new oil filter.
3. Remove fill cap and add 4 quarts (3.8 l) of oil until level reaches FULL mark on dipstick. **DO NOT OVERFILL.**
4. Start the engine and run at idle speed for approximately two minutes.
5. Stop the engine.

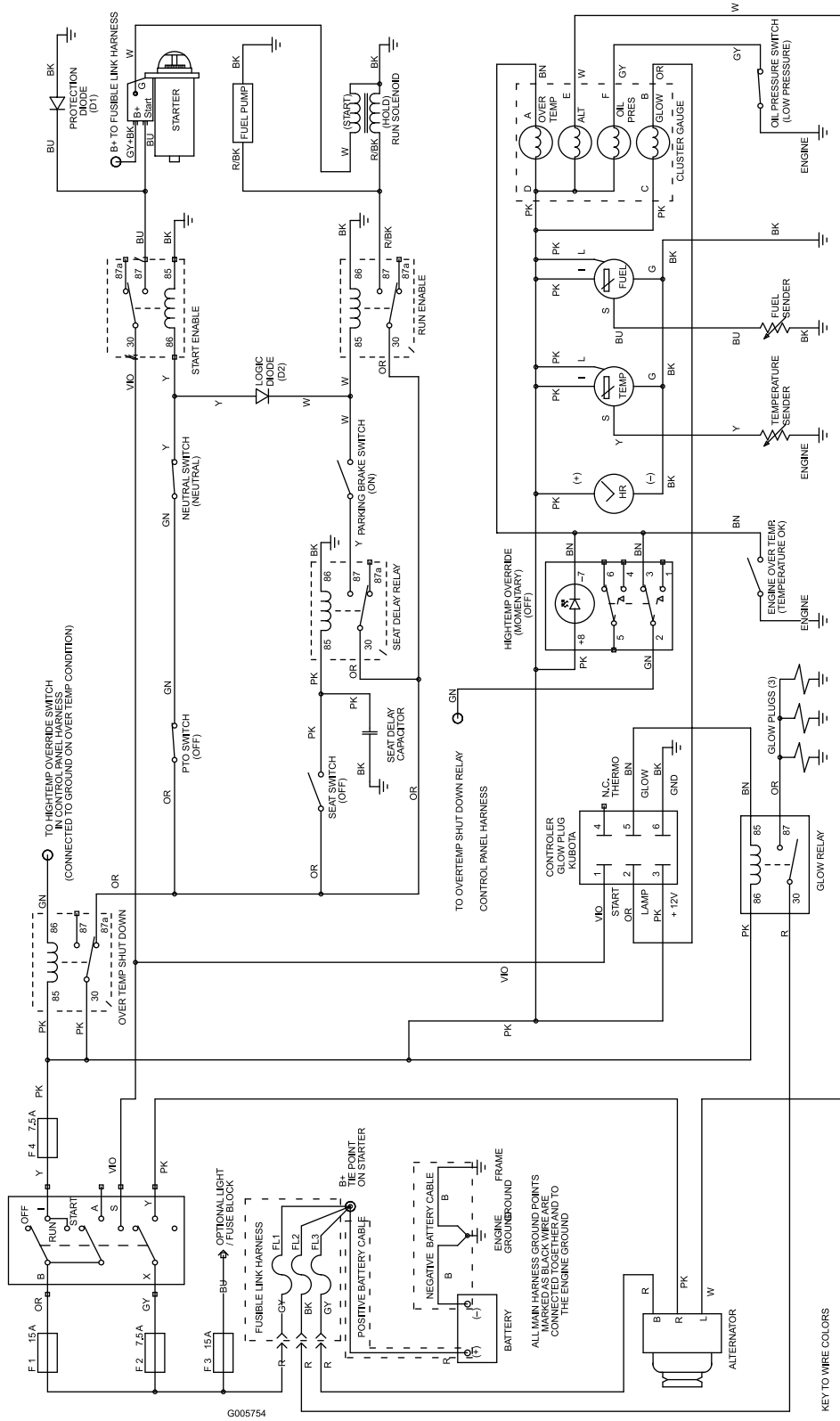
6. Thoroughly drain all fuel from the fuel tank, lines, fuel pump filter, and the fuel filter/water separator assembly.
7. Flush the fuel tank with fresh, clean diesel fuel.
8. Secure all fuel system fittings.
9. Thoroughly clean and service the air cleaner assembly.
10. Seal the air cleaner inlet and the exhaust outlet with weatherproof tape.
11. Check anti-freeze protection and add as needed for expected minimum temperature in your area.

Schematics



Hydraulic Schematic (Rev. A)

G005753



G005754

Electrical Schematic (Rev. A)

- KEY TO WIRE COLORS
 BK = BLACK GN = GREEN
 BR = BROWN BU = BLUE
 BU = BLUE GY = GRAY
 R = RED OR = ORANGE
 Y = YELLOW PK = PINK
 W = WHITE VIO = VIOLET
 T = TAN

Notes:



Toro General Commercial Products 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 diagnosis, labor, parts, and transportation. This warranty begins on the date the Product is delivered to the original retail purchaser.

* Product equipped with 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
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, brakes pads and linings, clutch linings, blades, reels, bed knives, tines, spark plugs, castor wheels, tires, filters, belts, and certain sprayer components such as diaphragms, nozzles, and check valves, etc.
- Failures caused by outside influence. Items considered to be outside influence include, but are not limited to, weather, storage practices, contamination, use of unapproved coolants,

lubricants, additives, fertilizers, water, or chemicals, etc.

- 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.

Note Regarding Deep Cycle Battery Warranty:

Deep cycle 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.

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 printed in your *Operator's Manual* 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.