FORM NO. 3317–922 Rev B

TORO®

*Helping you put quality into play.™*

MODEL NO. 30300 – 60001 & UP

OPERATOR'S MANUAL

# GROUNDSMASTER® 3000
## TRACTION UNIT

**To understand this product, and for safety and optimum performance, read this manual before starting the engine. Pay special attention to SAFETY INSTRUCTIONS highlighted by this symbol.**

**It means CAUTION, WARNING or DANGER – personal safety instruction. Failure to comply with the instruction may result in personal injury.**

TORO
THIS UNIT CONFORMS TO ANSI B71.4–1990

**The GROUNDSMASTER 3000 conforms to the B71.4-1990 specifications of the American National Standards Institute's safety standards for riding mowers: thus, TORO proudly displays the ANSI safety seal.**

# FOREWORD

This operator's manual has instructions on safety, proper set–up and operation, adjustments and maintenance. Therefore, anyone involved with the product, including the operator, should read and understand this manual. Major sections are:

- Safety Instructions
- Specifications
- Set–up Instructions
- Before Operating
- Know Your Controls
- Operating Instructions
- Maintenance
- Schematics

This manual emphasizes safety, mechanical and general product information. **DANGER**, **WARNING** and **CAUTION** identify safety messages. Whenever the triangular safety alert symbol appears, understand the safety message that follows. For complete safety instructions, read pages 4–5. **IMPORTANT** highlights special mechanical information and **NOTE** emphasizes general product information worthy of special attention.

**⚠ WARNING: ⚠**

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

Whenever you have questions or need service, contact your local authorized Toro Distributor. In addition to having a complete line of accessories and professional turf care service technicians, the distributor has a complete line of genuine TORO replacement parts to keep your machine operating properly. Keep your TORO all TORO. Buy genuine TORO parts and accessories.

# IDENTIFICATION AND ORDERING

## MODEL AND SERIAL NUMBER

The model and serial number is on a plate that is mounted on the left side of operator platform behind footrest. Use model and serial number in all correspondence and when ordering parts.

To order replacement parts from an authorized TORO Distributor, supply the following information:

**1.** Model and serial numbers of the machine.

**2.** Part number, description and quantity of parts desired.

**Note:** Do not order by reference number if a parts catalog is being used; use the part number.

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# SAFETY INSTRUCTIONS

**The GROUNDSMASTER® 3000 was tested and certified by TORO for compliance with the B71.4—1990 specifications of the American National Standards Institute. Although hazard control and accident prevention partially are dependent upon the design and configuration of the machine, these factors are also dependent upon the awareness, concern, and proper training of the personnel involved in the operation, transport, maintenance, and storage of the machine. Improper use or maintenance of the machine can result in injury or death. To reduce the potential for injury or death, comply with the following safety instructions.**

## BEFORE OPERATING

**1.** Read and understand the contents of this manual before starting and operating the machine. Become familiar with all controls and know how to stop quickly. A free replacement manual is available by sending complete Model and Serial Numbers to:

The Toro Company
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420–1196

**2.** Never allow children to operate the machine. Do not allow adults to operate the machine without proper instruction. Only trained operators, skilled in slope operation and who have read this manual should operate this machine.

**3.** Never operate machine when under the influence of drugs or alcohol.

**4.** Remove all debris or other objects that might be picked up and thrown by cutter blades or fast moving components from other attached implements. Keep all bystanders away from the operating area.

**5.** Keep all shields and safety devices in place. If a shield, safety device, or decal is defective or damaged, repair or replace it before operation is commenced. Also, tighten any loose nuts, bolts, and screws to insure machine is in safe operating condition.

**6.** Do not wear loose–fitting clothing because it could get caught in moving parts. Always wear long pants and substantial shoes. Wearing safety glasses, safety shoes, and a helmet is advisable and required by some local ordinances and insurance regulations.

**7.** Check interlock switches daily for proper operation (Refer To Checking Interlock Switches, Page 14). Do not rely entirely on safety switches -shut off engine before getting off seat. If a switch fails, replace it before operating the machine. The interlock system is for your protection, so do not bypass it. Replace all interlock switches every two years. Interlock switches should be adjusted so:

A. Engine cannot be started unless traction pedal is released (neutral position).

B. Engine stops if operator gets off seat when traction pedal is depressed.

C. PTO disengages if operator gets off seat when PTO lever is ENGAGED (on position).

**8.** Fill fuel tank with fuel before starting the engine. Avoid spilling any fuel. Since fuel is flammable, handle it carefully.

A. Use an approved fuel container.

B. Do not fill fuel tank when engine is hot or running.

C. Do not smoke while handling fuel.

D. Fill fuel tank outdoors and up to about one inch (25 mm) from the top of the tank, not the filler neck.

E. Wipe up any spilled fuel.

**9.** Sit on the seat when starting the engine and operating the machine.

**10.** Before starting the engine:

A. Engage parking brake.

B. Make sure traction pedal is in neutral.

C. After engine is started, release parking brake and keep foot off traction pedal. Machine must not move. If movement is evident, the neutral return mechanism is adjusted incorrectly. Shut engine off and adjust until machine does not move when traction pedal is released.

**11.** Do not run the engine in a confined area without adequate ventilation. Exhaust fumes are hazardous and could possibly be deadly.

**12.** Maximum seating capacity is one person. Therefore, never carry passengers.

**13.** Check carefully for overhead clearances before driving under any objects.

**14.** Check implement operator's manual for rear weight requirements.

## WHILE OPERATING

**15.** Using the machine demands the operator's complete attention. To prevent loss of control:

A. Operate only in daylight or when there is good artificial light.

B. Drive slowly.

C. Avoid sudden stops and starts.

D. Look behind machine before backing up.

E. Watch for holes or other hidden hazards.

F. Do not drive close to a sand trap, ditch, creek, or hazard.

G. Reduce speed when making sharp turns and when turning on a hillside.

H. The cutting deck must be lowered when going down slopes for steering control.

# SAFETY INSTRUCTIONS

**16.** Operator must be skilled and trained in how to drive on hillsides. Failure to use caution on slopes or hills may cause loss of control and vehicle to tip or roll possibly resulting in personal injury or death.

**17.** Traverse slopes carefully. Do not start or stop suddenly when traversing slopes or when traveling uphill or downhill.

**18.** If engine stalls or machine loses headway and cannot make it to the top of a slope, do not turn machine around. Always back slowly straight down the slope.

**19.** This product is designed to drive objects into the ground where they lose energy quickly in grassy areas. However, don't take an injury risk!! 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 area is cleared.

**20.** Never raise the cutting unit or other attached implement while the blades or other parts are rotating.

**21.** If cutting blades or other implement components strike a solid object or the machine vibrates abnormally, disengage PTO, move throttle to SLOW, set parking brake, and shut engine off. Remove key from switch to prevent possibility of accidental starting. Check cutting unit or other implement and traction unit for damage and defective parts. Repair any damage before restarting the engine and operating the implement or cutting unit. Assure cutting unit blades are in good condition and blade bolts are torqued to proper specifications (See Cutting Deck Operator's Manual).

**22.** To stop machine, remove foot from traction pedal and use brakes. Gradually reversing the traction pedal can provide additional braking.

**23.** Do not touch engine, muffler, or radiator while engine is running or soon after it has stopped. These areas could be hot enough to cause a burn.

**24.** Lower the cutting unit or other attached implement to the ground and remove key from switch whenever machine is left unattended.

**25.** Before getting off the seat:

A. Move traction pedal to neutral position and remove foot from pedal.

B. Set the parking brake and disengage the PTO.

C. Shut the engine off and remove key from ignition switch. Wait for all movement to stop before getting off the seat.

## MAINTENANCE

**26.** Remove key from ignition switch to prevent accidental starting of the engine when servicing, adjusting, or storing the machine.

**27.** If major repairs are ever needed or assistance is desired, contact an Authorized TORO Distributor.

**28.** To reduce potential fire hazard, keep the engine free of excessive grease, grass, leaves, and accumulations of dirt. Never wash a warm engine or electrical connections with water.

**29.** If the cutting unit discharge area ever plugs, disengage PTO and shut engine off before removing the obstruction.

**30.** Make sure machine is in safe operating condition by keeping nuts, bolts, and screws tight. Check attachment mounting hardware and all cutting unit blade mounting bolts frequently to assure they are torqued to proper specifications (See Cutting Deck or attachment Operator's Manual).

**31.** Make sure all hydraulic line connectors are tight, and all hydraulic hoses and lines are in good condition before applying pressure to the system.

**32.** Keep body and hands away from pin hole leaks or nozzles that eject hydraulic fluid under high pressure. Use paper or cardboard, not hands, to search for leaks. Hydraulic fluid escaping under pressure can have sufficient force to penetrate skin and do serious damage. If fluid is ejected into the skin, it must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.

**33.** Before disconnecting or performing any work on the hydraulic system, all pressure in system must be relieved by stopping engine and lowering implement to the ground.

**34.** If the engine must be running to perform maintenance or an adjustment, keep clear of PTO shaft, cutting unit blades, and other moving parts.

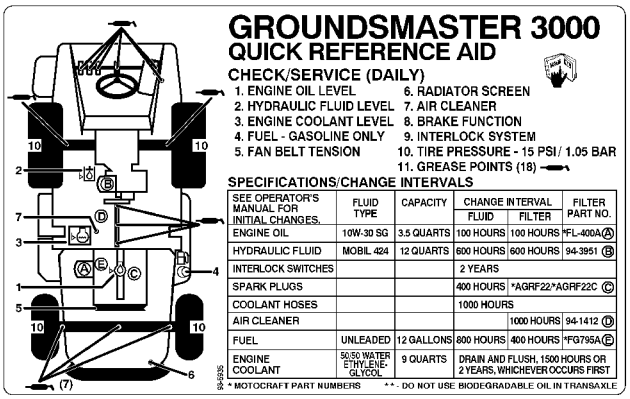
**35.** Do not overspeed the engine by changing the governor settings. Maximum engine speed with no load is 3150 $\pm$ 50 rpm. To ensure safety and accuracy, have an Authorized TORO Distributor check maximum engine speed with a tachometer.

**36.** Engine must be shut off before checking oil or adding oil to the crankcase.

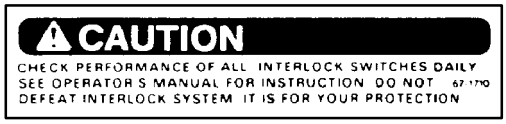
**37.** At the time of manufacture, the machine conformed to safety standards in effect for riding mowers. To ensure optimum performance and continued safety certification of the machine, use genuine TORO replacement parts and accessories. Replacement parts and accessories made by other manufacturers may result in non–conformance with the safety standards, and the warranty may be voided.

# SAFETY AND INSTRUCTION DECALS

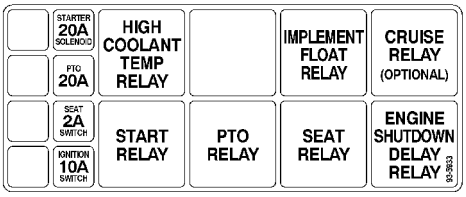
The following safety and instruction decals are mounted on the traction unit. If any decal becomes damaged or illegible, install a new decal. Part numbers are listed below or in your parts catalog.



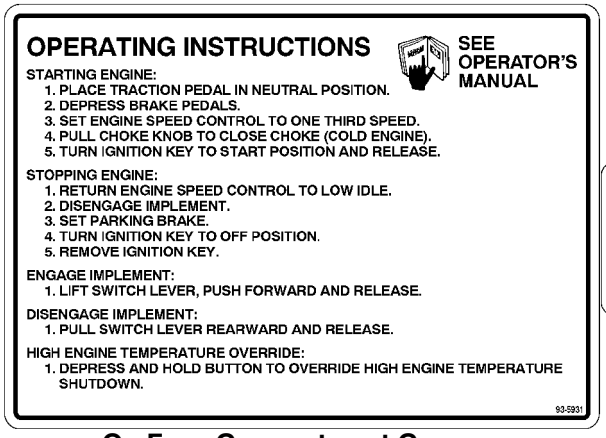

**Next to Right Side of Seat**
**(Part No. 93--5935)**



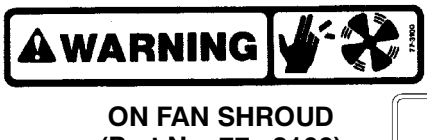

**On Side of Tool Box**
**(Part No. 67--1710)**



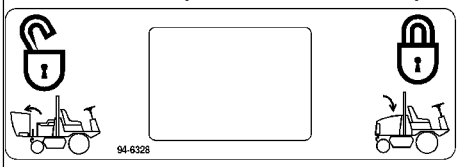

**In Compartment Behind Control panel**
**(Part No. 93--5933)**




**On Fuse Compartment Cover**
**(Part No. 93--5931)**

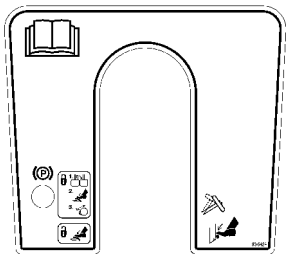



**ON FAN SHROUD**
**(Part No. 77--3100)**

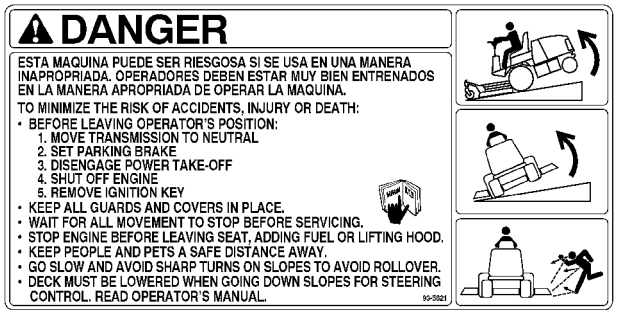



**On Hood**
**(Part No. 93--6328)**


**On Right Side Of Center Shroud**
**(Part No. 93--5617)**

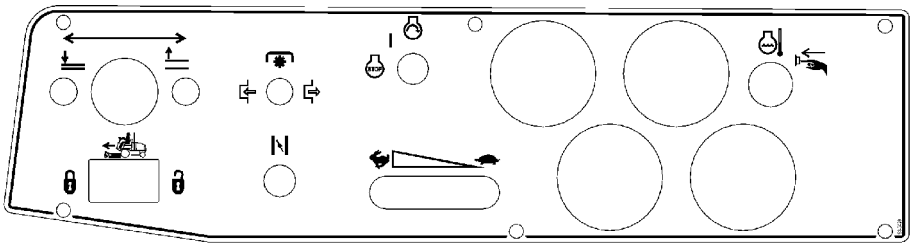


**On Steering Tower**
**(Part No. 93--5622)**

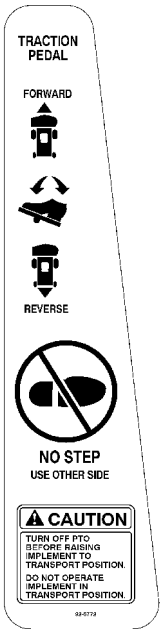



**On Tool Box Cover**
**(Part No. 93--5621)**


**On Frame Above Front Axle**
**(Part No. 85--4730)**



**On Control Panel**
**(Part No. 93--5426)**




**On Frame Next to Traction Pedal**
**(Part No. 92--5772)**

# SPECIFICATIONS

**Engine:** Ford VSG–411, 4 cylinder, 4 cycle, over–head valve, liquid cooled gasoline engine with centrifugal water pump. Available power, 33 hp at 3000 RPM, 1.1 liter displacement, governed to a maximum speed of 3150 RPM. Distributorless ignition system; spark is controlled by a DIS solid state electronic module. Oil capacity 3.5 quart (3.3 liter) with filter change. 37 amp alternator with integral regulator.

**Fuel Tank Capacity:** 12 gallons – unleaded gasoline

**Radiator:** Rear mount cross flow industrial radiator with tube and fin construction: 3 rows, 5 fins per inch. Thermally stable water cooled hydrostatic system regulates operating temperature. Separate coolant overflow bottle. System capacity approximately 9 quarts (8.5 liter).

**Controls:** Hand operated throttle, choke, PTO switch, hydraulic lift/lower/counterbalance of implement, ignition switch. Foot operated tilt steering, traction pedal, steering/parking brake pedals.

**Gauges and Diagnostics:** Gauge package includes fuel gauge, engine coolant temperature gauge, and hour meter. An indicator light for high engine coolant temperature, low engine oil pressure, alternator.

**Electrical Features:** 12 volt automotive type electrical system. 370 cold cranking amp battery performance at $0^0$F. Dash mounted ignition switch. 37 amp alternator. PTO, seat and traction interlock switches.

**Transaxle/PTO:** Integrated hydrostatic transaxle (IHT–M15) incorporating the hydrostatic transmission mechanical gearbox, differential, drive axle, power–take–off (PTO) system, and implement hydraulic system pump and reservoir in a single component. Variable speed, axial piston, hydrostatic U–type transmission: gear type charge circuit hydraulics with filtration provides hydraulic flow for power steering and implement lift. Approximately 12 quart oil capacity. Single foot pedal control of forward/reverse ground speed. Optional cruise control available.

**Implement Lift:** Twin hydraulic lift cylinders (2.5" bore x 3.5" stroke) provide lift, lower and counterbalance of implement via electrically operated hydraulic control manifold.

**Steering:** Eaton series 2 steering control unit with power beyond. Steering valve controls single steering cylinder. Steering system is single tie–rod type. Tilt steering wheel with single lever control. 14" diameter steering wheel.

**Ground Speed**

Single speed – 0–9.5 mph, infinitely variable

**Clearance**

Front ground clearance – 8.25 inches

Rear ground clearance – 6.00 inches

**Tires/Wheels/Pressures**

Two front traction drive tires – 25x10.5–15 turf tread, 6 ply rating.

Two rear steering tires – 20x8–10, turf tread, 6 ply rating.

Tire pressure – 15 psi

**Brakes:** Individual mechanical caliper disc brakes provide both independent application for steering assist and combined application for parking brake function. Dynamic braking through the hydrostatic traction drive.

**Seat**: Deluxe high back seat. Optional armrests. Optional seat suspension kit, Model 30395, or deluxe adjustable suspension kit, Model 30396.

**Storage:** Toolbox with cover located to the left of the seat base. Beverage holder integral to toolbox cover. Operator manual storage tube furnished for attachment to seat frame

**Weight** 1830lbs (830kg)

**Wheel Base** – 55 inches

**Tread Width** – 53 inches

**Specifications and design subject to change without notice.**

# LOOSE PARTS CHART

**Note:** Use this chart as a checklist to assure all parts necessary for assembly have been received. Without these parts, total set-up cannot be completed. Some parts may have already been assembled at factory.

| DESCRIPTION | QTY. | USE |
|---|---|---|
| Wheel nut<br>Wheel | 10<br>2 | Mount Rear Wheels |
| Wheel nut<br>Wheel | 10<br>2 | Mount Front Wheels |
| Steering Wheel<br>Foam Seal<br>Nut<br>Washer<br>Cap | 1<br>1<br>1<br>1<br>1 | Install Steering Wheel |
| Operator's Manual<br>Parts Catalog | 2<br>1 | |
| Registration Card | 1 | Fill out and return to Toro |
| Hydraulic Oil Filter (94–3951) | 1 | Change after 200 hours |

# SET – UP INSTRUCTIONS

## INSTALL FRONT & REAR WHEELS

**1.** Mount wheels and torque mounting nuts to 80 ft – lbs (61-75 N·m).

## INSTALLING STEERING WHEEL (Fig. 1)

**1.** Move rear wheels so they point straight ahead.

**2.** Slide steering wheel assembly onto steering shaft.

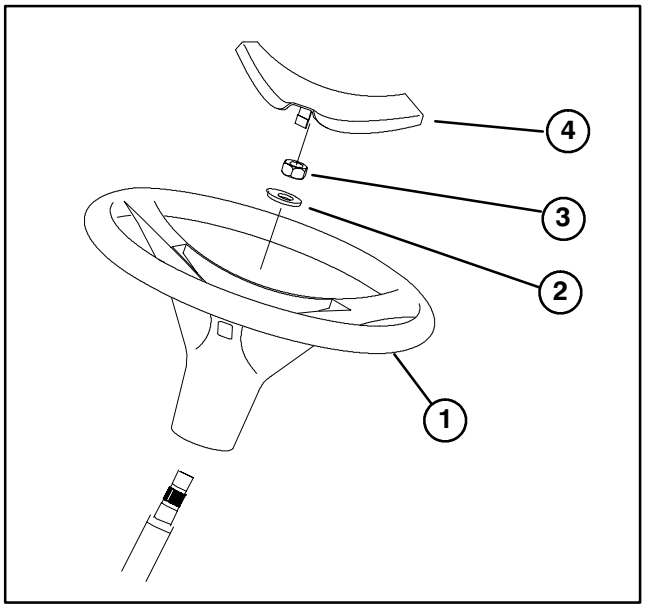



**Figure 1**

1. Steering Wheel
2. Flat Washer
3. Nut
4. Cap

**3.** Secure steering wheel to shaft with flat washer and nut. Tighten nut it to 10 – 15 ft – lb.

**4.** Install cap on steering wheel.

## GREASE 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.

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## CHECK ENGINE OIL (Fig. 2 – 4)

Crankcase capacity is 3–1/2 qt. (3.3 l) with filter.

**1.** Park machine on a level surface. Rotate hood latch fully counterclockwise and open hood.

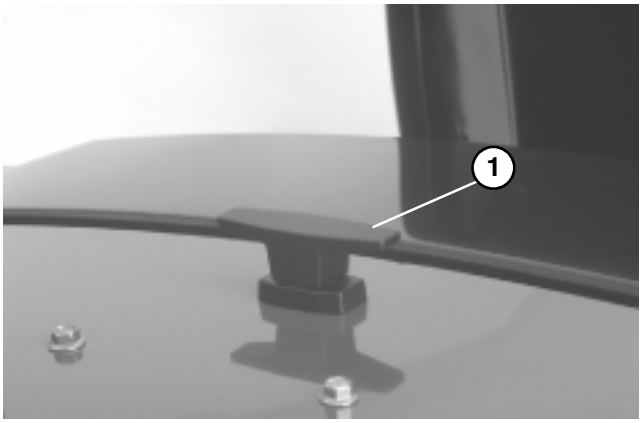



**Figure 2**
1. Hood Latch

**2.** Remove dipstick and wipe it with a clean rag. Insert dipstick into tube and make sure it is fully seated. Remove dipstick and check level of oil. If level of oil is low, add enough oil to raise level to notch in dipstick. DO NOT OVERFILL.

**3.** Install dipstick into tube.

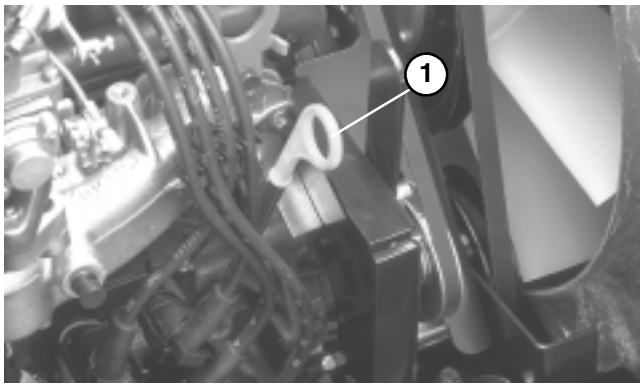



**Figure 3**
1. Dipstick

**4.** If oil level is low, clean area around oil fill cap, remove cap and add oil until level reaches FULL mark on dipstick. DO NOT OVERFILL.

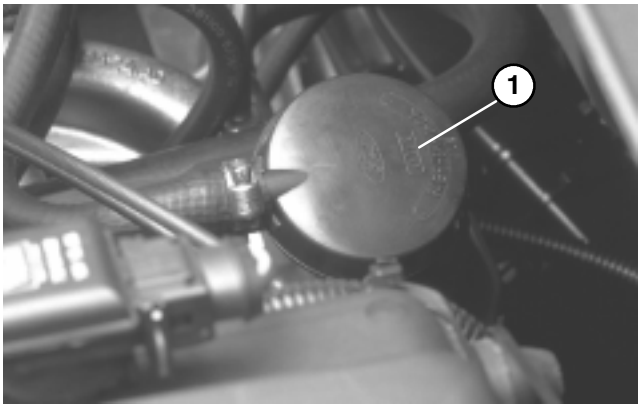



**Figure 4**
1. Oil Fill Cap

**5.** The engine uses any high–quality detergent oil having the American Petroleum Institute—API—"service classification" SG, SG/CC or SG/CD. Oil viscosity–weight– must be selected according to ambient temperature. Temperature/viscosity recommendations are:

### Single Viscosity Oils

| Outside Temperature | |
|---|---|
| –10°F to +60°F | SAE 10W |
| +10°F to +90°F | SAE 20W–20 |
| Above +32°F | SAE 30 |
| Above +50°F | SAE 40 |

### Multi–Viscosity Oils

| Outside Temperature | |
|---|---|
| Below +60°F | SAE 5W–30 |
| –10°F to +90°F | SAE 10W–30 |
| Above –10°F | SAE 10W–40 or 10W50 |
| Above +10°F | SAE 20W–40 or 20W50 |

**IMPORTANT: Check level of oil after every 5 hours of operation or daily. Change oil after initial 50 hours and every 100 hours thereafter. Change oil and filter more frequently when engine is operated in extremely dusty or dirty conditions.**

**6.** Install oil fill cap.

**7.** Close hood and secure latch.

## CHECK COOLING SYSTEM (Fig. 5)

Capacity of system is 9 qts. (8.5 l).

Clean debris off screen, oil cooler and radiator daily, hourly if conditions are extremely dusty and dirty; refer to Cleaning Radiator and Screen.

The cooling system is filled with a 50/50 solution of water and permanent ethylene glycol anti–freeze. Check level of coolant at beginning of each day before starting the engine.

**1.** Park machine on a level surface. Rotate hood latch fully counterclockwise and open hood.

**2.** Check coolant level. Coolant should be up to COLD line on reserve tank, when engine is cold.

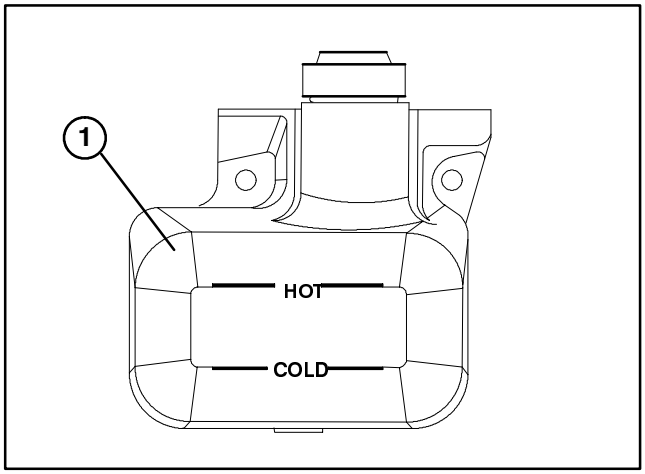



**Figure 5**
1. Reserve Tank

**CAUTION**

**If engine has been running, pressurized hot coolant can escape and cause burns if radiator cap is removed. Allow engine to cool at least 15 minutes or until the radiator cap is cool enough to touch without burning hand.**

**3.** If coolant is low, remove reserve tank cap and add a 50/50 mixture of water and permanent ethylene glycol anti–freeze. **DO NOT OVERFILL**.

**4.** Install reserve tank cap.

**5.** Close hood and secure latch.

## FILL FUEL TANK (Fig. 6)

Capacity of fuel tank is 12 gal.

THE TORO COMPANY STRONGLY RECOMMENDS THE USE OF FRESH, CLEAN, **UNLEADED** REGULAR GRADE GASOLINE IN TORO GASOLINE POWERED PRODUCTS. UNLEADED GASOLINE BURNS CLEANER, EXTENDS ENGINE LIFE, AND PROMOTES GOOD STARTING BY REDUCING THE BUILD–UP OF COMBUSTION CHAMBER DEPOSITS. LEADED GASOLINE CAN BE USED IF UNLEADED IS NOT AVAILABLE.

**NOTE: NEVER USE METHANOL, GASOLINE CONTAINING METHANOL, GASOLINE CONTAINING MORE THAN 10% ETHANOL, GASOLINE ADDITIVES, OR WHITE GAS BECAUSE ENGINE FUEL SYSTEM DAMAGE COULD RESULT.**

**1.** Remove fuel tank cap.

**2.** Fill tank to about one inch below top of tank, not filler neck with unleaded gasoline. Then install cap.

**DANGER**

**Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running, hot, or when machine is in an enclosed area. Vapors may build up and be ignited by a spark or flame source many feet away. DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline and fill tank to about 1 inch (25 mm) below the filler neck. Store gasoline in a clean, safety–approved container and keep the cap in place on the container. Keep gasoline in a cool, well–ventilated place, never in an enclosed area such as a hot storage shed. To assure volatility, do not buy more than a 6 month supply. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gas, keep it out of their reach because the fumes are explosive and dangerous to inhale.**

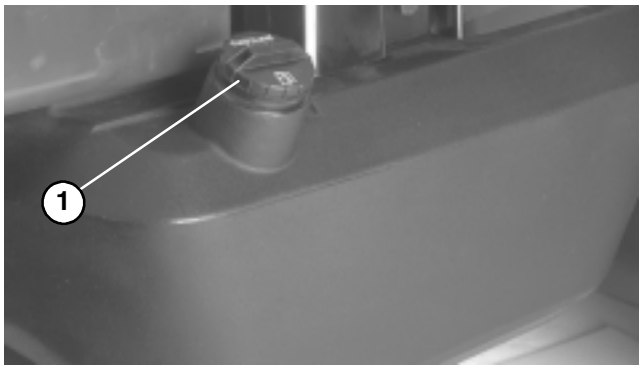



**Figure 6**
1. Fuel Tank Cap

## CHECK HYDRAULIC FLUID (Fig. 7)

The hydraulic system is designed to operate on anti–wear hydraulic fluid. The machines reservoir is filled at the factory with approximately 12 quarts of Mobil 424 hydraulic fluid. **Check level of hydraulic fluid before engine is first started and daily thereafter.**

**1.** Position machine on a level surface, raise the implement, and stop the engine.

**2.** Unscrew dipstick cap (Fig. 7) 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 oil. If level is not up to FULL mark on dipstick (Fig. 7), add enough oil to raise level to mark. DO NOT OVERFILL.

**3.** Screw dipstick filler cap finger–tight onto filler neck.

**4.** Lower the implement.

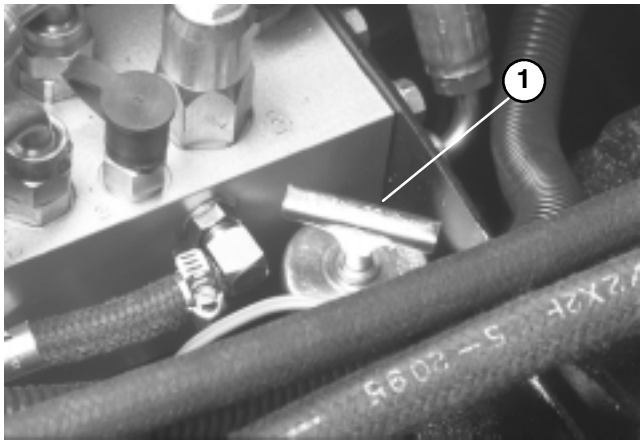



**Figure 7**
1. Dipstick cap

**The following fluids are recommended for use:**

**ISO type 46/68 anti–wear hydraulic fluid**

| | |
|---|---|
| Mobil | Mobil Fluid 424 |
| Amoco | Amoco 1000 |
| International Harvester | Hy–Tran |
| Texaco | TDH |
| Shell | Donax TD |
| Union Oil | Hydraulic/Tractor Fluid |
| Chevron | Tractor Hydraulic Fluid |
| BP Oil | BP HYD TF |
| Boron Oil | Eldoran UTH |
| Exxon | Torque Fluid |
| Conoco | Power–Tran 3 |
| Kendall | Hyken 052 |
| Phillips | HG Fluid |

**Note:** The fluids within this group are interchangeable.

**IMPORTANT: Do Not Use Biodegradable Hydraulic Fluid.**

**IMPORTANT: Use only types of hydraulic fluids specified. Other fluids could cause system damage.**

**Note:** A red dye additive for detecting leaks in the hydraulic system is available in 2/3 oz. bottles. One bottle is sufficient for 4–6 gal. of hydraulic fluid. Order Part No. 44–2500 from your Authorized Toro Distributor

## CHECK TIRE PRESSURE (Fig. 8)

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 15 psi.

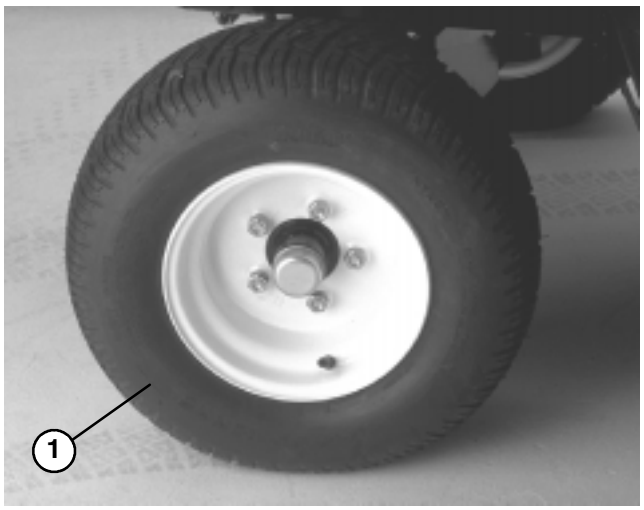



**Figure 8**
1. Rear Tire

**IMPORTANT:** Maintain even pressure in all tires to assure a good quality–of–cut and proper machine performance. DO NOT UNDER INFLATE.

## CHECK TORQUE OF WHEEL NUTS

**WARNING**

**Torque wheel nuts to 80 ft–lb after 1-4 hours of operation and again after 10 hours of operation and every 200 hours thereafter. Failure to maintain proper torque could result in failure or loss of wheel and may result in personal injury.**

# KNOW YOUR CONTROLS

**Traction Pedal** (Fig. 9) – Controls forward and reverse operation. Depress top of pedal to move forward and bottom to move backward. Ground speed depends on how far pedal is depressed. For no load, maximum ground speed, fully depress pedal while throttle is in FAST.
To stop, reduce foot pressure on traction pedal and allow it to return to center position.

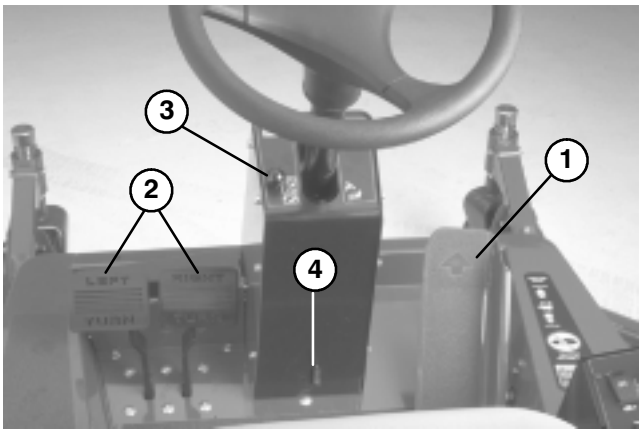



**Figure 9**
1. Traction Pedal
2. Brake Pedals
3. Parking Brake Latch
4. Tilt Steering Control

**Brake Pedals** (Fig. 9) – Two foot pedals operate individual wheel brakes for turning assistance, parking and to aid in obtaining better sidehill traction. Locking strap connects the pedals for parking brake operation.

**Parking Brake Latch** (Fig. 9) – A knob on the left side of console actuates parking brake lock. To engage parking brake, connect pedals with locking strap, push down on both pedals and pull parking brake latch out. To release parking brake, depress both pedals until parking brake latch retracts.

**Tilt Steering Control** (Fig. 9) – Lever on rear of steering tower. Push lever downward to adjust steering wheel to desired fore or aft operating position and release lever to lock adjustment.

**Lift Lever** (Fig. 10) – The lever raises and lowers the cutting unit.

**PTO Switch** (Fig. 10) – The PTO switch has three positions: ON (engage), Neutral and OFF (disengage). Slowly lift and push PTO switch forward to ON position to start the implement or cutting unit blades. Slowly, pull switch backward to OFF position to stop implement operation. The only time PTO switch should be in the ON position is when implement or cutting unit is down in operating position.

**Ignition Switch** (Fig. 10) – Three positions: OFF, ON and START.

**Charge Indicator** (Fig. 10) – Illuminates when system charging circuit malfunctions.

**Choke** (Fig. 10) – To start a cold engine pull out choke completely. After engine starts regulate choke to keep engine running smoothly. As soon as possible, push choke in completely.

**Engine Coolant Temperature Warning Light** (Fig. 10) – The light illuminates and engine shuts down when coolant reaches a dangerously high temperature.

**Engine Oil Pressure Warning Light** (Fig. 10) – Indicates dangerously low engine oil pressure.

**Temperature Gauge** (Fig. 10)—The temperature gauge registers the temperature of the coolant in the cooling system.

**Temperature Reset Button** (Fig. 10) — Press and hold reset button to start engine after high temperature shut down.

**Hour Meter** (Fig. 10) – Shows total hours that machine has been operated.

**Fuel Gauge** (Fig. 10) – Indicates level of fuel in tank.

**Throttle Control** (Fig. 10) – Move control forward to increase engine speed, rearward to decrease speed.

**Cruise Control** (Optional) (Fig. 10) – Controls speed of machine.

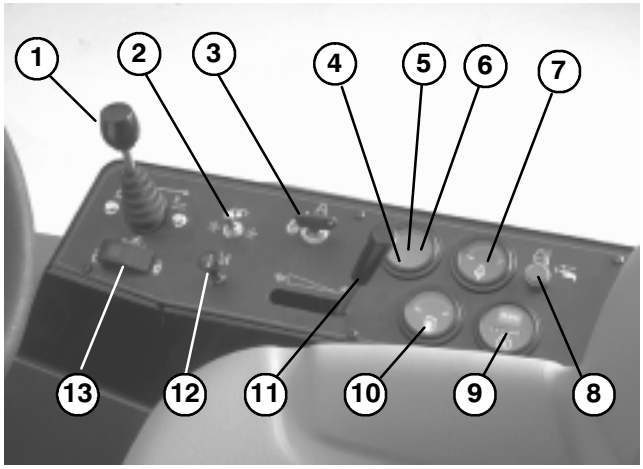



**Figure 10**
1. Lift Lever
2. PTO Switch
3. Ignition Switch
4. Charge Indicator
5. Engine Coolant Temperature Warning Light
6. Engine Oil Pressure Warning Light
7. Temperature Gauge
8. Temperature Reset Button
9. Hour Meter
10. Fuel Gauge
11. Throttle Control
12. Choke
13. Cruise Control (Optional)

# OPERATING INSTRUCTIONS

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## STARTING/STOPPING ENGINE

**1.** Ensure parking brake is set. Remove foot from traction pedal and insure it is in neutral.

**2.** Move throttle control to 1/4–1/3 open position.

**3.** To start a cold engine, pull choke control out.

**4.** Insert key into ignition switch and rotate it clockwise to START position. Hold key in START position for a few seconds to energize ignition system. Release key immediately when engine starts and regulate choke to keep engine running smoothly.

**IMPORTANT: To prevent overheating the starter motor, do not engage starter longer than 15 seconds. After 15 seconds of continuous cranking, wait 10 to 15 seconds before engaging starter motor again.**

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

**CAUTION**

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

**6.** To stop engine, move throttle control backward to 1/4–1/3 position, move PTO lever to OFF position and rotate ignition key to OFF. Remove key from switch to prevent accidental starting.

## CHECKING INTERLOCK SWITCHES

The machine has interlock switches in the electrical system. These switches are designed to stop the engine when operator gets off the seat when 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.

**CAUTION**

**Do not disconnect the interlock switches. Check operation of switches daily to assure interlock system is operating correctly. If a switch is malfunctioning, replace it before operating the machine. To ensure maximum safety, replace all switches after every two years or 1000 hours, whichever comes first.**

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. 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.

**WARNING**

**Do not operate machine without implement unless the PTO driveshaft is also removed.**

**3.** Sit on seat and start the engine. Raise off the seat and move the PTO lever to ON. The PTO should not engage. If the PTO engages, there is a malfunction in the interlock system that should be corrected before beginning operation.

## PUSHING OR TOWING TRACTION UNIT

**(Fig. 11)**

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

**IMPORTANT: Do no push or tow the traction unit faster than 10 mph. If traction unit must be moved a considerable distance, transport it on a truck or trailer.**

**1.** Locate towing lever on right side of axle assembly.

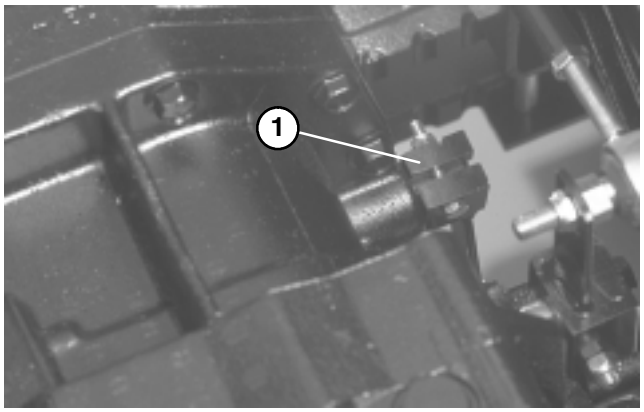



**Figure 11**
1. Towing Lever

**2.** Remove cotter pin and clevis pin securing lever to plate on side of axle.

**3.** Pivot lever rearward until hole is aligned with rear hole in plate. Secure lever to rear hole with cotter pin and clevis pin previously removed.

**4.** After completion of towing operation, pivot lever back to original position and re–secure.

## OPERATING CHARACTERISTICS

Practice driving the GROUNDSMASTER 3000 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 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 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. Make sure seat latch is properly secured. Drive slowly and avoid sharp turns on slopes to prevent roll overs. The cutting deck must be lowered when going downhill for steering control.

**WARNING**

**This product is designed to drive objects into the ground where they lose energy quickly in grassy areas. However, when a person or pet appears suddenly in or near mowing area, STOP MOWING.**
**Careless operation, combined with terrain angle, ricochets, or improperly positioned safety guards can lead to thrown object injuries. Do not resume mowing until 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.

Before transporting machine, raise cutting deck and secure with transport latch.

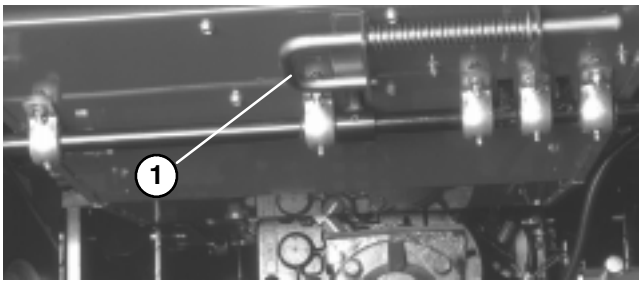



**Figure 12**
1. Transport Latch

**CAUTION:** This product may exceed noise levels of 85 dB(A) at the operator position. Ear protectors are recommended, for prolonged exposure, to reduce the potential of permanent hearing damage.

# LUBRICATION

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## GREASING BEARINGS AND BUSHINGS

**(Fig. 13 – 16)**

The machine has grease fittings that must be lubricated regularly with No. 2 General Purpose Lithium Base Grease. If machine is operated under normal conditions, lubricate all bearings and bushings after every 50 hours of operation or immediately after every washing.

The grease fitting locations and quantities are:

Steering cylinder ball joint (2), Rear axle tie rod (2), Rear axle pivot (1) Rear Spindle Shafts (2) (Fig. 13); Intermediate Drive Shaft (3) (Fig. 14); Pedal Pivots (5), Traction pedal (In square tube under floor plate) (1) (Fig. 15) and Lift arm pivot (2) (Fig. 16).

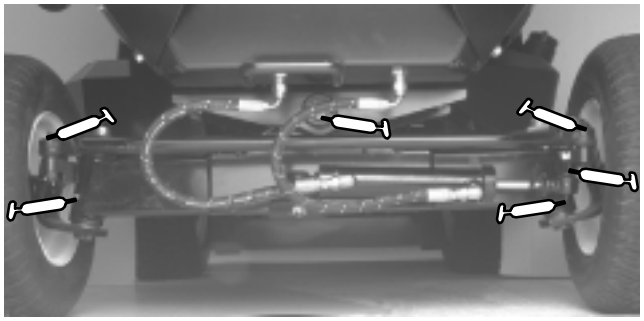


**Figure 13**

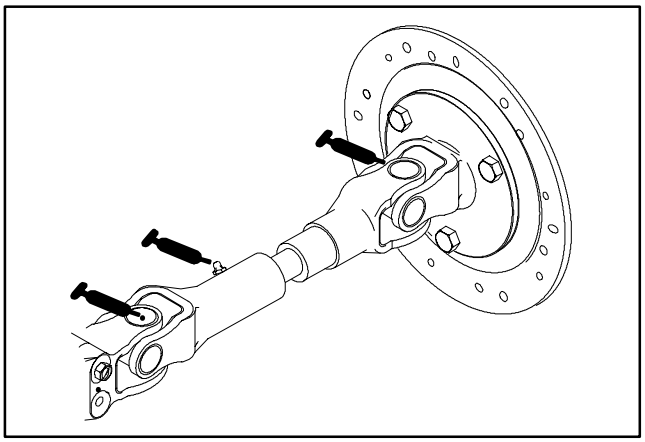


**Figure 14**

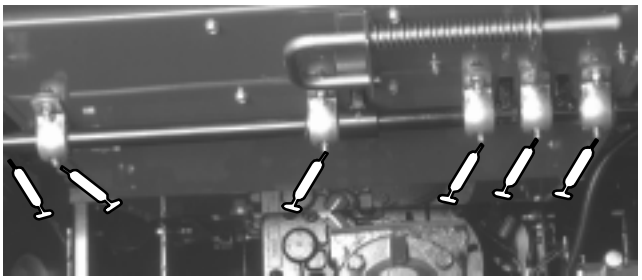


**Figure 15**

**Figure 16**

# DAILY MAINTENANCE CHECKLIST

Daily Maintenance: (duplicate this page for routine use)
Check proper section of Operator's Manual for fluid specifications

| **Maintenance Check Item** ➧ | **Daily Maintenance Check For Week Of** _____ | | | | | | |
|---|---|---|---|---|---|---|---|
| | MON | TUES | WED | THURS | FRI | SAT | SUN |
| ✓ Safety Interlock Operation | | | | | | | |
| ✓ Brake Operation | | | | | | | |
| ✓ Engine Oil & Fuel Level | | | | | | | |
| ✓ Cooling System Fluid Level | | | | | | | |
| ✓ Radiator & Screen for Debris | | | | | | | |
| ✓ Unusual Engine Noises | | | | | | | |
| ✓ Unusual Operating Noises | | | | | | | |
| ✓ Hydraulic System Oil Level | | | | | | | |
| ✓ Hydraulic Hoses for Damage | | | | | | | |
| ✓ Fluid Leaks | | | | | | | |
| ✓ Tire Pressure | | | | | | | |
| ✓ Instrument Operation | | | | | | | |
| Lubricate All Grease Fittings[2] | | | | | | | |
| Touch-up Damaged Paint | | | | | | | |

[1] = Immediately after every washing, regardless of the interval listed.

**Notation for areas of concern:** Inspection performed by_____

| Item | Date | Information |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

# MAINTENANCE SCHEDULE

## Minimum Recommended Maintenance Intervals

| Maintenance Procedure | Maintenance Interval & Service |
|---|---|
| Lubricate All Grease Fittings<br>Inspect Air Filter<br>Check Battery Level/Cable Connections | Every 50hrs |
| ‡ Change Engine Oil and Filter<br>Inspect Cooling System Hoses<br>† Check Fan, Governor and Alternator Belt Tension | Every 100hrs |
| † Torque Wheel Lug Nuts<br>Check Governor Oil Level<br>Service Spark Arrester Muffler | Every 200hrs |
| Service Air Filter<br>Change Fuel Filter<br>Inspect Fuel Lines and Connections<br>Change Spark Plugs<br>‡ Check Engine RPM (idle and full throttle)<br>Torque Head and Adjust Valves | Every 400hrs |
| ☐ Change Hydraulic Oil<br>☐ Change Hydraulic Oil Filter | Every 600hrs |
| Drain and Clean Fuel Tank<br>Pack Rear Axle Bearings<br>Check Rear Wheel Toe–In | Every 800hrs |

† Initial break in at 10 hours

‡ Initial break in at 50 hours

☐ Initial break in at 200 hours

Replace Moving Hoses
Replace Safety Switches
Cooling System Flush/Replace Fluid

**Annual Recommendations:**
Items listed are recommended every 1500 hours or 2 years, whichever occurs first.

# AIR CLEANER MAINTENANCE

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## GENERAL AIR CLEANER MAINTENANCE

**1.** Inspect air cleaner after every 50 hours of operation. More frequent in dusty or dirty conditions.

**2.** Check air cleaner body for damage which could possibly cause an air leak. Replace a damaged air cleaner body.

**3.** Service the air cleaner filter every 400 hours (more frequently in extreme dusty or dirty conditions). Do not over service air filter.

**4.** Be sure cover is sealing around air cleaner body.

**CAUTION**

**Never operate machine without complete air cleaner assembly in place and latched properly or a damaged air cleaner Debris entering engine can cause engine failure.**

## SERVICING AIR CLEANER (Fig. 17 & 18)

**1.** Release latches securing air cleaner cover to air cleaner body. Separate cover from body. Clean inside of air cleaner cover.

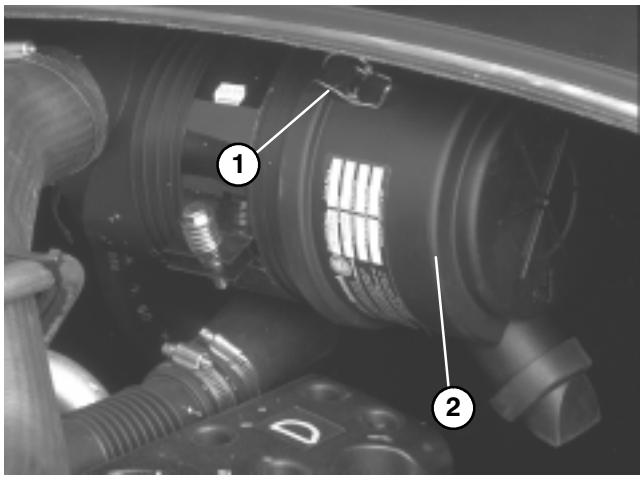



**Figure 17**
1. Air cleaner latches
2. Dust cup

**2.** Gently slide filter (Fig. 18) out of air cleaner body to reduce the amount of dust dislodged. Avoid knocking filter against air cleaner body.

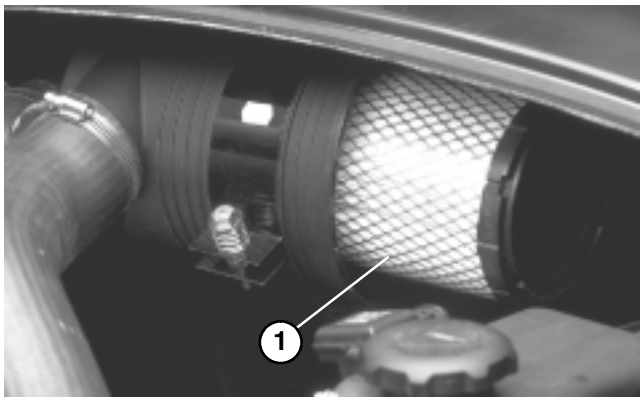



**Figure 18**
1. Air cleaner filter

**3.** Inspect filter and discard if damaged. Do not wash or reuse a damaged filter.

**Washing Method**

A. Prepare a solution of filter cleaner and water and soak filter element about 15 minutes. Refer to directions on filter cleaner carton for complete information.

B. After soaking filter for 15 minutes, rinse it with clear water. Maximum water pressure must not exceed 40 psi to prevent damage to the filter element. Rinse filter from clean side to dirty side.

C. Dry filter element using warm, flowing air (160°F) max), or allow element to air–dry. Do not use a light bulb to dry the filter element because damage could result.

**Compressed Air Method**

A. Blow compressed air from inside to the outside of dry filter element. Do not exceed 100 psi to prevent damage to the element.

B. Keep air hose nozzle at least 2" from filter and move nozzle up and down while rotating the filter element. Inspect for holes and tears by looking through the filter toward a bright light.

**5.** Inspect new filter for shipping damage. Check sealing end of filter. Do not install a damaged filter.

**6.** Insert new filter properly into air cleaner body. Make sure filter is sealed properly by applying pressure to outer rim of filter when installing. Do not press on flexible center of filter.

**7.** Reinstall cover and secure latches. Make sure cover is positioned with TOP side up.

# ENGINE MAINTENANCE

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## ENGINE OIL AND FILTER (Fig. 19–20)

Change oil and filter initially after the first 50 hours of operation, thereafter change oil and filter every 100 hours.

**1.** Remove drain plug (Fig. 19) and let oil flow into drain pan. When oil stops, install drain plug.

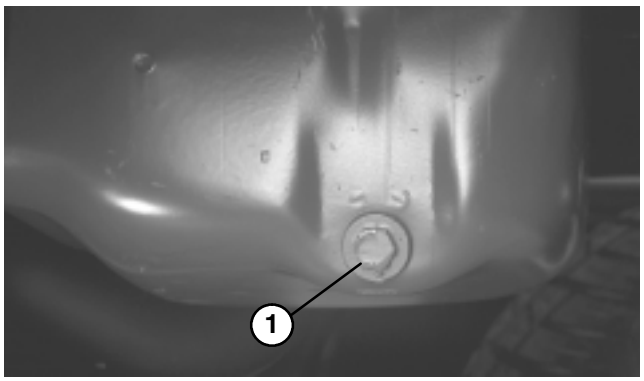



**Figure 19**
1. Drain Plug

**2.** Remove oil filter (Fig. 20). Apply a light coat of clean oil to the new filter seal before screwing it on. DO NOT OVER–TIGHTEN.

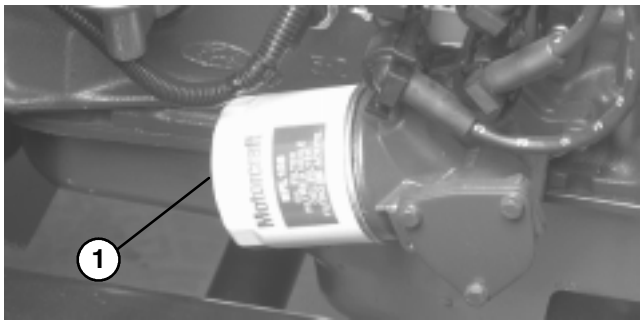



**Figure 20**
1. Oil Filter

**3.** Add oil to crankcase. Capacity is 3.5 quarts with filter. Refer to Check Engine Oil.

## FUEL SYSTEM

### Fuel Tank

Drain and clean fuel tank every 800 hours of operation or yearly, 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 fuel to flush out the tank.

### Fuel Lines and Connections

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

**DANGER**

**Because gasoline is flammable, caution must be used when storing or handling it. Do not fill fuel tank while engine is running, hot, or when machine is in an enclosed area. Vapors may build up and be ignited by a spark or flame source many feet away. DO NOT SMOKE while filling the fuel tank to prevent the possibility of an explosion. Always fill fuel tank outside and wipe up any spilled gasoline before starting engine. Use a funnel or spout to prevent spilling gasoline and fill tank to about 1 inch (25 mm) below the filler neck. Store gasoline in a clean, safety–approved container and keep the cap in place on the container. Keep gasoline in a cool, well–ventilated place, never in an enclosed area such as a hot storage shed. To assure volatility, do not buy more than a 6 month supply. Gasoline is a fuel for internal combustion engines; therefore, do not use it for any other purpose. Since many children like the smell of gas, keep it out of their reach because the fumes are explosive and dangerous to inhale.**

### Replacing Fuel Filter (Fig. 21)

Replace the fuel filter after every 400 hours of operation or yearly, whichever comes first.

**1.** Disconnect elbow fitting from rear of fuel filter.

**2.** Disconnect front of filter from elbow fitting.

**3.** Install new filter and connect fittings. Start engine and check for leaks.

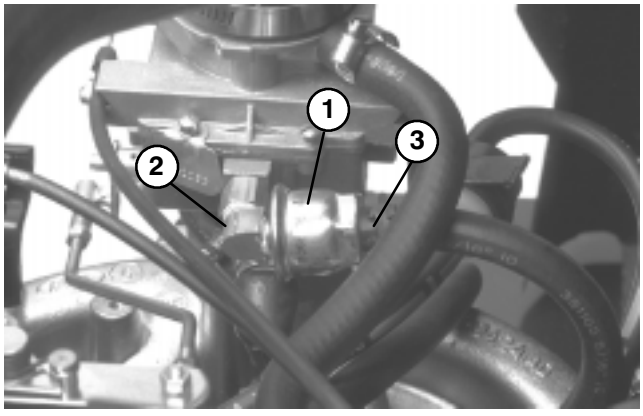



**Figure 21**
1. Fuel filter
2. Rear elbow
3. Front elbow

# ENGINE MAINTENANCE

## ENGINE COOLING SYSTEM (Fig. 22–23)

**1. Removing Debris** – Remove debris from rear screen, oil cooler and radiator daily, clean more frequently in dirty conditions.

**IMPORTANT: Never spray water onto a hot engine as damage to engine may occur.**

A. Turn engine off and clean hood screen thoroughly.

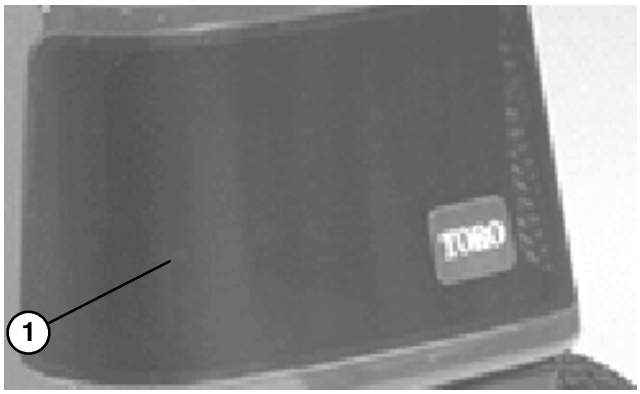



**Figure 22**
1. Rear Screen

B. Release hood latch and raise hood. Clean engine area thoroughly of all debris.

C. Clean both sides of oil cooler and radiator area thoroughly with compressed air. **Do not use water.**

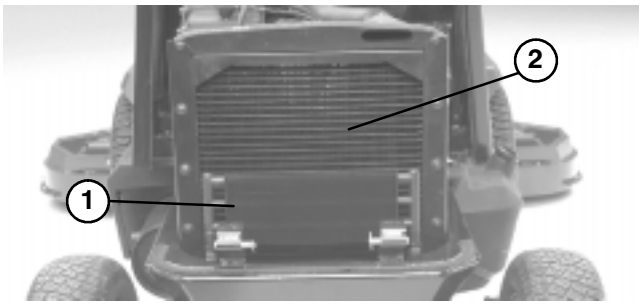



**Figure 23**
1. Oil Cooler
2. Radiator

D. Close hood and secure latch.

**Note:** Do not use water to clean engine or electrical components, as damage may occur.

**2. Maintaining Cooling System** – Capacity of the system is 9 quarts. Always protect cooling system with a 50/50 solution of water and permanent ethylene glycol anti–freeze. DO NOT USE WATER ONLY IN COOLING SYSTEM.

A. After every 100 operating hours, inspect and tighten hose connections. Replace any deteriorated hoses.

B. After every 2 years, drain and flush the cooling system. Add anti–freeze (refer to Check Cooling System).

## ENGINE BELTS

Check condition and tension of belts after every 100 hours of operation. Replace belts as required.

### Alternator Belt

The alternator belt should be tensioned so when it is pressed firmly with thumb, midway between pulleys, it deflects .25 inch.

**1.** To adjust belt tension, loosen bolt securing brace to engine, bolt securing alternator to brace and alternator mounting bolt.

**2.** Rotate alternator away from engine.

**3.** Hold alternator in position after proper belt tension setting is achieved and tighten alternator and brace bolts to secure adjustment.

### Cooling & Governor Fan Belts

The cooling and governor fan belts belt should be tensioned so when they are pressed firmly with thumb, midway between pulleys, they deflect .38 inch.

**1.** To adjust belt tension, loosen upper and lower nuts securing idler arm to front engine mount.

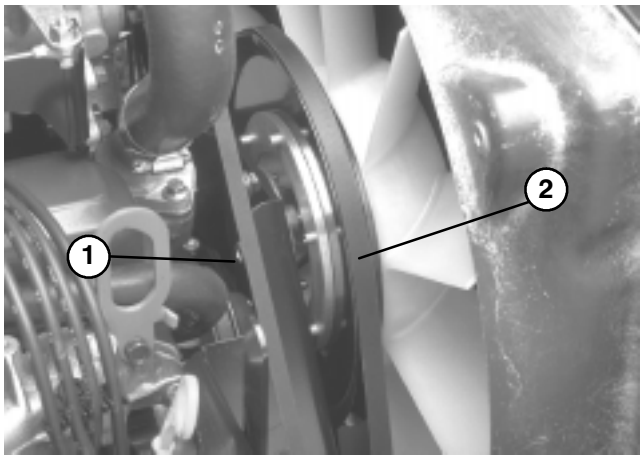



**Figure 24**
1. Cooling Fan Belt
2. Governor Fan Belt

**2.** Pull out on idler arm until desired belt tension is achieved.

**3.** Tighten mounting nuts to secure adjustment.

## REPLACING SPARK PLUGS

Change spark plugs after every 400 operating hours to assure proper engine performance and reduce exhaust emission level.

Correct spark plug to use is a Motorcraft – AGSF22C or AGRF22 or equivalent.

Recommended air gap is .040" (1.016 mm).

**Note:** The spark plug usually lasts a long time; however, the plug should be removed and checked whenever the engine malfunctions.

**1.** Clean area around spark plugs so foreign matter cannot fall into cylinder when spark plug is removed.

**2**. Pull spark plug wires off spark plugs and remove plugs from cylinder head.

**3.** Check condition of side electrode, center electrode, and center electrode insulator to assure there is no damage.

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

**4.** Set air gap between center and side of electrodes at .040" (1.016 mm). Install correctly gapped spark plug and tighten plug to 11–15 ft–lb. If torque wrench is not used, tighten plug firmly.

**5.** Install spark plug wires.

## ADJUSTING GOVERNOR (Fig. 25–26)

**1.** With engine shut off, move throttle control to FAST position and open hood. Check between the throttle arm and the stop on the carburetor base to make sure there is 1/32". If gap is not correct, adjust throttle rod by turning ball joint ends until gap is 1/32". If gap is correct, proceed to step 2.

**WARNING**

**Engine must be running so final adjustment of the governor can be performed. To guard against possible personal injury, engage parking brake and keep hands, feet, face and other parts of the body away from fan or other moving parts.**

**2.** Start engine and move throttle to SLOW position. Allow engine to warm up to normal operating temperature.

**3.** Rotate throttle arm closed until it contacts stop.

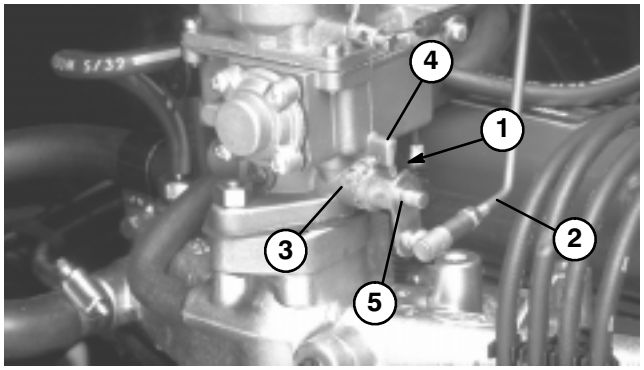



**Figure 25**

1. 1/32" (0.8 mm)
2. Throttle rod
3. Carburetor idle speed screw
4. Stop
5. Throttle arm

**4.** Check idle speed and adjust carburetor idle speed screw if necessary to attain 1350 ± 50 rpm.

**5.** Release throttle arm, loosen jam nut on governor low idle speed screw and adjust it to attain 1500 ± 100 rpm.

**6.** Slowly move throttle to FAST position until engine speed reaches 3150 ± 100 rpm. Shut off engine. Adjust high idle stop screw until it contacts speed control lever.

**IMPORTANT: Do not over speed the engine because the transmission could be damaged.**

**7.** Move throttle rapidly from SLOW to FAST. The engine should not surge. if engine surges, proceed to step 8.

**8.** Check V–belts from engine to governor pulley and assure they are tight. If belts are loose, the engine will surge. If belts are tensioned properly, loosen jam nut that retains the anti–surge screw. Rotate screw clockwise 1/8 turn at a time until surging stops. Should governor continue to surge, check the following:

**A.** Carburetor too rich or too lean.

**B.** Binding in throttle linkage.

**C.** Governor worn internally.

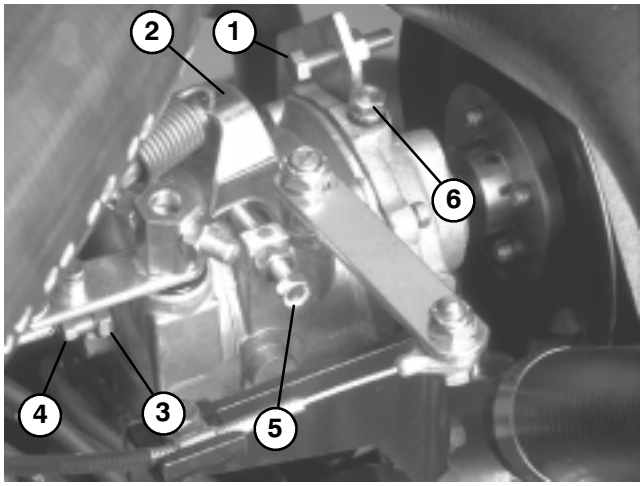



**Figure 26**

1. High idle stop screw
2. Speed control lever
3. Jam nut
4. Anti–surge screw
5. Low idle stop screw

**IMPORTANT: Never rotate anti–surge screw in too far so that speed of engine increases.**

**9.** Bump the throttle lever with your hand so engine speeds up momentarily. If governor is working properly, engine speed should return to normal within one or two surges of the governor. More than two surges of the governor usually indicates than the anti–surge screw must be turned in slightly more than it is. When adjustment is correct, lock jam nut against governor body.

**10.** Check low and high idle speed to be sure there is no change from the initial setting. If high idle speed has increased, anti−surge has been turned into the governor too far and it must be backed out. Then repeat the entire adjustment procedure.

**Note:** If the throttle control on the instrument panel will not stay in the FAST position during operation, remove the panel cover and tighten the nut at base of throttle lever assembly.

## CHECKING OIL LEVEL IN GOVERNOR

The governor is shipped with oil in it, but the level of oil must be checked after every 250 hours of operation.

**1.** Position machine on level surface and shut engine off.

**2.** Disengage hood latch and open the hood.

**3.** Clean area around check plug on governor.

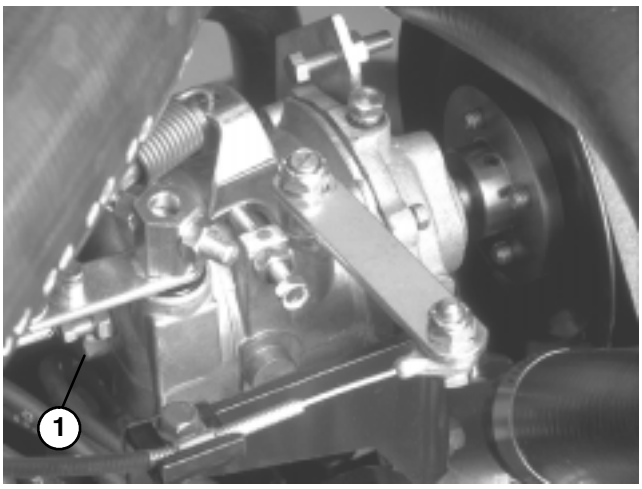



**Figure 27**
1. Oil check plug

**4.** Remove check plug. Oil level must be up to bottom of filler hole. If oil level is low, remove oil fill plug and add same oil that is being used in engine. When oil is at point of overflowing out of check plug hole, install the check plug and fill plug.

## SERVICING SPARK ARRESTOR MUFFLER

Every 200 hours operation, clear the muffler of carbon buildup.

**1.** Remove pipe plug from clean−out port at lower side of muffler.

**CAUTION**

**Be careful while working around muffler as it may be hot and could cause injury.**

**2.** Start engine. Plug the normal muffler exit with block of wood or metal plate so exhaust flow will be forced out of the clean−out port. Continue to block exit until carbon deposits cease coming out port.

**CAUTION**

**Do not stand in line with the clean−out port. Always wear safety glasses.**

**3.** Stop engine and replace pipe plug.

# HYDRAULIC MAINTENANCE

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## CHANGING HYDRAULIC SYSTEM OIL & FILTER (Fig. 29 – 28)

The hydraulic system oil must be changed initially at 200 hours and thereafter every 600 hours of operation or seasonally, whichever comes first. The hydraulic system is designed to operate on anti–wear hydraulic fluid. The machines reservoir is filled at the factory with approximately 12 quarts of Mobil 424 hydraulic fluid. **Check level of hydraulic fluid before engine is first started and daily thereafter.**

**The following fluids are recommended for use:**

**ISO type 46/68 anti–wear hydraulic fluid**

| | |
|---|---|
| Mobil | Mobil Fluid 424 |
| Amoco | Amoco 1000 |
| International Harvester | Hy–Tran |
| Texaco | TDH |
| Shell | Donax TD |
| Union OIl | Hydraulic/Tractor Fluid |
| Chevron | Tractor Hydraulic Fluid |
| BP Oil | BP HYD TF |
| Boron OIl | Eldoran UTH |
| Exxon | Torque Fluid |
| Conoco | Power–Tran 3 |
| Kendall | Hyken 052 |
| Phillips | HG Fluid |

**Note:** The fluids within this group are interchangeable.

**IMPORTANT: Do Not Use Biodegradable Hydraulic Fluid.**

**IMPORTANT: Use only types of hydraulic fluids specified. Other fluids could cause system damage.**

**1.** Start engine, park machine on a level surface, lower implement to the shop floor, set the parking brake, and shut engine off.

**2.** Clean area around dipstick cap (Fig. 28) and remove cap from axle filler tube.

**3.** To ease access to axle housing drain plug, implement may be removed from traction unit.

**4.** Clean area around drain plug and remove plug from axle housing, allowing oil to flow into drain pan (Fig. 29).

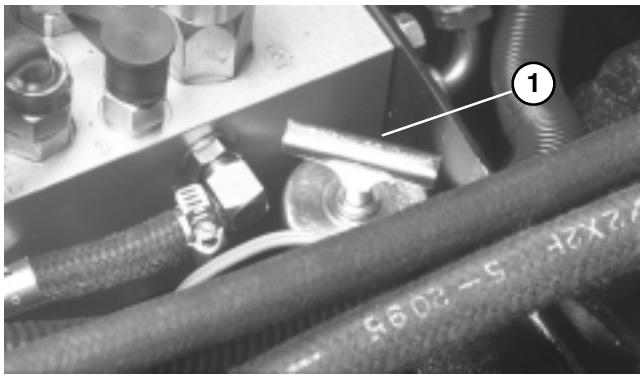



**Figure 28**
1. Dipstick cap

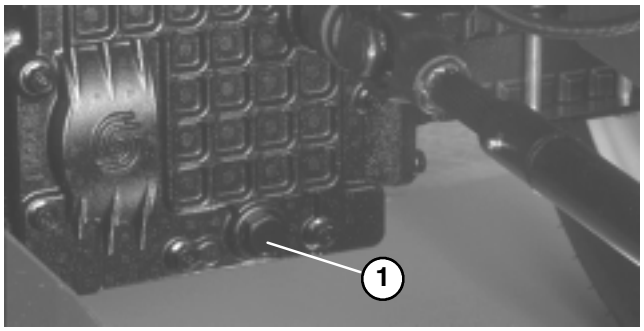



**Figure 29**
1. Drain plug

**5.** Clean area around hydraulic oil filter and remove filter (Fig. 30).

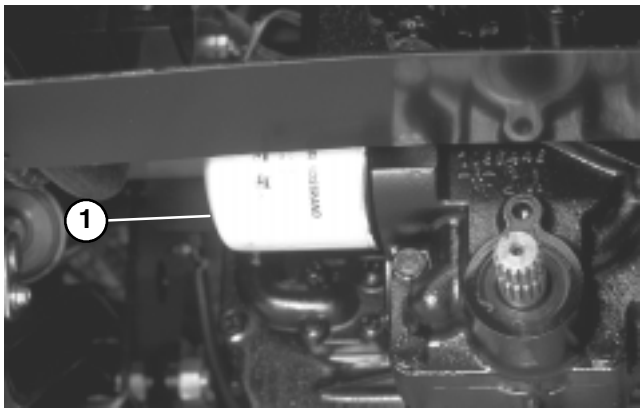



**Figure 30**
1. Hydraulic Filter

**6.** Lubricate new filter seal and install filter.

**7.** Install drain plug in axle housing (Fig. 29).

**8.** Through axle filler tube, fill axle to proper level with Mobil 424 hydraulic fluid.

**9.** Start and run the engine at idle speed for about two minutes, raise and lower implement and turn the steering wheel lock to lock to purge air trapped in the system. Shut the engine off.

**10.** Let machine set for two additional minutes, then remove dipstick and check oil level in axle. If level is low, add oil until level matches groove in dipstick. If level is too high, remove drain plug and drain oil until oil level matches Full mark on dipstick.

# HYDRAULIC MAINTENANCE

## CHECKING HYDRAULIC LINES AND HOSES

Inspect hydraulic lines and hoses daily for leaks, kinked lines, loose mounting supports, wear, loose fittings, weather deterioration and chemical deterioration. Make all necessary repairs before operating.

**WARNING**

**Keep body and hands away from pin hole leaks or nozzles that eject high pressure hydraulic fluid. Use cardboard or paper to find hydraulic leaks. Hydraulic fluid escaping under pressure can penetrate skin and cause injury. Fluid accidentally injected into the skin must be surgically removed within a few hours by a doctor familiar with this form of injury or gangrene may result.**

## HYDRAULIC SYSTEM TEST PORT (Fig. 31)

The test port is used to test pressure in the hydraulic circuits. Contact your local Toro distributor for assistance.

**1.** Test Port #1 (Fig. 31) is used to adjust pressure in counterbalance circuit.

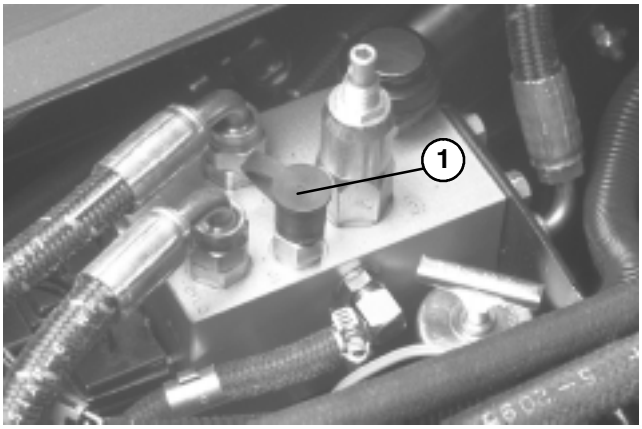



**Figure 31**
1. Test Port

## ADJUSTING TRACTION PEDAL LINKAGE (Fig. 32 & 33)

Traction pedal to contact stop just before it reaches full stroke.

**1.** Park machine on a level surface, shut engine off and lower cutting unit to the floor.

**2.** Check pedal stop adjustment. Distance from top of stand to top of stop must be 1.25". Loosen jam nuts and adjust stop if required.

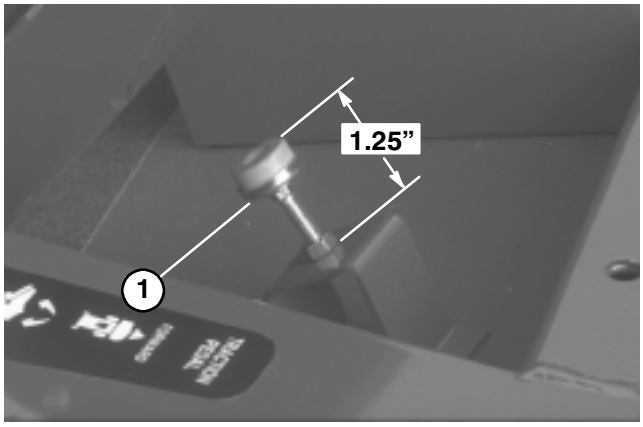



**Figure 32**
1. Traction Pedal Stop

**3.** Loosen jam nut securing hub to rod.

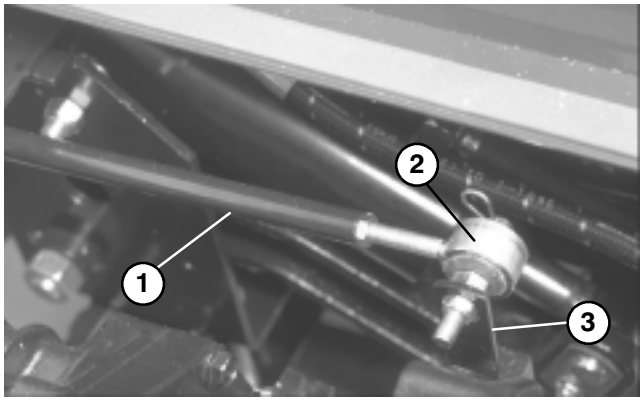


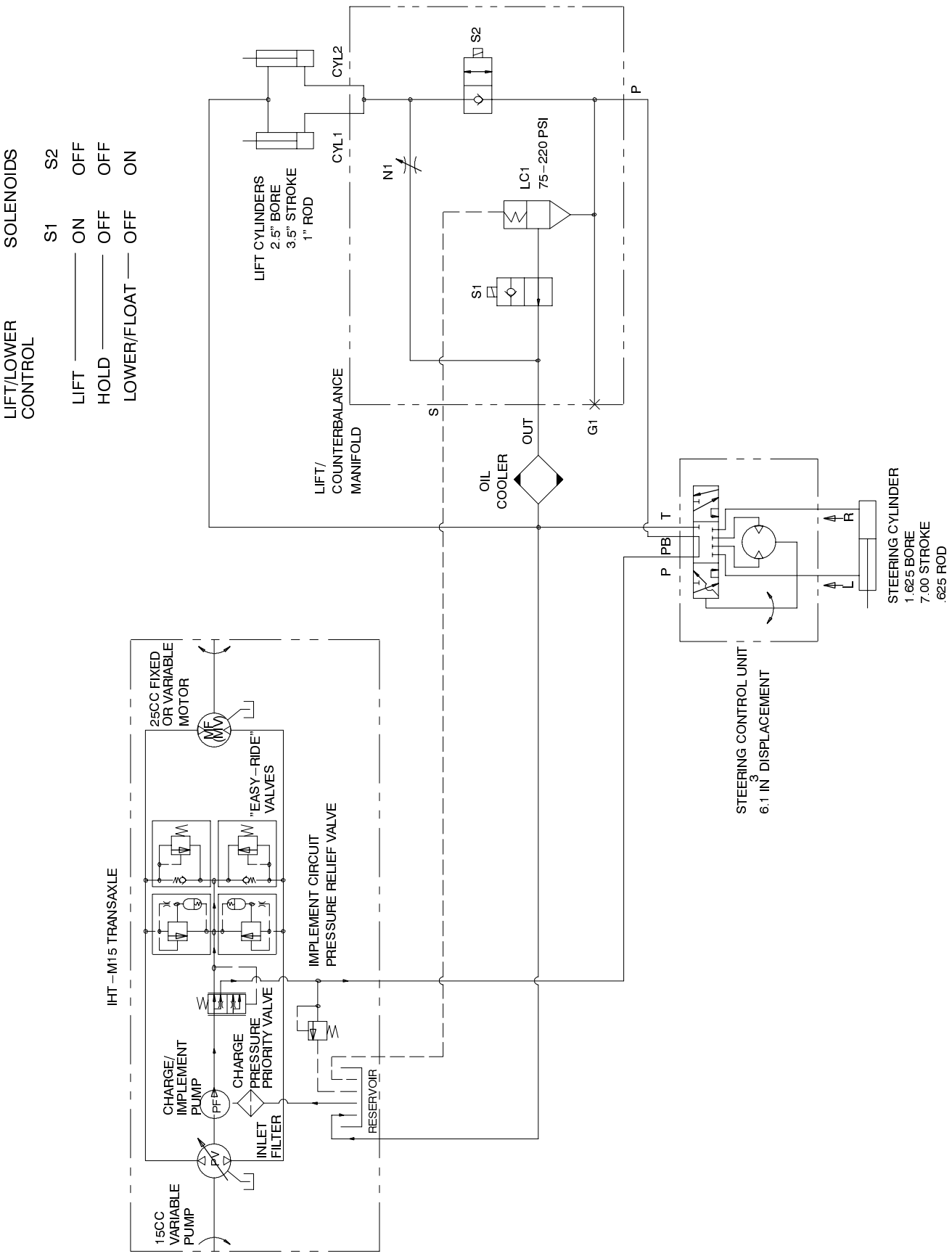

**Figure 33**
1. Traction Rod
2. Traction Rod Hub
3. Lever

**4.** Remove hair pin cotter and washer securing traction rod hub to lever rod on side of axle assembly.

**5.** Adjust hub so traction pedal contacts stop just before it reaches full forward stroke.

**6.** Re–assemble linkage to lever after adjustment.

# HYDRAULIC SCHEMATIC



# BRAKE MAINTENANCE

## ADJUSTING SERVICE BRAKES (Fig. 34)

If excessive pedal travel is required to engage brake or as brake pads wear, an adjustment to the brake linkage may be required.

**1.** Jack up front of machine and support with jack stands.

**2.** Remove left front tire.

**3.** With brake linkage bellcrank against frame stop, loosen jam nut disconnect clevis from bellcrank and adjust linkage until there is a slight drag on rotor.

**4.** Back off clevis one full turn and reinstall to bellcrank.

**5.** Tighten jam nut.

**6.** Repeat procedure on opposite wheel.

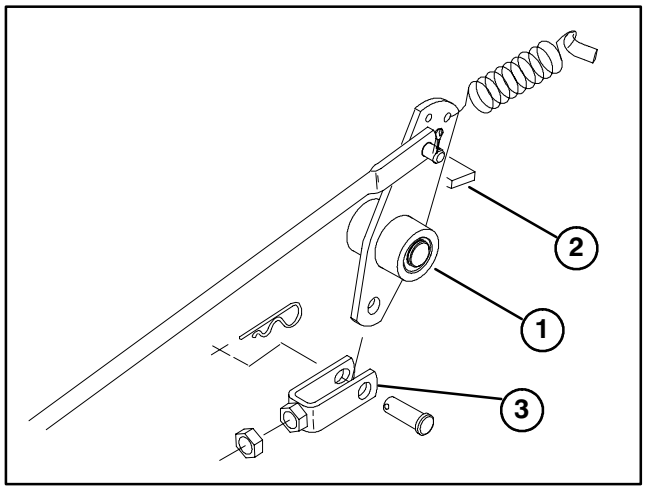



**Figure 34**

1. Bellcrank
2. Frame stop
3. Linkage Clevis

# AXLE MAINTENANCE

**CAUTION**

**Before servicing or making adjustments to the machine, stop engine and remove key from the switch.**

## REAR WHEEL TOE–IN (Fig. 35)

After every 800 operating hours or annually, check rear wheel toe–in.

**1.** Measure center–to–center distance (at axle height) at front and rear of steering tires. Front measurement must be 1/8 in. less than rear measurement.

**2.** To adjust toe–in:

A. Remove cotter pins and nuts securing ball joints to steering arms. Separate ball joint from arm.

B. Loosen clamps at both ends of tie rod.

C. Rotate ball joints to move front of tire inward or outward.

D. Tighten tie rod clamps when adjustment is correct.

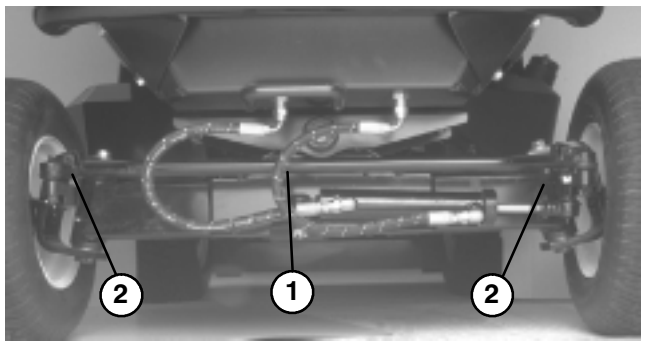



**Figure 35**

1. Tie Rod
2. Tie Rod Clamps

# ELECTRICAL MAINTENANCE

## BATTERY CARE

**(Fig. 36 & 37)**

Check battery condition 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.

**IMPORTANT: Before welding on the machine, disconnect both cables from the battery and the terminal connector from the alternator to prevent damage to the electrical system.**

**1.** Loosen knobs securing battery cover to machine.

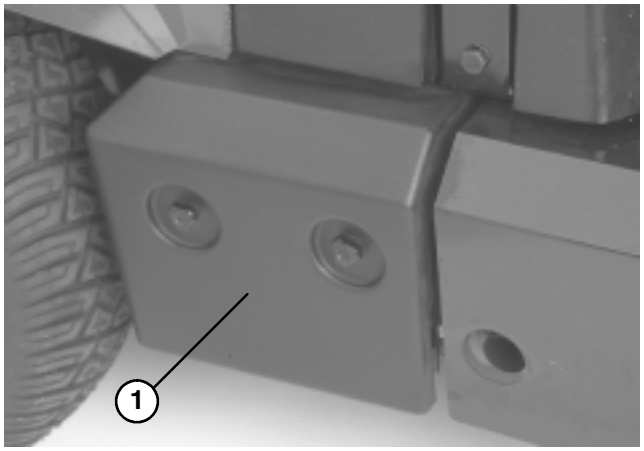



**Figure 36**
1. Battery Cover

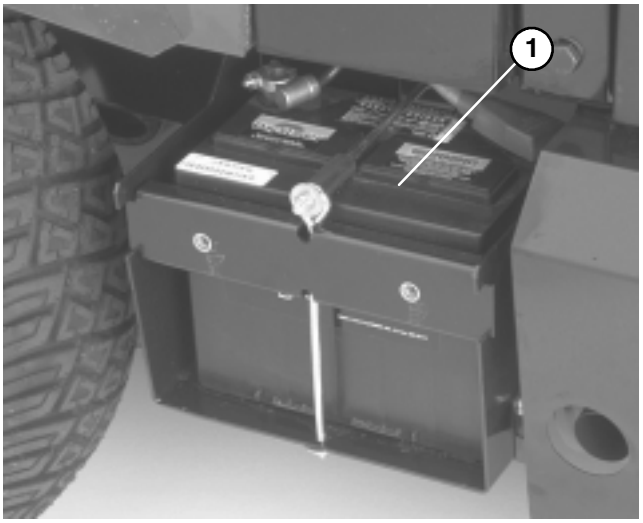



**Figure 37**
1. Battery

**CAUTION**

**Wear safety goggles and rubber gloves when working with electrolyte. Charge the battery in a well ventilated so gases produced while charging can dissipate. Since the gases are explosive, keep open flame and electrical spark away from the battery; do not smoke. Nausea may result if the gases are inhaled. Unplug charger from electrical outlet before connecting to, or disconnecting charger leads from battery posts.**

## FUSES (Fig. 38)

There are 5 fuses in the machines electrical system. Four are located in compartment rear of control panel and one (80 amp) fuse is located by alternator.

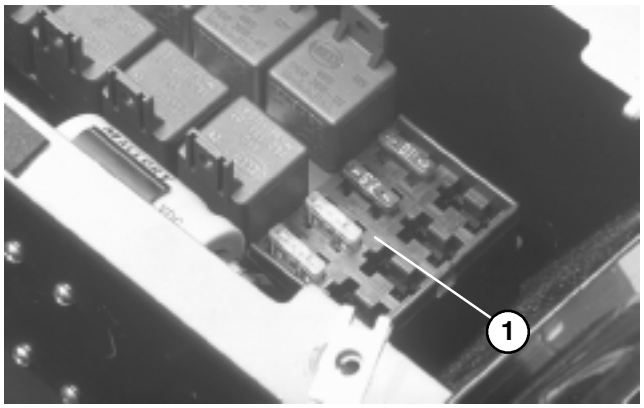
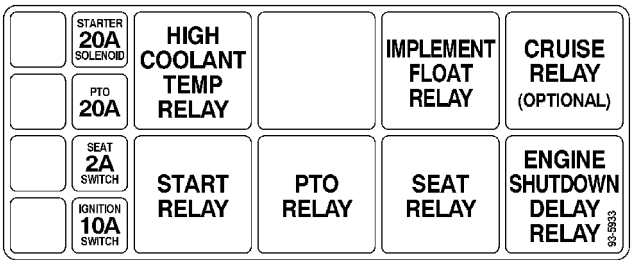
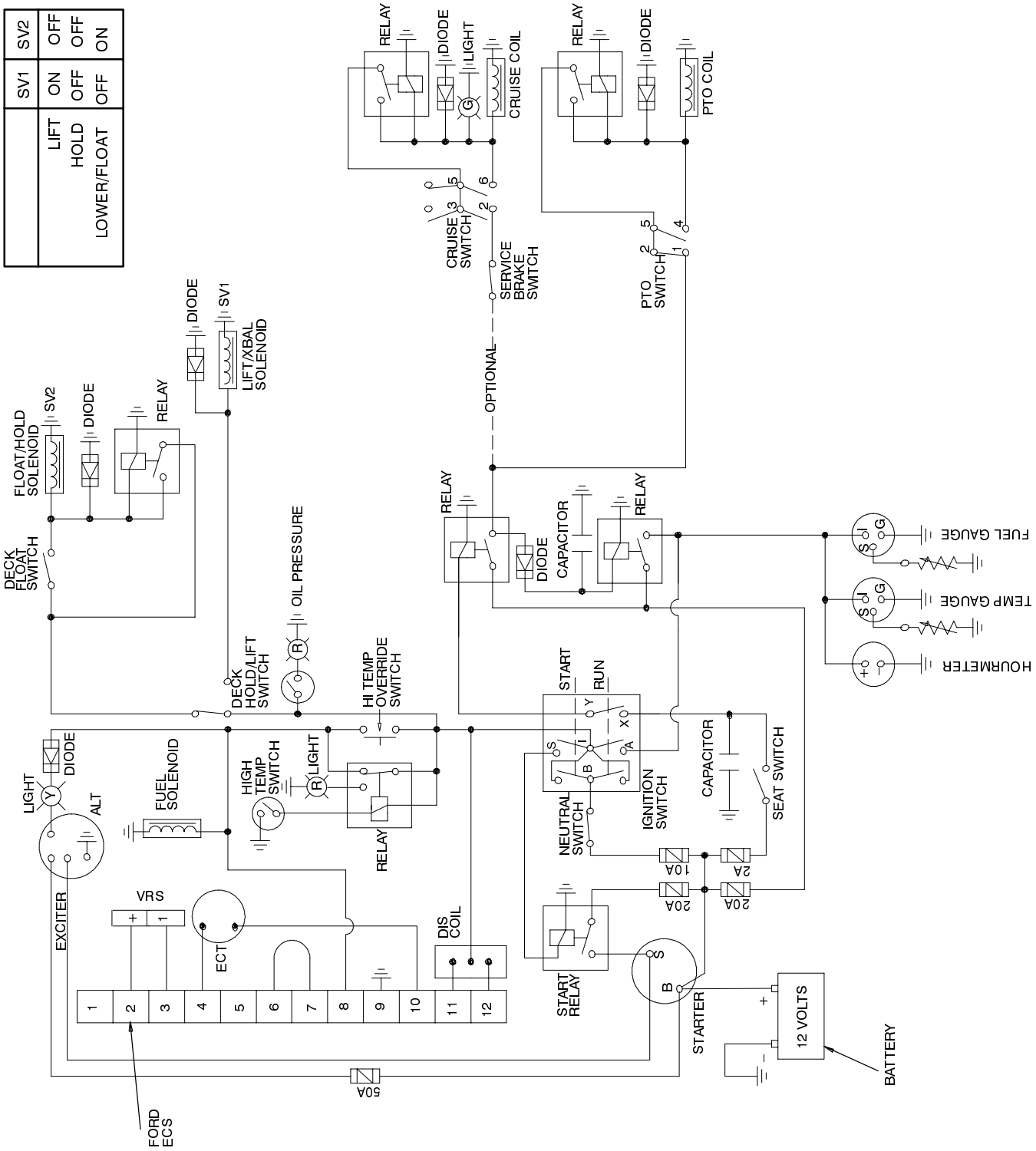



**Figure 38**
1. Fuses



# ELECTRICAL SCHEMATIC




T-2263A

# PREPARATION FOR SEASONAL STORAGE

**Traction Unit**

**1.** Thoroughly clean the traction unit, cutting units and the engine.

**2.** Check the tire pressure. Inflate all tires to 15–20 psi.

**3.** Check all fasteners for looseness; tighten as necessary.

**4.** Grease or oil all grease fittings and pivot points. Wipe up any excess lubricant.

**5.** Lightly sand and use touch–up paint on painted areas that are scratched, chipped, or rusted. Repair any dents in the metal body.

**6.** Service the battery and cables as follows:

a. Remove the battery cables from the battery posts.

b. Clean the battery, posts and cable connections 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.** Refill the engine with recommended motor oil. Refer to changing crankcase oil.

**4.** Start the engine and run at idle speed for approximately two minutes. DO NOT RUN LONGER THAN TWO MINUTES.

**5.** Stop the engine; remove all spark plugs.

**6.** Pour one ounce (28cc) of clean engine oil in each spark plug hole.

**7.** With the coil connector removed, crank the engine with the starter for at least 12 revolutions to distribute the oil in the cylinders.

**8.** Reinstall the spark plugs. Reconnect the coil connector.

**9.** Drain the gasoline from the fuel tank, fuel lines, and the carburetor bowl. Reinstall all lines and secure all connections.

**10.** Thoroughly clean and service the air cleaner assembly.

**11.** Seal the air cleaner inlet, the exhaust outlet and the crankcase breather with weatherproof tape.

**12**. Check the oil filter cap, gas cap and radiator cap to ensure they are all securely in place.

# NOTES

# The Toro Promise

## *A Limited Warranty*

*The Toro Company promises to repair your TORO GROUNDSMASTER® MOWER and its originally purchased cutting unit, if defective in materials or workmanship. The following time periods from the date of purchase apply (special warranty terms, on certain components, may be offered through The Toro Company by the component manufacturers):*

**Model 30300 . . . . . Two Years or 1500 operational hours, whichever comes first**

*The cost of parts, labor and transportation are included.*

---

If you feel your TORO Product is defective and wish to rely on The Toro Promise, the following procedure is recommended:

1. Contact your Authorized TORO Distributor or Commercial Dealer (the Yellow Pages of your telephone directory is a good reference source).

2. The TORO Distributor or Commercial Dealer will advise you on the arrangements that can be made to inspect and repair your product.

3. The TORO Distributor or Commercial Dealer will inspect the product and advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without an extra charge to you.

If for any reason you are dissatisfied with the distributor's analysis of the defect or the service performed, you may contact us.

Write:

TORO Commercial Products Service Department
8111 Lyndale Avenue South
Minneapolis, MN 55420–1196

The above remedy of product defects through repair by an Authorized TORO Distributor or Commercial Dealer is the purchaser's sole remedy for any defect.

THERE IS NO OTHER EXPRESS WARRANTY. ALL IMPLIED WARRANTIES OF MERCHANTIBILITY AND FITNESS FOR USE ARE LIMITED TO THE DURATION OF THE EXPRESS WARRANTY.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

This Warranty applies only to parts or components which are defective and does not cover repairs necessary due to normal wear, misuse, accidents, or lack of proper maintenance. Regular, routine maintenance of the unit to keep it in proper operating condition is the responsibility of the owner.

All warranty repairs reimbursable under The Toro Promise must be performed by an Authorized Toro Commercial Dealer or Distributor using Toro approved replacement parts.

Repairs or attempted repairs by anyone other than an Authorized TORO Distributor or Commercial Dealer are not reimbursable under the TORO Promise. In addition, these unauthorized repair attempts may result in additional malfunctions, the correction of which is not covered by warranty.

THE TORO COMPANY IS NOT LIABLE FOR INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH THE USE OF THE PRODUCT INCLUDING ANY COST OR EXPENSE OF PROVIDING SUBSTITUTE EQUIPMENT OR SERVICE DURING PERIODS OF MALFUNCTION OR NON–USE.

Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion 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.

**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. If all other remedies fail, you may contact us at The Toro Company.

Compliance with Radio Interference Regulations Certified.