

TORO®

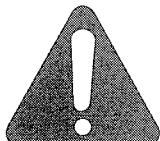
MODEL NO. 30181 – 590001 &amp; UP

OPERATOR'S  
MANUALPROLINE MID-SIZE  
TRACTION UNIT

TORO

THIS UNIT CONFORMS  
TO ANSI B71.4-1990

To assure maximum safety, optimum performance, and to gain knowledge of the product, it is essential that you or any other operator of the machine read and understand the contents of this manual before the engine is ever started. Pay particular attention to the **SAFETY INSTRUCTIONS** highlighted by this symbol —



The safety alert symbol means **CAUTION**, **WARNING** or **DANGER** — personal safety instruction. Failure to comply with the instruction may result in personal injury.



# FOREWORD

The Proline mid size mowers have advanced concepts in engineering, design and safety; and if maintained properly, will give excellent service.

Since this is a high-quality product, Toro is concerned about the future use of the machine and safety of the user. Therefore, read this manual to familiarize yourself with proper set-up, operation and maintenance instructions. The major sections of the manual are:

1. Safety Instructions	3. Before Operating	5. Maintenance
2. Set-up Instructions	4. Operation	

Certain information in this manual is emphasized. DANGER, WARNING and CAUTION identify personal safety related information. IMPORTANT identifies mechanical information demanding special attention. Be sure to read this directive because it deals with the possibility of damaging a part or parts of the machine. NOTE identifies general information worthy of special attention.

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## SAFETY INSTRUCTIONS



The safety alert symbol means CAUTION, WARNING or DANGER — “personal safety instruction”. Read and understand the instruction because it has to do with safety. Failure to comply with the instruction may result in personal injury.

Hazard control and accident prevention are 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.

**WARNING:** Engine exhaust contains carbon monoxide which is an odorless, deadly poison. Carbon monoxide is also known to the State of California to cause birth defects. Do not run engine indoors or in an enclosed area.

### BEFORE OPERATING

1. Read and understand the contents of this Operator's Manual before 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 Number to:

The Toro Company  
8111 Lyndale Avenue South  
Bloomington, Minnesota 55420-1196

2. Never allow children to operate the machine. Do not allow adults to operate machine without proper instruction. Only trained operators who have read this manual should operate this machine.
3. Never operate the machine when under the influence of drugs or alcohol.
4. Before attempting to start engine, shift into neutral and lock parking brake.
5. Remove all debris or other objects that might be picked up and thrown by the cutter blades. Keep all bystanders away from the mowing area.
6. Do not operate unless all shields and safety devices are in place. If a shield, safety device or decal is illegible or damaged, repair or replace it before operation is commenced. Also tighten any loose nuts, bolts and screws to assure machine is in safe operating condition.

# SAFETY INSTRUCTIONS

7. Do not operate machine while wearing sandals, tennis shoes, sneakers or shorts. Also, do not wear loose fitting clothing which 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.
8. Fill fuel tank with gasoline before starting the engine. Avoid spilling gasoline. Since gasoline is flammable, handle it carefully.
  - A. Use an approved gasoline container.
  - B. Do not fill tank while engine is hot or running.
  - C. Do not smoke while handling gasoline.
  - D. Fill fuel tank outdoors and up to about one inch (25 mm) from top of the tank, not the filler neck.
  - E. Wipe up any spilled gasoline.
- WHILE OPERATING**
  9. Start engine when parking brake is set, blade is disengaged, and transmission is in neutral.
  10. Do not run the engine in a confined area without adequate ventilation. Exhaust fumes are hazardous and could possibly be deadly.
  11. Using the machine demands attention, and to prevent loss of control:
    - A. Mow only in daylight or when there is good artificial light.
    - B. Watch for holes or other hidden hazards.
    - C. Do not drive close to a sand trap, ditch, creek or other hazard.
    - D. Reduce speed when making sharp turns and when turning on hillsides.
  12. Do not operate unless grass deflector, Recycler® cover or entire grass collector is installed. The grass deflector must always be installed and in lowest position on the side discharge cutting unit. 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.
  13. Never raise the cutting unit while the blades are rotating.
  14. If the cutting blades strike a solid object or the machine vibrates abnormally, shut the engine off. Remove spark plug wires from spark plugs to prevent possibility of accidental starting. Check cutting unit and traction unit for damage and malfunctioning parts. Repair any damage before restarting the engine and operating the cutting unit. Be sure blades are in good condition and blade bolts are tight.
  15. Cut grass slopes carefully. Do not start, stop, or turn suddenly.
  16. Do not touch engine or muffler while engine is running or soon after it is stopped. These areas could be hot enough to cause a burn.
  17. Before leaving the operator's position - behind handle or leaving mower unattended, shift transmission into NEUTRAL, apply parking brake release control bail and shut OFF engine.

## MAINTENANCE

18. Disconnect spark plug wires from spark plugs to prevent accidental starting of the engine when servicing, adjusting or storing the machine.
19. If traction unit and mower must be tipped to perform maintenance or an adjustment, drain gasoline from fuel tank and oil from crankcase. Remove battery.
20. When driving unit forward, always use upper "Forward" traction drive handle. When backing up, always use lower "Reverse" traction drive handle.
21. To reduce potential fire hazard, keep the engine free of excessive grease, grass, leaves and accumulations of dirt.
22. Be sure machine is in safe operating condition by keeping nuts, bolts and screws tight. Check the blade mounting bolts and nuts frequently to be sure they are tightened to specification.
23. If the engine must be running to perform a maintenance adjustment, keep hands, feet, clothing and other parts of the body away from the cutting unit blades and other moving parts.
24. Do not overspeed the engine by changing governor settings. To be sure of safety and accuracy, have an Authorized TORO ProLine Service Dealer check maximum engine speed with a tachometer.
25. Engine must be shut off before checking oil or adding oil to the crankcase.
26. Allow engine to cool before storing mower in any enclosure such as a garage or storage shed. Make sure the mower fuel tank is empty if machine is to be stored in excess of 30 days. Do not store mower near any open flame or where gasoline fumes may be ignited by a spark. Always store gasoline in a safety-approved, red metal container.
27. Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized Toro ProLine Service Dealer. At the time of manufacture, the machine conformed to the safety standards in effect. To ensure optimum performance and continued safety conformance of the machine, use genuine TORO replacement parts and accessories. Replacement parts and accessories made by other manufacturers may result in non-conformance with safety standards and could void the warranty.

# SAFETY AND INSTRUCTION DECALS

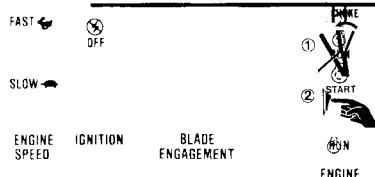
The following decals are installed on the machine. If any become damaged or illegible, replace it. The decal part number is listed below and in your parts catalog. Replacement can be ordered from your Authorized Toro Distributor.

 FORWARD - TRACTION DRIVE  
 PULL TO BRAKE

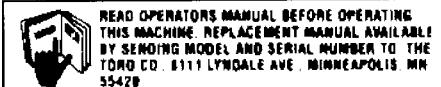
ON UPPER CONTROL BAR  
(Part No. 82-2290)

 REVERSE - TRACTION DRIVE

ON LOWER CONTROL BAR  
(Part No. 82-2280)



**ProLine**



ON CONTROL PANEL  
(Part No. 65-3090)

ON CONTROL PANEL  
(Part No. 82-7740)



**IMPORTANT**  
SHUT OFF FUEL  
BEFORE  
TRANSPORTING

ON REAR FRAME  
(Part No. 74-0490)



**DANGER**  
ROTATING BLADES CAN CUT HANDS/FEET AND THROW OBJECTS.  
• Stop engine before leaving operator position. • Keep bystanders from mowing area. • Keep hands/feet away from blades. • Keep guard in place. • Remove debris from area.

ON CONTROL PANEL  
(Part No. 71-1280)

P  
A  
R  
K  
I  
N  
G  
B  
R  
A  
K  
E

USE REVERSE - TRACTION  
DRIVE BAR ONLY.      DO NOT SHIFT UNDER LOAD  
USE FORWARD - TRACTION DRIVE BAR ONLY

R      N      1      2      3      4

ON CONTROL PLATE  
(Part No. 82-7750)

ON PARKING BRAKE LEVER  
(Part No. 52-2010)

# SPECIFICATIONS

**18 hp Kohler Engine:** four cycle, air cooled, electric start vertical shaft engine has output of 18 hp @ 3600 RPM and 30 ft.-lb. torque @ 2500 RPM. Displacement is 38.1 cubic inches. Crankcase oil capacity is 4 pints w/ filter and fuel tank capacity is 5 gallons. Correct spark plug is Champion RC 12YC or equivalent.

**Frame:** 11 ga. formed steel box with 1 in. dia. axle with 1/4" x 4 U-strap rear frame bolted to frame.

**Wheels and Tires:** 6.5 x 15 pneumatic tires are mounted on welded steel wheels which have greaseable ball bearings. Recommended tire pressure is 15 psi.

**Transmission:** Permanently lubricated and fully enclosed gear box. In line shift pattern with 4 forward speeds, neutral and reverse.

**Traction Drive Belts:** A-section, V-belt with 3 in. dia. take up idler to gear box from engine. 2 rib A-section banded belt to each wheel from gear box output shafts.

## Gear Drive Reduction:

1st gear – 7.0  
2nd gear – 4.5  
3rd gear – 3.5  
4th gear – 3.0  
Rev. – 6.0

## Ground Speed @ 3200 Engine rpm:

1st gear – 2.2 MPH  
2nd gear – 3.5 MPH  
3rd gear – 4.5 MPH  
4th gear – 5.2 MPH  
Rev. – 2.5 MPH

## Optional Accessories:

Sulky attachment, Model #30123

Specifications and design subject to change without notice.

## LOOSE PARTS

**NOTE:** Use this chart as a checklist to assure all parts have been received. Without these parts, total set-up cannot be completed.

Description	Qty.	Use
Upper Handle Flange Capscrew 3/8 – 16 X 1" Lg. Flangenut 3/8-16	1 4 4	Install Upper Handle To Frame.
Cable Clamp Screw Start Lock Nut Lock washer Nut Cable Tie	1 1 1 1 1 4	Install Wire Harness
Shift Lever Shift Lever Mounting Block Plain Washer (Thick Black) Capscrew 1/4 – 28 X 2" Lg.	1 1 1 1	Install Shift Lever To Transmission
Rod Fitting Clevis Pin Washer Hairpin Cotter	2 2 2 2	Install Control Rods
Fuel Tank Control Panel Capscrew 5/16 – 18 X 7/8" Lg. Lockwasher 5/16 Flatwasher 5/16 Hose Clamp	1 1 4 4 4 1	Install Fuel Tank And Control Panel
Keys	2	Use in ignition switch
Battery Battery Holder Capscrew 1/2-13 x 1-1/4" Lg. Locknut 3/8-16 Battery Strap Battery Support Rod Lock Nut 1/4-20 Carriage Bolt 5/16-18 Locknut 5/16-18 Vent Tube	1 2 2 2 1 2 2 2 2 1	Install Battery
Operator's Manual Parts Catalog Registration Card	1 1 1	Read Before Operating Machine Fill Out And Return To Toro

# SET-UP INSTRUCTIONS

## MOUNT FUEL TANK AND CONTROL PANEL

1. Position fuel tank onto rear frame aligning mounting holes as shown in Fig. 1.

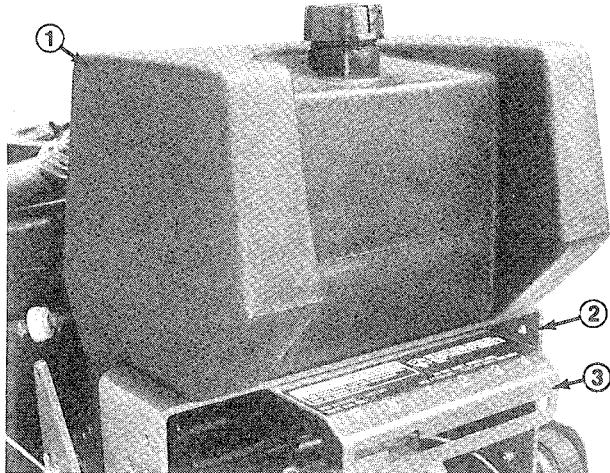


Figure 1

1. Fuel tank
2. Rear frame
3. Control panel

2. Loosely mount control panel to bottom of rear frame and fuel tank with (4) capscrews, lockwashers and washers (Fig. 1 & 2). Do not tighten capscrews at this time.

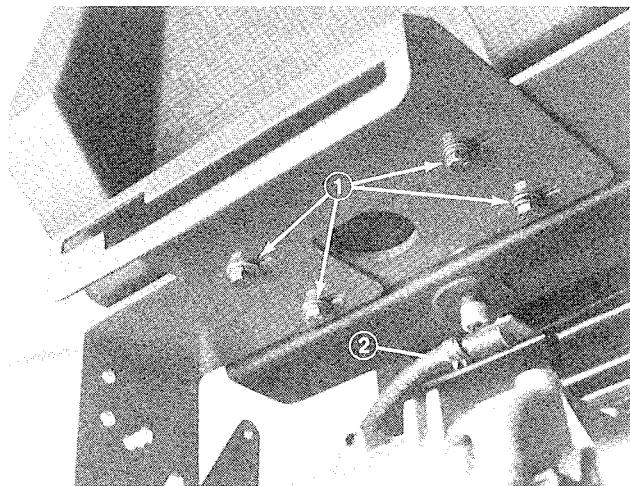


Figure 2

1. Capscrews, lockwashers & washers
2. Fuel line hose clamps

3. Secure fuel line to tank fitting with hose clamp (Fig. 2).

## INSTALL SHIFT LEVER

1. Position shift lever mounting block onto shaft on top of transmission. DO NOT remove rubber washer on transmission.

2. Insert shift lever thru slot in control panel and align mounting hole in lever with mounting block on transmission. Secure lever to transmission with 1/4-28 x 2" lg. cap screw and thick, black, washer. Torque capscrew to 100-125 in - lb (Fig. 3).

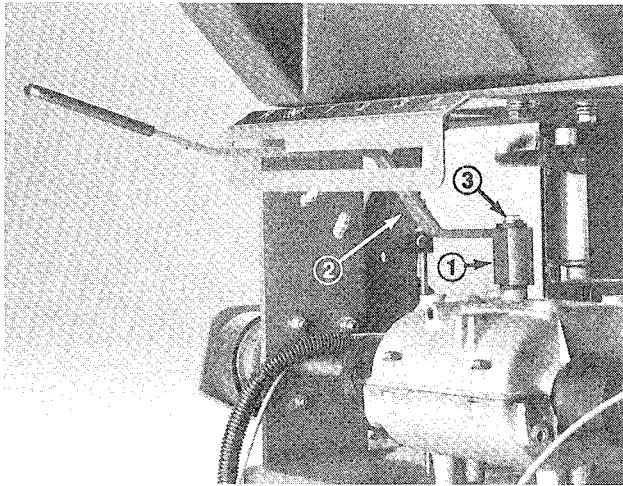


Figure 3

1. Shift lever mounting block
2. Shift lever
3. Capscrew & washer

3. Move shift lever to reverse and 4th gear. Control panel mounting holes are slotted to enable it to be moved from side to side (Fig. 2). Position control panel as needed to achieve full shift range. Tighten mounting screws to a maximum of 90 in.-lb. **DO NOT OVER TIGHTEN.**

## INSTALL UPPER HANDLE

1. Align upper handle mounting holes with desired mounting holes in frame (upper or lower set of holes) and secure each side with (2) 3/8 - 16 x 1" lg. flange capscrews and flange nuts (Fig. 4). Torque capscrews to 23-27 ft.-lbs. Route cables and wire harness inside of frame (Fig. 4).

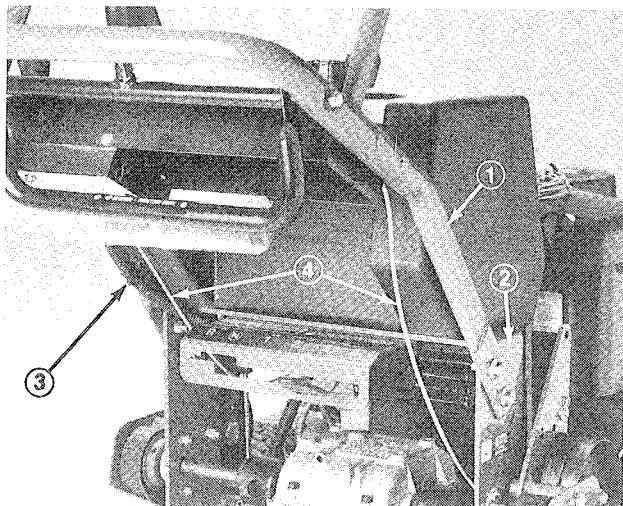


Figure 4

1. Upper handle
2. Frame
3. Wire harness
4. Cables

# SET-UP INSTRUCTIONS

## CONNECT ENGINE SPEED CONTROL CABLE

2. Position remote engine speed control control lever rearward until there is approximately 1/8" between lever and rear end of slot in control base.
3. Route engine speed control cable under fuel tank bracket and around left side of engine.
4. Hook cable "Z" end into last hole in governor arm. Loosen cable clamp screw and install cable under clamp (Fig. 5).
5. Push firmly on engine speed control cable until governor arm contacts stop and tighten cable clamp screw (Fig. 5).

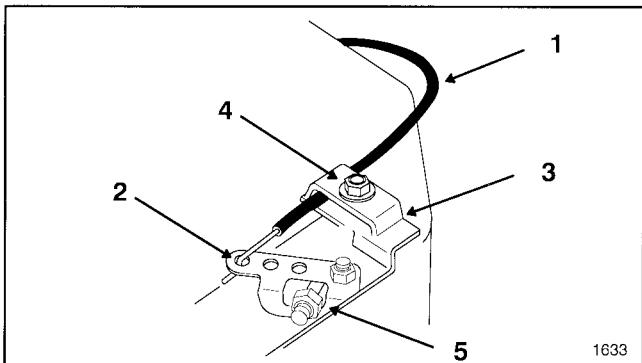


Figure 5

1. Engine speed control cable  
2. Last hole in governor arm  
3. Cable clamp  
4. Cable clamp screw  
5. Stop

## CONNECT CHOKE CABLE

1. Position remote choke control until there is approximately 1/8" between lever and rear end of slot in control base.
2. Route choke cable under fuel tank bracket and around right side of engine (Fig. 6).
3. Hook cable "Z" end into hole in choke lever (Fig. 6). Loosen cable clamp screw and install cable under clamp.
4. Push firmly on choke cable until choke lever is in the full open position. Tighten cable clamp screw (Fig. 6).
5. Secure choke cable to lift ring, on right side of engine, and handle, just above fuel tank bracket, with cable ties (Fig. 6).

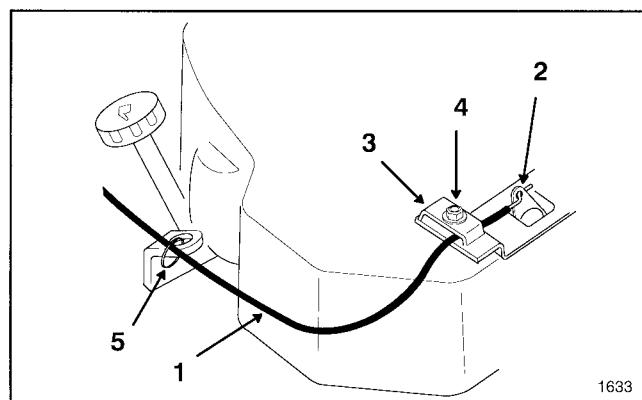


Figure 6

1. Choke cable  
2. Choke lever  
3. Cable clamp  
4. Cable clamp screw  
5. Cable tie

## CONNECT WIRE HARNESS

1. Route wire harness down inside left handle, under fuel tank bracket and behind engine. (Fig. 7).
2. Plug clutch connector, coming up through frame at side of engine, into wire harness (Fig. 7).
3. Secure wire harness to frame behind engine with cable clamp, just past clutch connector lead (Fig. 7).
4. Secure wire harness, engine speed control cable and fuel hose together with wire tie, behind fuel filter.

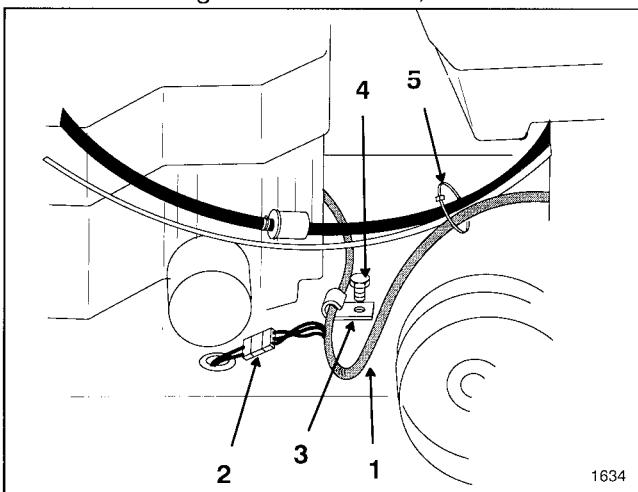


Figure 7

1. Wire harness  
2. Clutch connector  
3. Cable clamp  
4. Cable clamp screw  
5. Cable tie

5. Route wire harness around right side of engine. Plug surface-mount plug into engine plug, in front of starter. Secure wire harness plug to engine with screws. (Fig. 8).
6. Attach red wire ring terminal and positive, red battery cable to lower terminal of starter solenoid. Secure with flange nut (Fig. 8).
7. Attach black wire ring terminal and negative, black battery cable to right rear engine mounting bolt with lock washer and second nut (Fig. 8).

# SET-UP INSTRUCTIONS

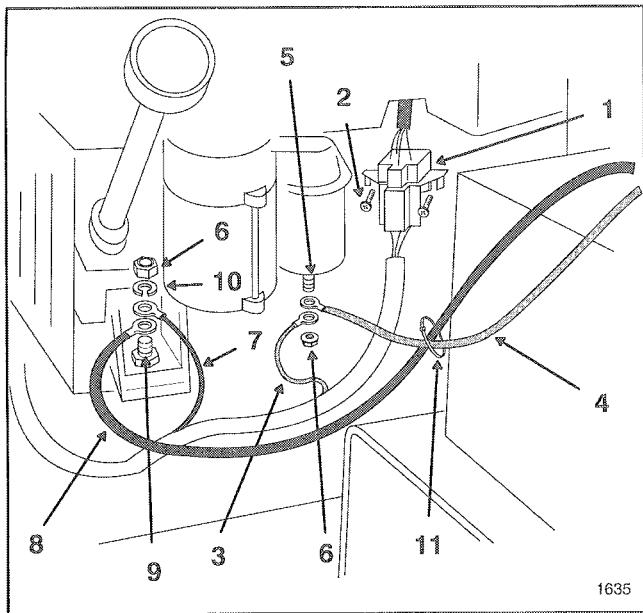


Figure 8

1. Surface mount plug	6. Nut (loose parts)
2. Screw	7. Black wire
3. Red wire	8. Negative battery cable
4. Positive battery cable	9. Engine mounting bolt
5. Starter solenoid	10. Lock washer
11. Cable tie	

## INSTALL CONTROL RODS

1. Thread a rod fitting onto each control rod approximately 2" (Fig. 9) or until upper control bar (Fig. 10) is perpendicular to ground.

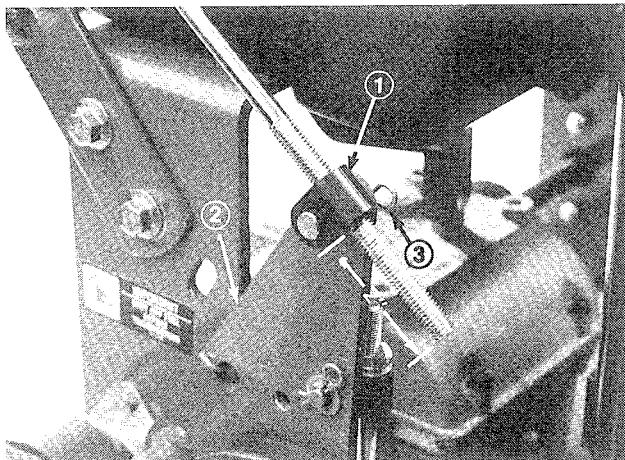


Figure 9

1. Control rod fitting	3. Clevis pin, washer & hairpin cotter
2. Idler brackets	

2. Mount rod fitting ends to mounting holes in idler brackets (from outside) with clevis pins, washers and hairpin cotters (Fig. 9).

**Note:** The control bar and upper handle must be parallel when in relaxed, drive and brake positions.

3. Check gap between control bar and upper handle when fully engaging wheel belts. Gap should be approximately 1 to 1-1/4" (Fig. 10).

4. Check operation. If adjustment is required, remove hairpin cotter and washer securing end of control rod to upper control bar; thread rod into or out of rod fitting to proper position and reinstall to control bar with washer and hairpin cotter.

5. Brake rods should be adjusted so parking brake lever can be swung into a snug position against the upper handle while pulling back on upper control bar (Fig. 10).

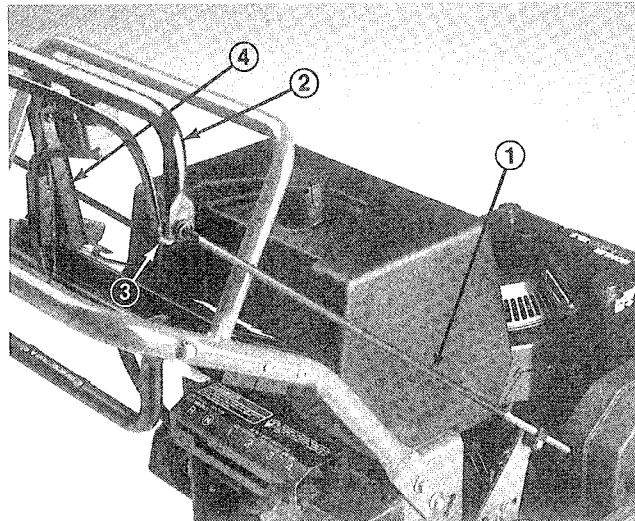


Figure 10

1. Control rod
2. Upper control bar
3. Washer & hairpin cotter
4. Parking brake lever

6. If an adjustment to brake rods is required, remove hairpin cotter and washer securing brake rod fitting to idler bracket (Fig. 11).

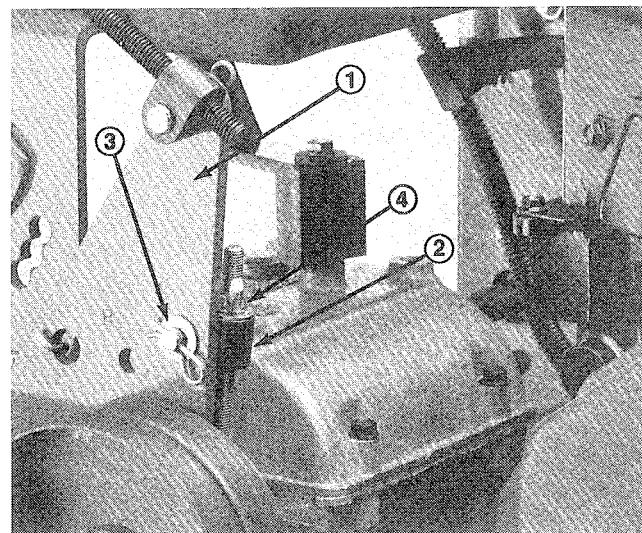


Figure 11

1. Idler bracket	3. Hairpin cotter & washer
2. Brake rod fitting	4. Wing nut

# SET-UP INSTRUCTIONS

7. Adjust wing nut up or down on brake rod and resecure to idler bracket. Check adjustment and readjust if necessary.

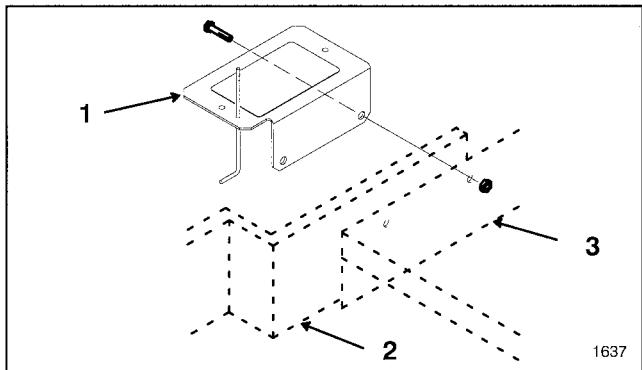
**Note:** Make sure brake rod is installed in forward ("F") mounting hole in idler bracket.

8. Repeat procedure on opposite side if adjustment is required.

## INSTALL BATTERY

1. Mount battery holder and cutting unit carrier frame at the same time to upper holes on right side of traction unit. Use (2) 1/2-13 x 1-1/4" lg. flange head cap-screws and lock nuts (Fig. 12).

2. Fill battery with electrolyte and charge, refer to ACTIVATING AND CHARGING BATTERY, page 10.



**Figure 12**  
1. Battery holder  
2. Carrier frame  
3. Traction frame

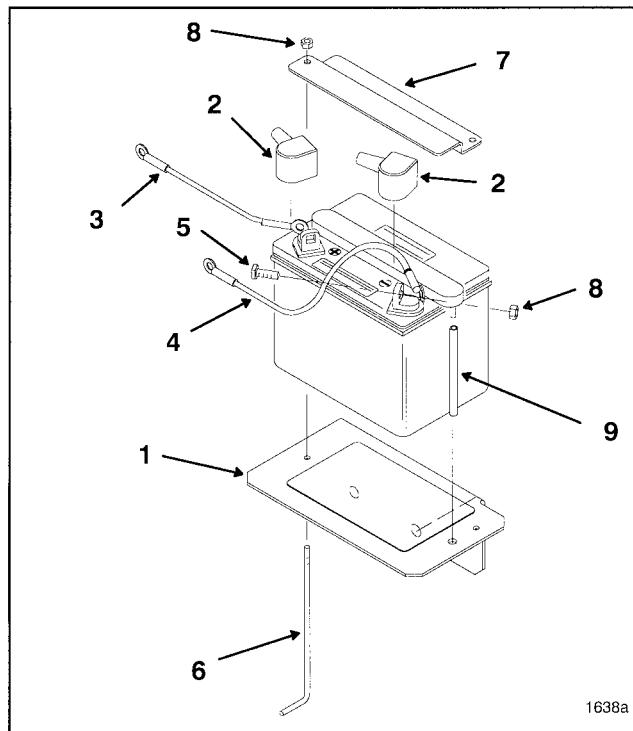
3. Position battery onto holder with terminal posts away from the engine (Fig. 13).

4. Slide the red terminal boot onto the red battery able and the black terminal boot onto the the black battery cable.

5. Install the positive (red) battery cable to positive (+) battery terminal and the negative battery cable to the negative (-) battery terminal and secure with carriage bolts and locknuts.

6. Mount battery to holder with (2) support rods, a battery clamp and (2) locknuts. Position support rods in mounting holes (Fig. 13). Tighten locknuts so battery is held securely in position and will not slide. DO NOT OVERTIGHTEN.

7. Slide vent tube through hole, next to support rod, in battery holder.



**Figure 13**

1. Battery holder	5. Carriage bolt
2. Terminal boot	6. Battery support rod
3. Positive battery cable	7. Battery clamp
4. Negative battery cable	8. Lock nut
	9. Vent tube

# BEFORE OPERATING

## ACTIVATE AND CHARGE BATTERY (12 VOLT)

Since battery is not filled with electrolyte or activated, the battery, if you have not already done so, must be removed from the machine so it can be filled with electrolyte and charged. Bulk electrolyte with 1.260 specific gravity must be purchased from a local battery supply outlet. Remove the battery and activate it as follows:

1. Remove filler caps from battery and slowly fill each cell until electrolyte is just above the plates. To obtain best results, let battery set for 20 minutes. Add electrolyte to the maximum capacity
2. Leave filler caps off and connect a 3 to 4 amp battery charger to the battery posts. Charge the battery at a rate of 4 amperes or less for 4 hours.



### WARNING

**Electrolyte gases are explosive and can cause serious injury to eyes, lungs and skin. Wear safety goggles and rubber gloves when working with electrolyte or battery. Charge the battery in a well ventilated place so gasses produced while charging can dissipate. Since the gases are explosive, keep open flames 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.**

3. When battery is charged, disconnect charger from electrical outlet and battery posts.
4. Slowly add electrolyte to each cell until level is up to fill ring. Install filler caps.

**IMPORTANT:** Do not overfill battery. Electrolyte will overflow onto other parts of the machine and severe corrosion and deterioration will result.

## FILL CRANKCASE WITH OIL

**IMPORTANT:** The engine does not have oil in the crankcase when it is shipped from the factory. If engine is started before oil is added to the crankcase, engine damage could result. Therefore, before engine is started for the first time:

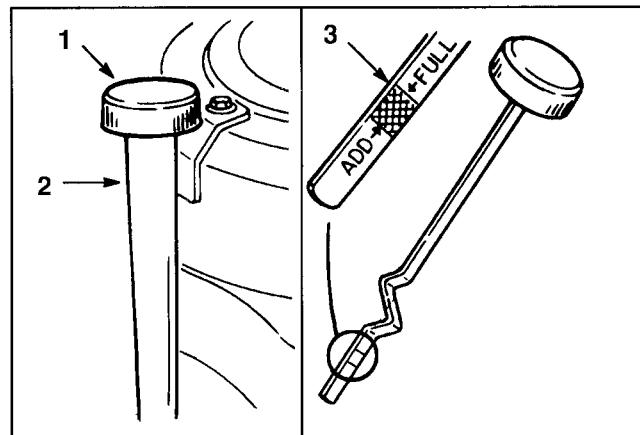
**Check oil before each use as follows:**

1. Make sure the engine is stopped, level and is cool so the oil has had time to drain into the sump.

2. Clean area around the oil fill cap/dipstick before removing it. This will help keep dirt, grass clippings, etc., out of the engine.

3. Un-thread and remove the oil fill cap/dipstick; wipe oil off. Reinstall the dipstick into the tube and rest the oil fill cap on the tube. Do not thread the cap onto the tube (Fig. 14).

4. Remove dipstick and check oil level. The level should be between the FULL and ADD marks. If low, add oil of proper type up to the FULL mark. Reinstall the oil fill cap/dipstick and thread tight (Fig. 14).



**Figure 14**

1. Dipstick
2. Fill tube
3. Oil level

5. Slowly pour approximately 4 pints of oil into the filler neck. The engine uses any high quality detergent oil having the American Petroleum Institute - API - "service classification" SF, SG or SH. Oil viscosity (weight) must be selected according to anticipated ambient temperature:

- A. Above 32° F (0°C) – Use SAE 10W-30 or 10W-40
- B. Below 32° F (0°C) – Use 5W-20 or 5W-30

6. Check oil level. DO NOT ADD OIL SO LEVEL RISES ABOVE "F" MARK BECAUSE ENGINE COULD BE DAMAGED WHEN IT IS STARTED.

7. Remove dipstick and check oil level. The level should be between the FULL and ADD marks. If low, add oil of proper type up to the FULL mark. Reinstall the oil fill cap/dipstick and thread tight (Fig. 14).

**Note:** Check level of oil after every 5 operating hours or each time the mower is used. Initially, change oil after the first 5 hours of operation; thereafter, when conditions are normal, change oil after every 25 hours of operation. However, change oil more frequently when mower is operated in dusty or dirty conditions.

## CHECK TIRE PRESSURE

Tires are over inflated at the factory. Check tires and insure they are inflated to 15 psi.

# BEFORE OPERATING

## FILL FUEL TANK WITH GASOLINE

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.

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

1. Clean area around fuel tank cap and remove cap from tank.
2. Fill fuel tank to about 1 inch from top of the tank, not filler neck. Install fuel tank cap securely.
3. Wipe up spilled gasoline.



## 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 before starting engine and fill tank to about 1 inch from top of tank, not 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 30 day supply of gasoline. 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.

# CONTROLS

**Engine Speed Control (Fig. 15)** – The engine speed control has two positions: FAST and SLOW.

**Choke Control (Fig. 15)** – The choke control has two positions: CHOKE and RUN.

**Deck Engagement Control Bail (Fig. 15)** – Control bail used in conjunction with deck engagement switch to release blade brake and engage electromagnetic clutch to drive deck pulleys. Release bail to disengage deck pulleys.

**Deck Engagement Switch (Fig. 15)** – Rocker switch used in conjunction with control bail to release blade brake and engage electromagnetic clutch to drive deck pulleys.

**Gear Shift Lever (Fig. 15)** – Transmission has four forward speeds, neutral and reverse, and has an in-line shift pattern. Do not shift while unit is moving, as transmission damage may occur.

**Upper Control Bar (Fig. 15)** – Shift to desired gear and push forward on control bar to engage forward traction operation and pull back to brake. Pull right side of control bar to turn right and left side to turn left.

**Lower Control Bar (Fig. 15)** – Shift transmission to reverse and pull rearward on lower control bar to engage rearward traction operation.

**Parking Brake Lever (Fig. 15)** – Pull back on upper control bar and swing brake lever up against the upper handle.

**Ignition Switch (Fig. 15)** – Switch is part of battery ignition system and it has three positions: OFF, RUN and START. Key automatically returns to RUN position from START position when released after engine starts.

**Fuel Shut-off Valve** – (Under fuel tank) Close fuel shut-off valve when transporting or storing mower.

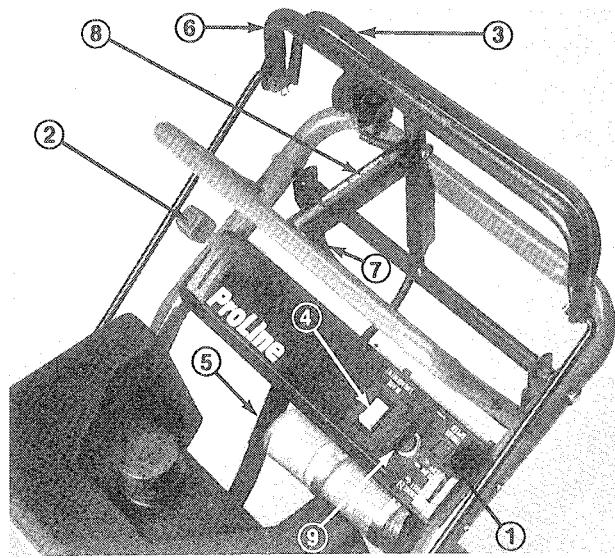


Figure 15

1. Engine speed control	6. Upper control bar
2. Choke control	7. Lower control bar
3. Deck engagement control bail	8. Parking brake lever
4. Deck engagement switch	9. Ignition switch
5. Gear shift lever	

# OPERATING INSTRUCTIONS

## STARTING AND STOPPING

1. Make sure spark plug wires are installed on spark plugs and fuel valve is open.
2. Shift into neutral and turn ignition key to RUN.
3. Move engine speed control to half way.
4. Move choke control to CHOKE position before starting a cold engine.

**Note:** A warm or hot engine usually does not require as much choking.

5. Rotate ignition key to START. When engine starts, release key, gradually move choke to run and regulate engine speed as desired.

**IMPORTANT: To prevent overheating of the starter motor, do not engage starter longer than 10 seconds. After 10 seconds of continuous cranking, wait 60 seconds before engaging starter motor again.**

6. To engage blade, squeeze deck engagement control bail against upper control bar and press rocker switch forward. Hold control bail against control bar while operating. Releasing control bail disengages deck pulleys. Repeat procedure to engage deck pulleys if control bail is released.

7. To stop engine, release control bail and control bar, shift to Neutral, move engine speed control to SLOW, turn ignition key to OFF and set parking brake. Wait for all parts to stop moving before leaving the operating position behind handle.

8. Pull wires off spark plugs to prevent possibility of accidental starting before storing machine.
9. Close fuel shut off valve before storing machine.

**CAUTION: Make sure fuel shut off valve is closed before transporting or storing machine, as fuel leakage may occur.**

## CHECK INTERLOCK SYSTEM

The purpose of the safety interlock system is to assure control bail is used in conjunction with deck engagement switch to release blade brake and engage clutch to drive deck pulleys or disengage deck pulleys when control bail is released. Check operation of the switches daily to assure interlock system is operating.

### To check interlock system:

1. Position machine on a flat, open area.
2. With engine running and control bar in neutral position, squeeze control bail against control bar (Do not press deck engagement switch), deck pulleys must not engage. If the interlock system is malfunctioning it must be repaired by an Authorized TORO Proline Service Dealer. If deck pulleys do not engage, the interlock system is functioning correctly, proceed to step 3.
3. With engine running and control bar in neutral position, press deck engagement switch (Do not squeeze control bail against control bar), deck pulleys must not engage. If deck pulleys engage, the interlock system is malfunctioning and must be repaired by an Authorized TORO Proline Service Dealer. If deck pulleys do not engage, the interlock system is functioning correctly, proceed to step 4.
4. With engine running, control bar in neutral position and deck pulleys engaged, release control bail. Deck pulleys must disengage. If deck pulleys do not disengage, the interlock system is malfunctioning and must be repaired by an Authorized TORO Proline Service Dealer. If deck pulleys disengage, the interlock system is functioning correctly.



### CAUTION

THE INTERLOCK SWITCHES ARE FOR THE OPERATOR'S PROTECTION, SO DO NOT DISCONNECT THEM. CHECK OPERATION OF THE SWITCHES DAILY TO ASSURE INTERLOCK SYSTEM IS OPERATING. IF A SWITCH IS DEFECTIVE, REPLACE IT BEFORE OPERATING. REPLACE SWITCHES EVERY TWO YEARS TO ASSURE MAXIMUM SAFETY. DO NOT RELY ENTIRELY ON SAFETY SWITCHES – USE COMMON SENSE!

# MAINTENANCE



## CAUTION

To prevent accidental starting of the engine while performing maintenance, shut engine off. Also, pull wires off spark plugs. Make sure wires do not contact plugs accidentally.

### GREASE WHEELS

Lubricate the wheel bearings every 8 hours with No. 2 general purpose grease. Wipe up any excess grease.

### GREASE TRANSMISSION COUPLERS

Lubricate the transmission couplers (Fig. 16) every 250 hours with No. 2 general purpose grease. Pump grease gun about 4 times. Wipe up any excess grease.

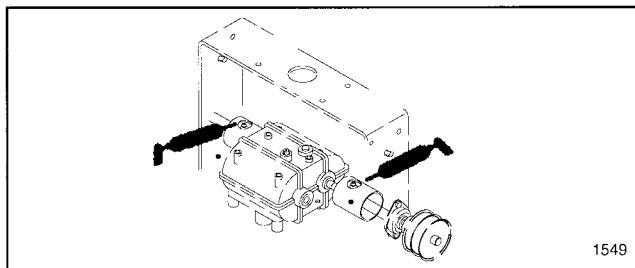


Figure 16

### SERVICING AIR CLEANER

The foam pre-cleaner must be cleaned and re-oiled after every 25 hours of engine operation if engine is operated in clean air conditions. However, air cleaner must be cleaned every few hours if operating conditions are extremely dusty or sandy.

1. Remove knob and cover (Fig. 17). Remove wing nut and element cover.

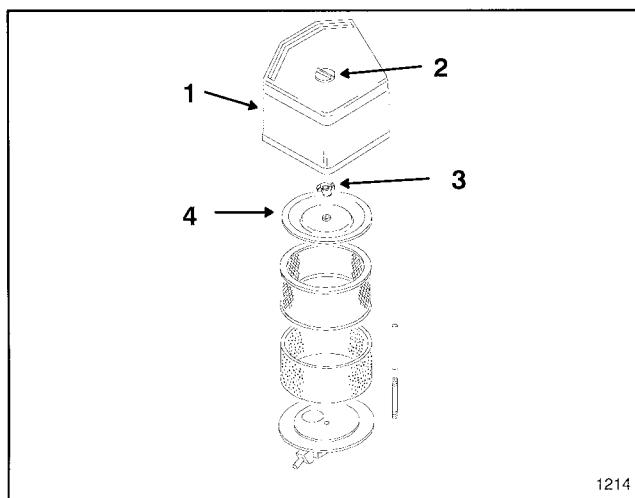


Figure 17

1. Cover  
2. Knob

3. Wing nut  
4. Element cover

2. Carefully slide foam pre-cleaner off the paper element (Fig. 18).

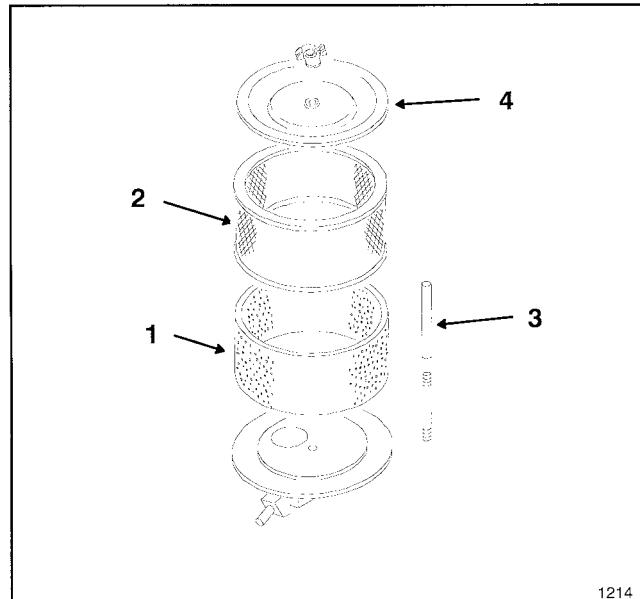


Figure 18

1. Foam pre-cleaner
2. Paper element
3. Rubber seal
4. Element cover

3. a. Wash foam pre-cleaner in detergent and warm water.  
b. Rinse the pre-cleaner thoroughly until all traces of detergent are eliminated. Squeeze out excess water (do not wring). Air dry.  
c. Saturate foam pre-cleaner in engine oil. Squeeze to remove excess oil.
4. Reinstall foam pre-cleaner on paper element.

Inspect paper element every 50 hours of operation and replace when dirty or damaged. Do not wash paper element or do not clean with compressed air as damage will occur.

**Note:** With air cleaner disassembled, check air cleaner components for damage. Replace if necessary. Make sure rubber seal is on shaft or severe engine damage may occur.

5. Reinstall paper element with pre-cleaner, rubber seal, element cover and wing nut
6. Tighten wing nut 1/2 to 1 turn after nut contacts cover. Do not overtighten. Install air cleaner cover and knob.

**IMPORTANT:** Always operate engine with air cleaner element in place or engine damage will result.

# MAINTENANCE

## CHANGING CRANKCASE OIL AND FILTER

1. Check level of oil before starting engine and after every 5 hours of operation. Maintain oil level at FULL mark on dipstick.

### Check oil level before each use as follows:

2. Make sure the engine is stopped, level and is cool so the oil has had time to drain into the sump.

3. Clean area around the oil fill cap/dipstick before removing it. This will help keep dirt, grass clippings, etc., out of the engine.

4. Un-thread and remove the oil fill cap/dipstick; wipe oil off. Reinstall the dipstick into the tube and rest the oil fill cap on the tube. Do not thread the cap onto the tube.

5. Remove dipstick and check oil level. The level should be between the FULL and ADD marks. If low, add oil of proper type up to the FULL mark. Reinstall the oil fill cap/dipstick and thread tight.

6. Change oil after first 5 hours of operation; every 25 hours thereafter. Change oil more frequently when operating conditions are extremely dusty or dirty.

### To change oil:

1. Position mower on level surface. Start and run engine for a period to warm the oil.

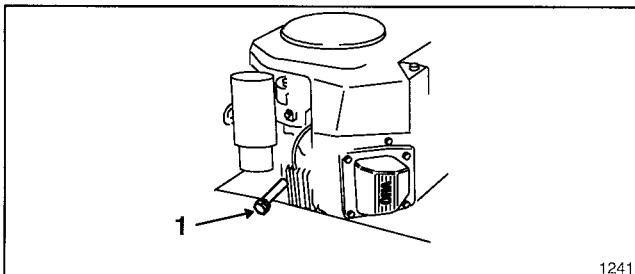
2. Turn engine off and place drain pan under frame, below drain plug (Fig. 19). Remove drain plug and allow all oil to flow into drain pan. Install drain plug after oil stops flowing.

3. Remove dipstick and add oil to crankcase. Refer to FILL CRANKCASE WITH OIL, page 10. Capacity of crankcase is 4 pints when changing filter, 3 pints when changing oil only. DO NOT OVERFILL or engine damage may result.

4. Change the oil filter every other oil change. To change filter:

### To change filter:

1. Drain the oil from the engine crankcase, refer To Change Oil, page 15.



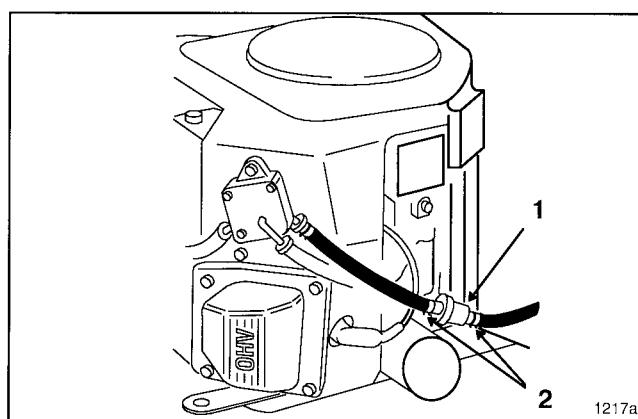
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Figure 19  
1. Drain plug

2. Remove old filter and wipe off the filter adapter.
3. Apply a thin coating of new oil to the rubber gasket on the new oil filter.
4. Install the new oil filter to the filter adapter. Tighten oil filter clockwise until the rubber gasket contacts the filter adapter, then tighten the filter an additional 1/4 turn. Fill the crankcase with new oil (4 pints). Refer to FILL CRANKCASE WITH OIL, page 10.

## FUEL FILTER REPLACEMENT

An in-line filter is incorporated into the fuel line between the fuel tank and carburetor (Fig. 20). Use the following procedures should replacement become necessary:



1217a

Figure 20

1. Fuel filter
2. Hose clamps

1. Close fuel shut off valve, loosen the hose clamp on the carburetor side of filter and remove the fuel line from the filter.

2. Place a drain pan under filter, loosen the remaining hose clamp and remove filter.



### CAUTION

Since gasoline is highly flammable, drain it outdoors and make sure engine is cool to prevent a potential fire hazard. Wipe up any gasoline that may have spilled. Do not drain gasoline near any open flame or where gasoline fumes may be ignited by a spark. Do not smoke a cigar, cigarette, or a pipe when handling gasoline.

3. Install the new filter with arrow on the filter body pointing towards the carburetor.

# MAINTENANCE

## REPLACING SPARK PLUGS

Since air gap between center and side electrodes of the spark plug increases gradually during normal operation of the engine, check condition of electrodes after every 25 operating hours. Recommended air gap is 0.040 of an inch (0.102 mm). Correct spark plug to use is a Champion RC-12YC or equivalent.

**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 plug so foreign matter cannot fall into cylinder when spark plug is removed.
2. Pull spark plug wire off spark plug and remove plug 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 0.040 of an inch (0.102 mm) (Fig. 21). Install correctly gapped spark plug w/gasket seal, and tighten plug to 10–15 ft.-lb. (14–20 N.m). If torque wrench is not used, tighten plug firmly.

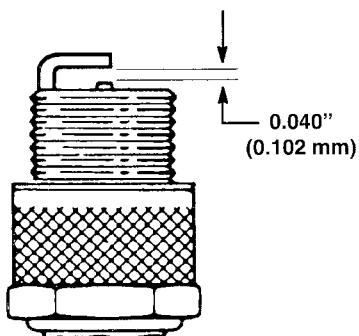


Figure 21

## ADJUSTING CARBURETOR

The carburetor is designed to deliver the correct fuel–air mixture to the engine under all operating conditions. The main fuel jet is calibrated at the factory and is not adjustable. The idle fuel adjusting needle is also set at the factory and normally does not need adjustment. If, however, the engine is hard starting or does not operate correctly at idle speeds, it may be necessary to adjust the idle fuel needle.

**IMPORTANT:** Before the carburetor is adjusted, the air cleaner must be clean, and throttle and choke controls must be checked for proper operation: refer to **Servicing Air Cleaner**, page 14 and **Adjusting Throttle and Choke Controls**, page 16.

1. **Idle Fuel Adjusting Needle** (Fig. 22) - Close needle by gently rotating it clockwise.

**IMPORTANT:** Do not close the needle too tight because the needle and seat in carburetor will likely be damaged.

2. Rotate - open - the needle 1 turn counterclockwise (Fig. 22).
3. Start engine and let it run at half throttle for approximately five to ten minutes to warm up.



### WARNING

Engine must be running so final adjustment of the carburetor can be performed. To guard against possible personal injury, shift into neutral, and engage parking brake. Keep hands, feet, face, and other parts of the body away from the cutter blades, underside of mower housing, discharge area, and any rotating engine parts.

4. **Idle Speed Setting** - Move the throttle control to SLOW setting. Set the idle speed to 1200 rpm  $\pm$  75 RPM by turning the idle speed adjusting screw in or out (Fig. 22). Check speed with a tachometer.

5. **Final Setting Idle Fuel Needle** - Move the throttle control to the slow position. Turn the idle fuel adjusting needle out (counterclockwise) until the engine speed decreases (rich). Note position of the needle.

Now turn the adjusting needle in (clockwise). The engine speed may increase, then it will decrease as the needle is turned in (lean). Note position of the needle. Set the needle midway between the rich and lean settings.

# MAINTENANCE

6. Recheck idle speed using a tachometer.

3200  $\pm$  100 – High Idle

1200  $\pm$  100 – Low Idle

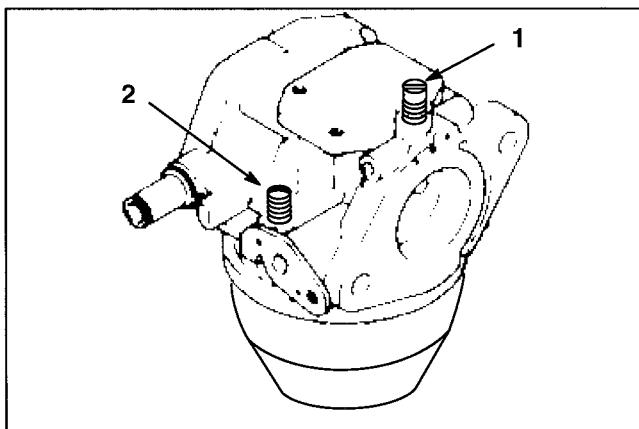


Figure 22

1. Idle fuel adjusting needle  
2. Idle speed adjusting screw

## REPLACING TRACTION BELT

1. Raise the front of the machine and hold with jack stands.
2. Disconnect electric clutch in-line connector from wiring harness. (Fig. 23).
3. Remove left front engine mounting bolt securing clutch retainer to frame. Unhook retainer from clutch and remove (Fig. 23).
4. Unhook tension spring from side of frame (Fig. 23).
5. Loosen pivot bolt enough to remove traction belt from the drive pulley and clutch.
6. Install new belt around clutch and drive pulley.
7. Install pivot bolt in idler arm. Torque mounting bolt to 35-40 ft-lb. Install tension spring between idler arm and frame bracket (Fig. 23).
8. Install belt around idler pulley (Fig. 23).
9. Hook clutch retainer into clutch and secure to frame with engine mounting bolt. Torque engine mounting bolt to 170–220 in.-lb. (19–24 N.m)

10. Connect clutch in-line connector to wire harness.

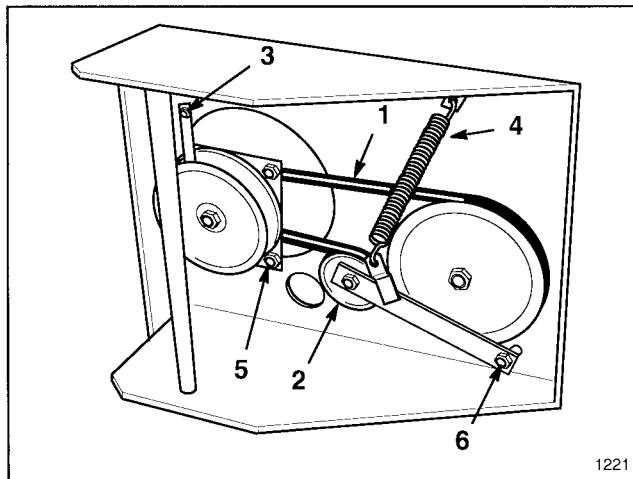


Figure 23

1. Traction Belt  
2. Idler Pulley  
3. Clutch Retainer  
4. Tension Spring  
5. Adjusting Nut  
6. Pivot Bolt

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## ADJUSTING CLUTCH

The clutch is adjustable to ensure proper engagement and braking. Check clutch adjustment every 100 hours.

1. To adjust clutch, tighten or loosen locknuts on flange studs. (Fig. 23).
2. Check adjustment by inserting feeler gauge thru slots next to flange studs.
3. The proper disengagement clearance between the clutch plates is .012–.018 inch. (.027–.040 mm) It will be necessary to check this clearance at each of the three slots to ensure the plates are parallel to each other.

## BRAKE ADJUSTMENT

An adjustment to the brake may be required to compensate for belt stretching or brake seating.

1. To adjust brakes, refer to Install Control Rod, page 8.

# MAINTENANCE

## DRIVE BELT REPLACEMENT

1. Remove top capscrew securing idler support and idler bracket to rear frame (Fig. 24).

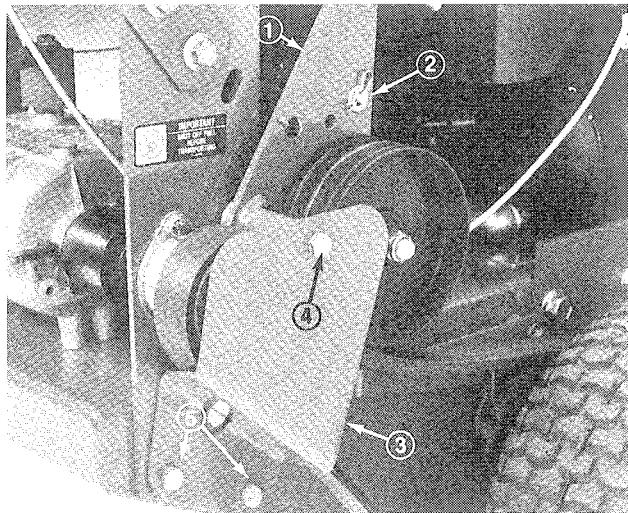


Figure 24

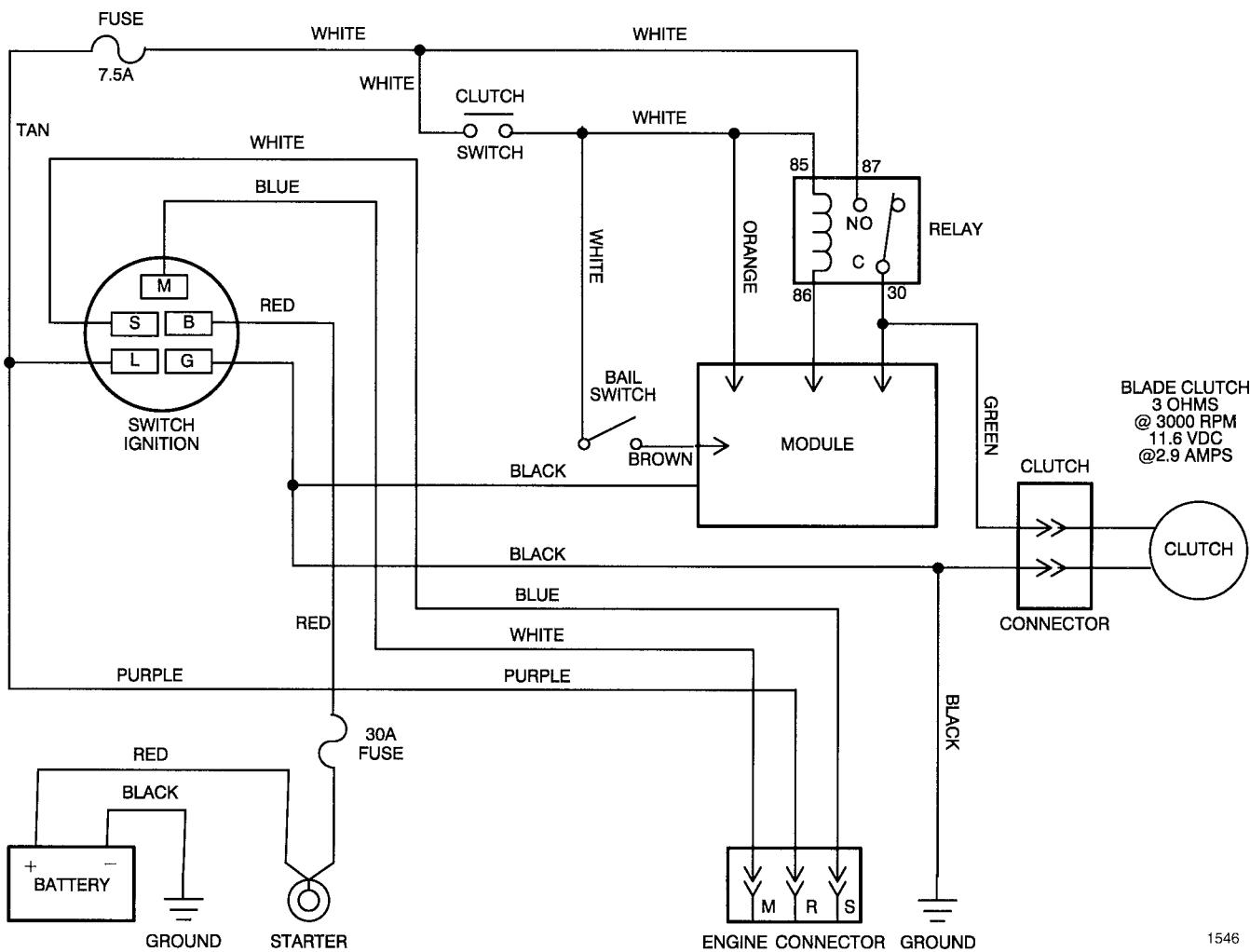
1. Idler bracket
2. Hairpin cotter, washer & brake rod fitting
3. Idler support
4. Top capscrew
5. Bottom capscrews

2. Loosen bottom two mounting screws enough to allow belt to pass between drive pulley and idler support (Fig. 24).
3. Raise wheel off ground enough to allow belt removal.

## CLEANING COOLING SYSTEM

Clean engine cooling system frequently, by removing any build-up of grass, dirt or other debris from the cylinder and cylinder head cooling fins, air intake screen on flywheel end, and carburetor/governor levers and linkage. This will help insure adequate cooling and correct engine speed and will reduce the possibility of overheating and mechanical damage.

# WIRING SCHEMATIC



## IDENTIFICATION AND ORDERING

The mower has two identification numbers: a model number and a serial number. The two numbers are stamped into a plate that is riveted to the frame on right front corner of mower. In any correspondence concerning the mower, supply the model and serial numbers to assure that correct information and replacement parts are obtained.

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.

**THE TORO TOTAL COVERAGE  
GUARANTEE****A One Year Limited Warranty  
(A Full Two-Year Warranty for Residential Use)****What Is Covered By This Express Warranty?**

The Toro Company promises to repair any TORO ProLine product used for commercial, institutional, or rental purposes if defective in materials or workmanship for a period of one year from the date of purchase. The cost of parts and labor are included as well as transportation within a 15 mile radius of a TORO ProLine Service Dealer.

**What Products Are Covered By This Warranty?**

ProLine products covered by this warranty include the ProLine 120, 220, 616, 620, 724 riding products and wide area walk behind mowers and their cutting decks and accessories.

**How About Residential Use?**

TORO ProLine products used for residential use are covered by a full two-year warranty.

**How Do You Get Warranty Service?**

Should you feel your TORO ProLine product contains a defect in materials or workmanship, contact the dealer who sold you the product or any TORO ProLine Service Dealer. The Yellow Pages of your telephone directory is a good reference source; look under TORO Commercial Service Dealers. The Service Dealer will either arrange service at his/her dealership or recommend another authorized Service Dealer who may be more convenient. You may need proof of purchase (copy of registration card, sales receipt, etc.) for warranty validation.

If for any reason you are dissatisfied with a Service Dealer's analysis of the defect in materials or workmanship or if you need a referral to a TORO ProLine Service Dealer, please feel free to contact us at the following address:

Toro Customer Service Department  
8111 Lyndale Avenue South  
Bloomington, MN 55420-1196  
612-888-8801

**What Must You Do To Keep The Warranty In Effect?**

You must maintain your TORO Product by following the maintenance procedures described in the operator's manual. Such routine maintenance, whether performed by a dealer or by you, is at your expense.

**What Does This Warranty Not Cover?****and  
How Does Your State Law Relate To This Warranty?**

There is no other express warranty except as described above. This express warranty does not cover:

- Cost of regular maintenance service or parts, such as filters, fuel, lubricants, tune-up parts, blade sharpening, brake and clutch adjustments.
- Any product or part which has been altered or misused or required replacement or repair due to normal wear, accidents, or lack of proper maintenance.
- Repairs necessary due to improper fuel, contaminants in the fuel system, or failure to properly prepare the fuel system prior to any period of non-use over three months.
- Pickup and delivery charges for distances beyond a 15 mile radius from a TORO ProLine Service Dealer.

All repairs covered by this warranty must be performed by a TORO Service Dealer using Toro approved replacement parts.

Repair by a TORO Service Dealer is your sole remedy under this warranty.

**The Toro Company is not 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. Some states do not allow exclusions 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.