FORM NO. 3312-528

TORO®

MODEL NO. 58050 - 5000101 & UP

OPERATOR'S MANUAL

3 hp FRONT TINE TILLER - CHAIN DRIVE

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

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

Printed in U.S.A. 9-84

PRICE $1.00
Part No. 238611

FOREWORD

The TORO Tiller has advanced concepts in engineering, design, and safety. If set-up and maintained properly, the tiller will give long, dependable service.

Since the tiller is a high-quality product, TORO is concerned about the future use of the tiller and safety of the user. Therefore, read this manual carefully to familiarize yourself with the safety instructions and the product before operating the tiller. The seven major sections of the manual are:

1. Safety Instructions
2. Setting Up Instructions
3. Preparation Before Starting
4. Operating Instructions
5. Maintenance
6. Engine Operating and Maintenance Instructions
7. Trouble Shooting

Note that safety, mechanical, and some general information in the manual is emphasized. The words CAUTION, WARNING, DANGER, IMPORTANT, and NOTE are used to classify the information. CAUTION, WARNING, and DANGER identify safety related information; and NOTE identifies general information worthy of special attention.

OPTIONAL SPARK ARRESTER

In some areas there are local, state or federal regulations requiring that a spark arrester be used on the engine of this tiller. If a spark arrester is required, order from your local Briggs & Stratton dealer.

Notice to customers in the State of California - The engine on this unit is **NOT** equipped with a spark arresting muffler.

WARNING

When tiller is used or operated on any California forest, brush or grass covered land, a working order spark arrester must be attached to muffler. If not, the operator is violating state law, Section 4442 Public Resources Code.

If help - concerning set-up, operation, maintenance, or safety - is ever needed, contact the local Authorized TORO Service Dealer or Distributor. Refer to the "Yellow Pages" for assistance. In addition to skilled service technicians, the dealer and distributor have other TORO products, as well as factory approved accessories and replacement parts. Keep your Toro Tiller all TORO. Buy genuine TORO replacement parts and accessories.

TABLE OF CONTENTS

The Toro Company – 1982
MINNEAPOLIS, MN 55420 – U.S.A.

SAFETY INSTRUCTIONS

This 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.

The following "Instructions for Safe Tilling" are suggested by The Toro Company. Failure to operate the tiller in accordance with these Safety Instructions MAY RESULT IN PERSONAL INJURY.

BEFORE OPERATING

1. Read and understand the contents of this manual before starting and operating the tiller. Become familiar with all controls and know how to stop tiller quickly. NEVER ALLOW CHILDREN TO OPERATE TILLER.

2. Keep everyone, especially children and pets, away from the area of operation. Remove glass, metal objects, sticks, stones, wire and any other debris that might get caught in or possibly be thrown by the tines.

3. Keep all shields and safety devices in place. If shield, safety device or decal is defective, repair or replace it before operation is commenced. Also tighten any loose nuts, bolts and screws.

4. Wear long pants and substantial shoes while using the tiller. Do not operate tiller while barefoot, wearing sandals, tennis shoes, sneakers or shorts.

5. Fill fuel tank with gasoline before starting the engine. Avoid spilling any gasoline. Since gasoline is highly flammable, handle it carefully.

   A. Use an approved gasoline container.

   B. Fill tiller fuel tank outdoors when engine is cool. Engine must not be running to prevent a potential hazard.

   C. Wipe up any gasoline that may have spilled, and install gasoline container cap and tiller fuel tank cap before starting the engine.

WHILE OPERATING

6. Open doors if engine will be run in the garage because exhaust fumes are dangerous and could possibly be deadly. Do not run engine indoors.

7. Do not operate the tiller if someone is near the area to be tilled.

8. Tilling the soil demands attention. Always maintain secure footing, balance and control.

9. Till the soil when it is dry or moist because wet or sticky soil can cause mechanical damage.

10. Keep face, hands, feet and any other part of the body or clothing away from concealed, moving or rotating parts such as the tines, belts and pulleys. Stay behind the handles and away from the tines while operating the tiller.

11. Release clutch control, shut engine off and wait for all parts to stop before removing any obstruction from the tines. Use a stick to remove the obstruction.

12. If a solid object is hit by the tines or tines get plugged, release clutch control and shut engine off. Remove high tension wire from spark plug; then check for possible damage, an obstruction or loose parts. Use a stick to remove any obstruction, and make all repairs before using the tiller again.

13. Before leaving the operator's position - behind handles - release clutch control and shut engine off. Pull high tension wire off spark plug to prevent possibility of accidental starting.

14. Do not touch the engine while it is running or soon after it is stopped because the engine may be hot enough to cause a burn.

MAINTAINING TILLER

15. Before performing any maintenance or servicing the tiller, shut engine off and pull high tension wire off spark plug to prevent possibility of accidental starting.

16. Perform only those maintenance instructions described in this manual. If major repairs are ever needed or assistance is desired, contact an Authorized TORO Service Dealer.

17. Keep tiller in safe operating condition by having nuts, bolts and screws tight.

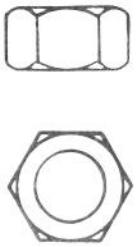
18. To reduce potential fire hazard, make sure engine and tiller chassis is free of excessive grease, vegetation, dirt and other foreign matter.

19. Do not overspeed the engine by changing governor settings. Recommended engine speed is 3600 rpm. To assure safety and accuracy, have an Authorized TORO Service Dealer check maximum engine speed (3600 rpm) with a tachometer.

HARDWARE BAG CONTENTS

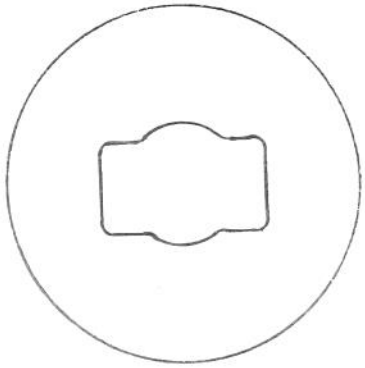
The items illustrated below will be found in the hardware bag and are used during the assembly of your Tiller. The illustrations are drawn actual size and can be helpful in determining the correct hardware needed in each assembly step. The quantity of each item is shown in parenthesis. Also included in the hardware bag but not illustrated here is (1) Clutch Cable Assembly.

(4)
3/8-16 x 1 Hex Hd.
Cap Screw, Grade 5

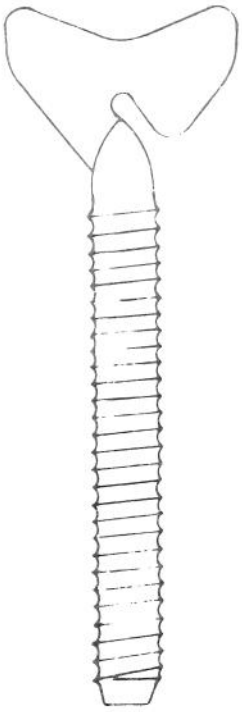


(4)
3/8-16 Hex Nut

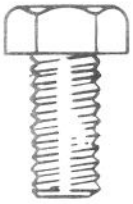
(1) "S" Hook



(2) Tine
Washer

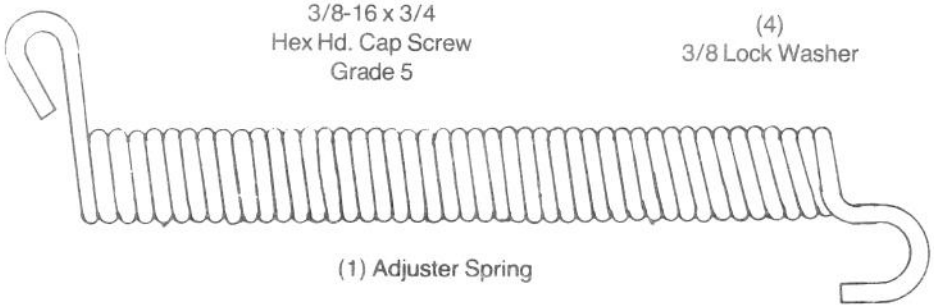


(1)Adjustment Stud

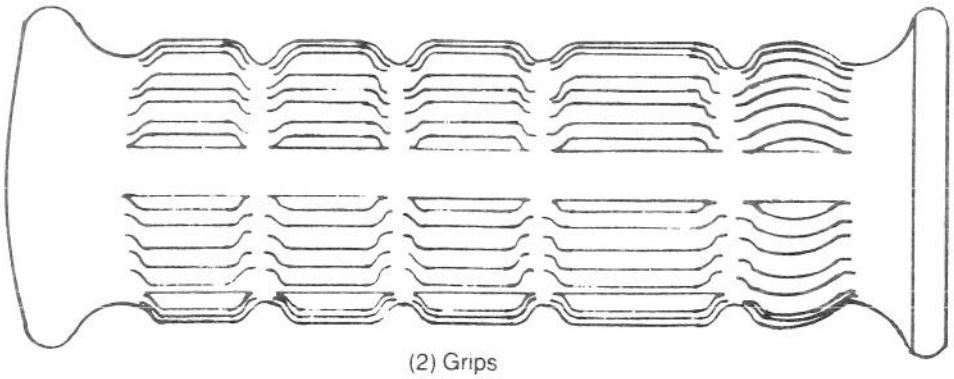


(2)
3/8-16 x 3/4
Hex Hd. Cap Screw
Grade 5

(4)
3/8 Lock Washer



(1) Adjuster Spring



(2) Grips

UNCARTONING AND LOOSE PARTS

This tiller is shipped in one carton completely assembled except for the handle and the handle controls. Remove all loose parts and packing inserts from carton. Carefully cut sides of carton and **ROLL** tiller out of carton to avoid any unnecessary lifting.

The hardware bag included with your tiller contains all the extra parts and hardware needed to assemble the tiller correctly. **NOTE: page 4 illustrates the hardware bag contents.** Use this page for correct identification of hardware items needed during set-up.

SET-UP INSTRUCTIONS

NOTE: In these set-up instructions, all items marked with an asterisk (*) can be found in the hardware bag.

INSTALL HANDLE

1. Position handle over brackets and line up bottom hole in handle with bottom hole in bracket (Fig. 1). Insert a 3/8-16 x 1 hex hd. cap screw through the bottom hole in handle and bracket on each side.
2. Choose a high or low handle setting by lining up the middle or top holes in the handle with the holes in the bracket. (Middle hole - high setting, top hole - low setting.)
3. Insert the two remaining 3/8-16 x 1 hex hd. cap screws* through the lined up holes and secure using a 3/8 lock washer* and 3/8-16 hex nut* on each cap screw as shown.

ATTACH THROTTLE CONTROL TO HANDLE

1. Slide the threaded part of control into slot on the back of handle (Fig. 2). **NOTE:** Throttle cable must run above cross brace (Fig. 1).
2. Slide the 3/8 lock washer and 3/8 hex nut up the control cable and secure control to handle by tightening the hex nut to the control from underside of the slot. (**NOTE:** Lock washer and nut shown in Fig. 2 are placed on cable at factory.)

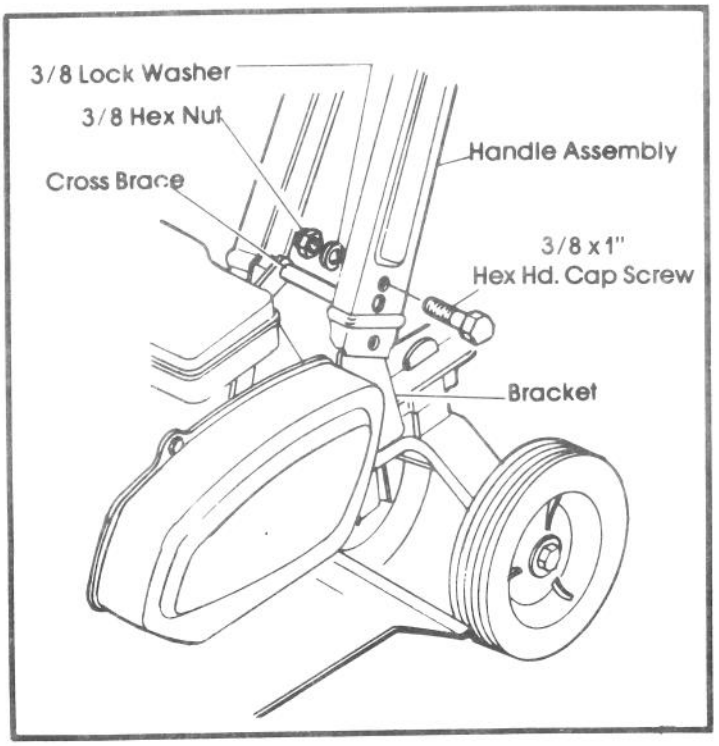


FIGURE 1

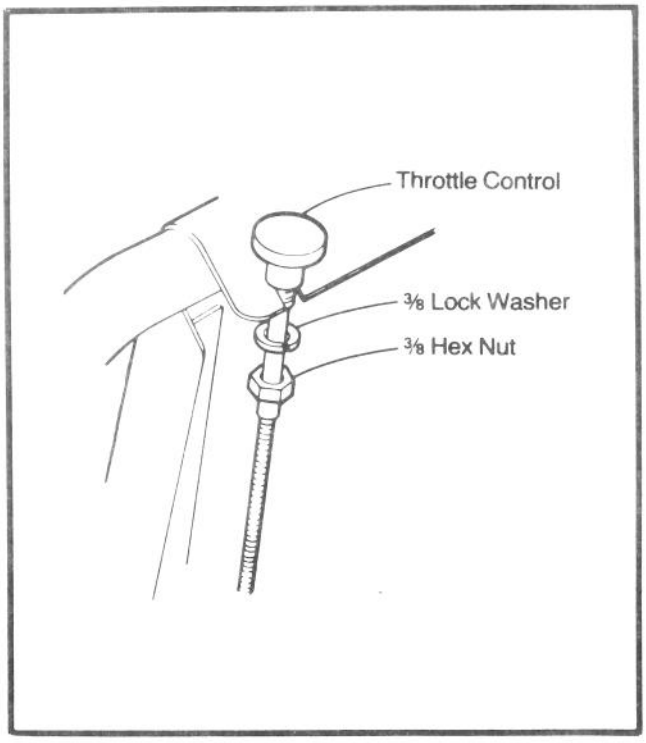


FIGURE 2

A2311

SET-UP INSTRUCTIONS

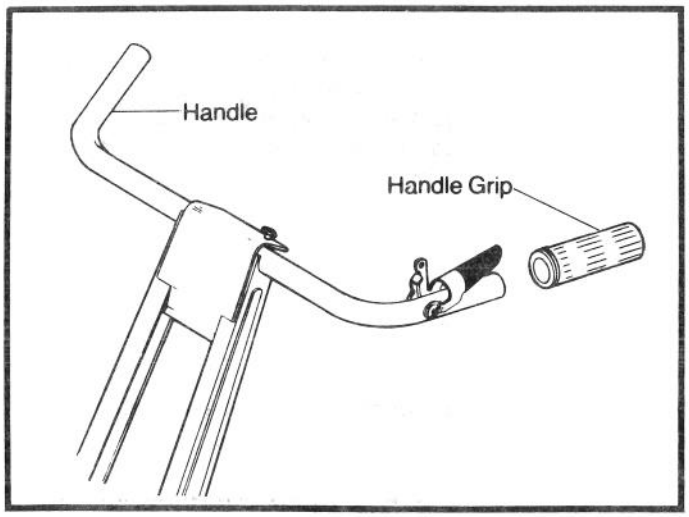


FIGURE 3

INSTALL HANDLE GRIPS

Dunk handle grips* in **cold water** and slide onto the handle, Fig. 3.

INSTALL CLUTCH CABLE

1. Hook open end of spring in hole on clutch lever, Fig. 4. **NOTE:** Hook spring through right side of hole first or it will bind under handle when connected to cable.

2. Nylon adjustment stud is turned 10 full turns into end of adjuster spring, as shown in Fig. 5. (**NOTE:** If readjustment becomes necessary follow instructions in Fig. 5 to turn stud easily.)

3. Hook one side of "S" hook* onto cable*, hook other side of "S" hook onto idler arm, Fig. 6.

4. With clutch lever up and spring under handle, slide other end of cable onto hook on nylon adjustment stud, Fig. 4. **NOTE:** Be sure cable runs straight from idler arm to "U" bracket (**below** cross brace shown in Fig. 6) then to adjustment stud.

5. Adjust cable. Follow the instructions for clutch cable adjustment, page 11.

*** This item can be found in the hardware bag.**

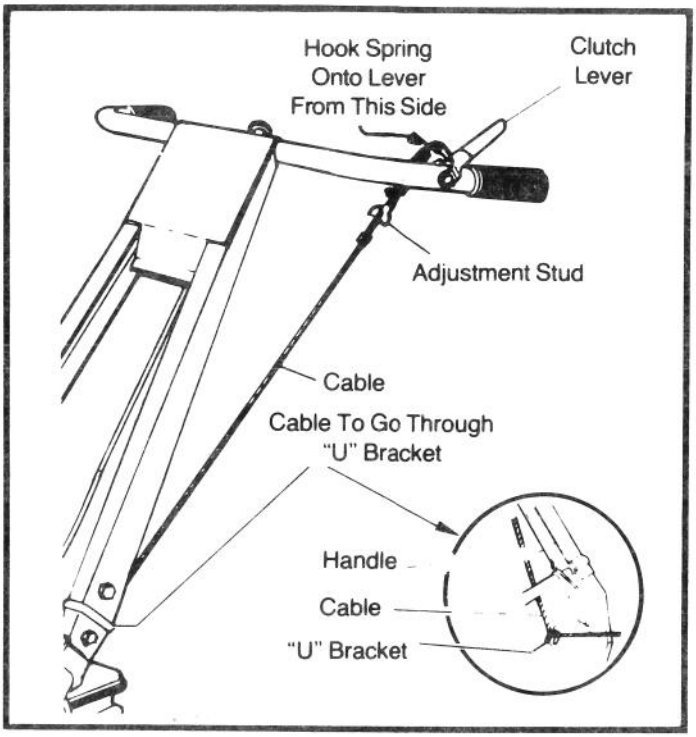


FIGURE 4

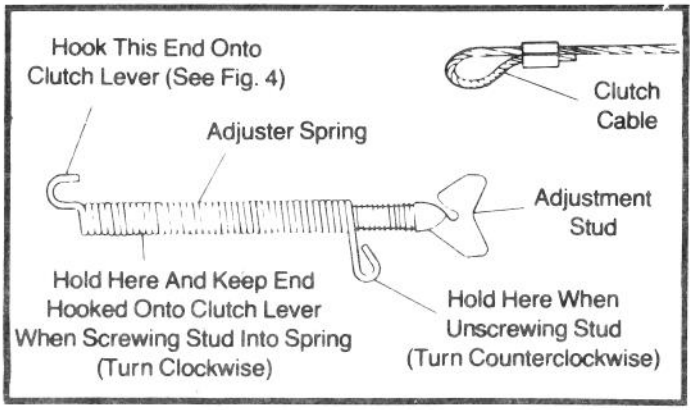


FIGURE 5

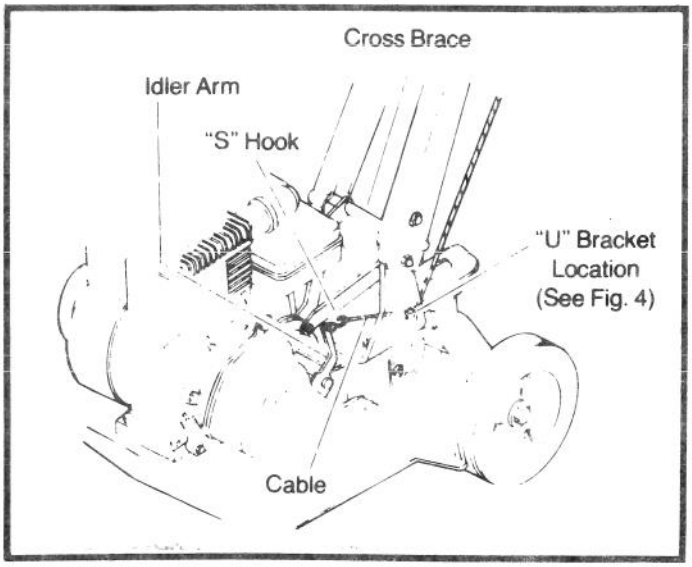


FIGURE 6

BEFORE OPERATING

1. **IMPORTANT: FILL CRANKCASE WITH OIL**

   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. Refer to the engine section of this operator's manual for the quantity and type of oil needed (page 13).

2. **FILL FUEL TANK**

   Fill fuel tank with a clean, fresh, leaded or low-lead "regular" grade of automotive gasoline. **Do not** use "gasohol". Fill tank completely. **Do not mix oil with gasoline.**

   NOTE: The use of "lead-free" gasoline produces fewer combustion deposits, but may shorten valve life if carburetor adjustment is too lean.

3. Although your tiller was lubricated at the factory, it is well to do it again during initial servicing so as to become familiar with points requiring regular service. Be certain to check oil in chain case. See MAINTENANCE section, page 10.

4. All bolts and nuts should be checked and tightened during the first two (2) hours of use. Periodic checks should be made thereafter.

CONTROLS AND OPERATING INSTRUCTIONS

CLUTCH LEVER

The clutch lever engages forward drive to the tines when held down against the handle, and disengages the drive when released. The clutch lever is located by the left hand grip on the handle, Fig. 7.

THROTTLE CONTROL

This control regulates the engine speed from idle to fast and also stops the engine. It is located on the left side of the handle panel (Fig. 7). To idle engine push throttle control in. To increase speed pull throttle control out. To stop engine push throttle control all the way in.

DEPTH CONTROL

The depth control controls the depth and speed (acting as a brake) at which the tiller will operate. It is located in the rear of the tiller frame, Fig. 7.

By lowering the setting of the depth control, the forward speed of the tiller is reduced and the working depth of the tines is increased. Raising the setting of the depth control increases the forward speed and reduces the working depth. Refer to Fig. 8 for an explanation of the different hole settings in the depth control.

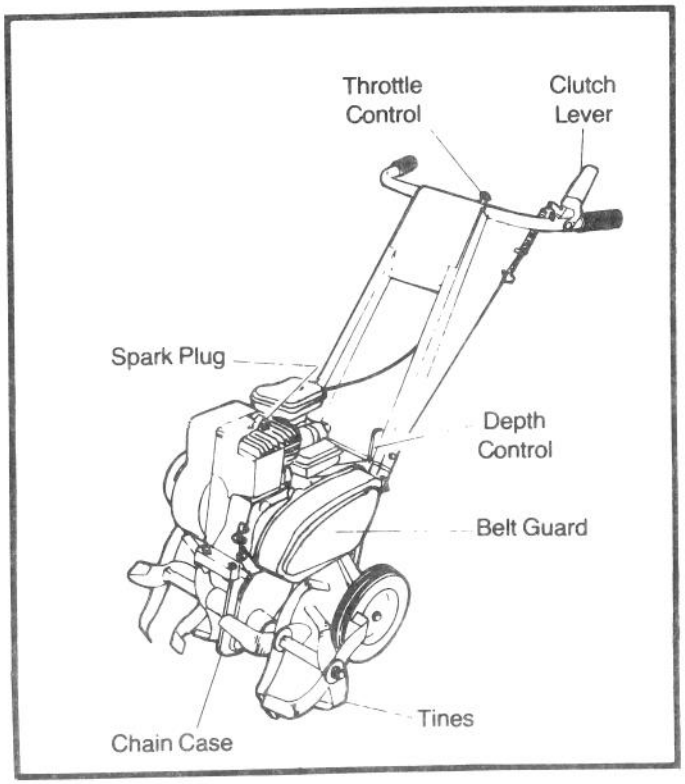


FIGURE 7

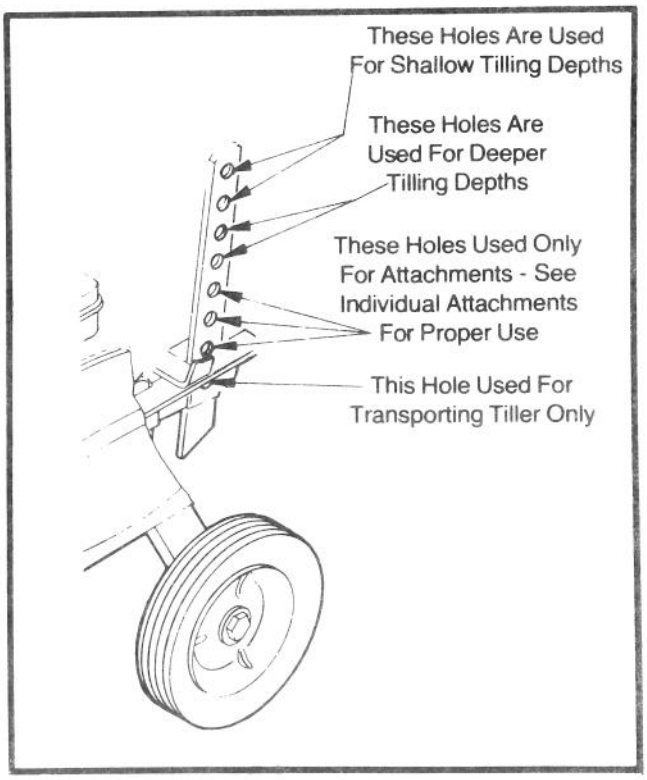


FIGURE 8

A2313

OPERATING INSTRUCTIONS

As the operator lifts up on the handle bar, Fig. 9, the depth control is pulled slightly out of the soil, allowing the tiller to inch its way forward. In this way, a slight lift is all that is needed to completely control forward progress.

As the operator presses down on the handle bar, Fig. 10, the depth control bites deeper into the ground, holding the tiller back. When the tiller is held back, the tines are permitted to penetrate down to the maximum tilling depth.

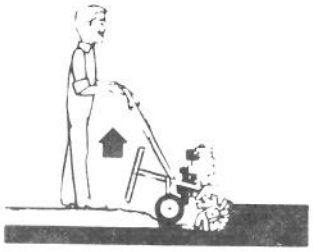


FIGURE 9

OPERATING SUGGESTIONS

This tiller will provide excellent rotary tilling when used to prepare seed beds, cultivate, mulch or similar chores. As a rule, planting rows of seeds closer together than 27" is not recommended. Refer to page 9 for the many different tine arrangements and their recommended usages.

WARNING: TO PREVENT ACCIDENTAL STARTING when changing tine arrangement, or whenever tiller is being adjusted or serviced, always remove the spark plug or wire from the spark plug and insert in holding tab (V-notch) as shown below. Also push throttle control all the way in.

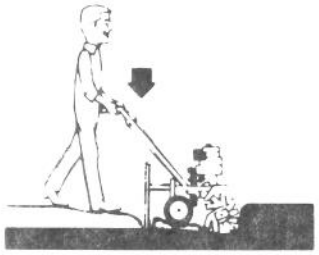
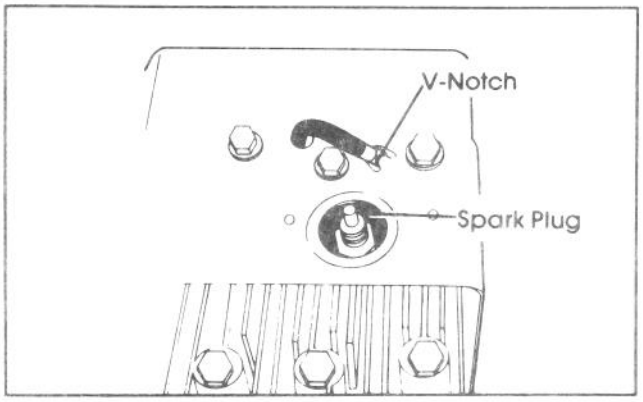


FIGURE 10



TINE ARRANGEMENTS

You have a choice of four (4) different tilling widths (7", 12", 17" and 22") just by interchanging tines or removing the outer tines and tine extensions altogether.

IMPORTANT!

When the outer tines and tine extensions are removed, you must secure the inner tines to the tine shaft using the (2) short ⅜-16 x ¾ hex hd. cap screws and (2) tine washers from the hardware bag. Use the following procedure for easy changeover.

1. Remove the outer tines and tine extension from left side of tiller by removing the ⅜-16 x 6" cap screw in the end of the tine shaft.
2. Resecure inner tines to tine shaft. See Fig. 11 for the correct sequence of parts. **NOTE:** Use the hardware removed from the outer tines along with the extra tine washer and ⅜-16 x ¾" cap screw (from the hardware bag).
3. Repeat procedure for right side of tiller. Be sure to tighten cap screws securely.

IMPORTANT: Store the outer tines, 6" cap screws, bushings, and tine extensions in a safe place until needed again.

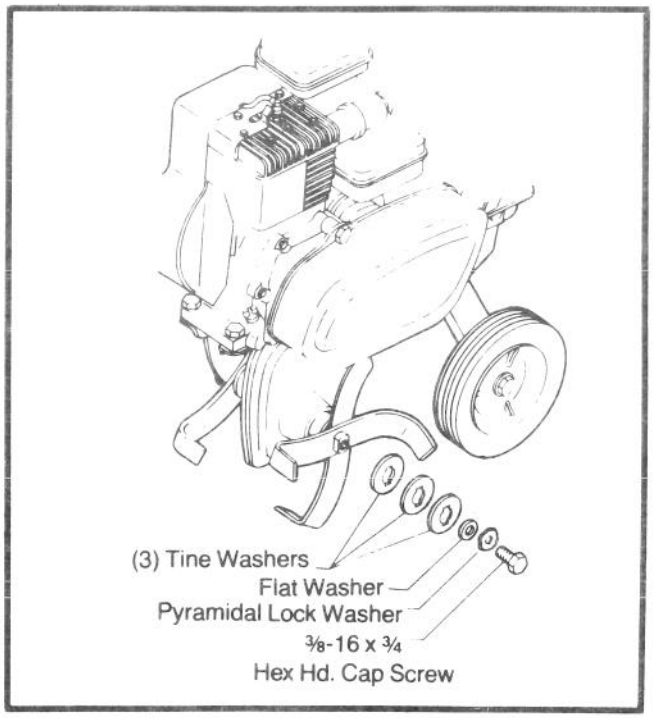


FIGURE 11

A2314

OPERATING INSTRUCTIONS

When changing tines from one arrangement to another be certain all tines are facing the same forward direction as illustrated in Fig. 12. The rotation of tines is indicated by arrows, as viewed from the right-hand side of tiller.

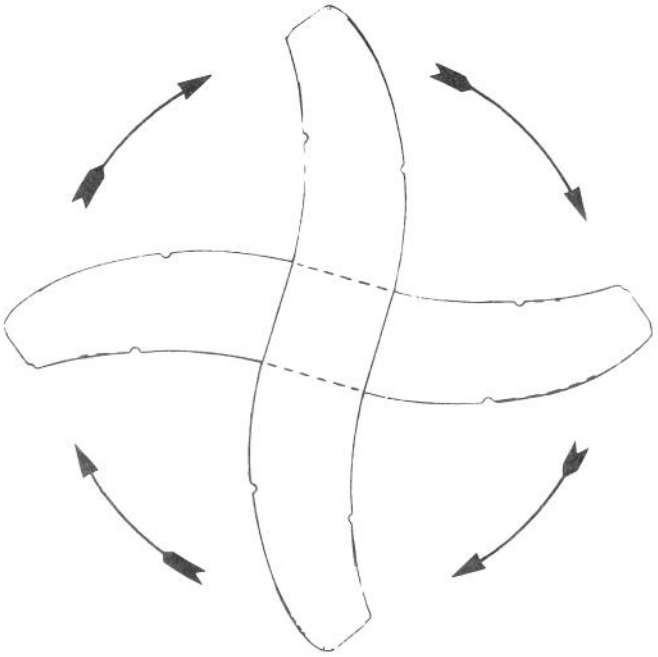
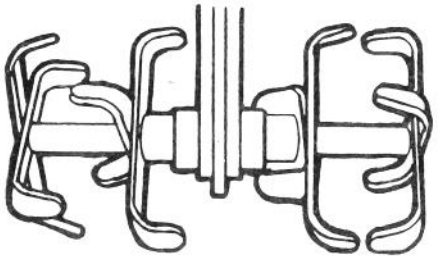
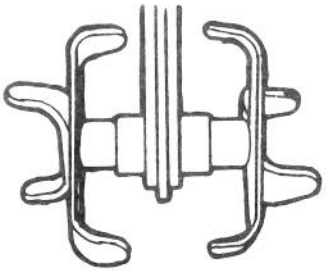


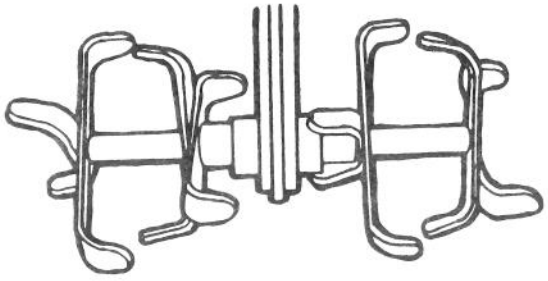
FIGURE 12



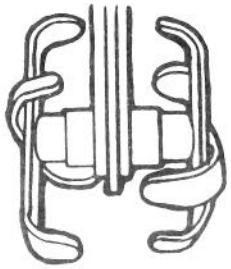
17" Tilling Width
The Shipping Width. This Arrangement Is Recommended For Use When Cultivating Row Crops Or For Border Edging.



12" Tilling Width
This Arrangement Is A Narrow Version Of The 22" Width (All Outer Tines Removed) And Has The Same Usages.



22" Tilling Width
This Arrangement Is Recommended For Use When Preparing Seed Beds.



7" Tilling Width
This Arrangement Is Recommended For Use When Border Edging Or To Work In Flower Beds.

STARTING AND STOPPING INSTRUCTIONS

Now that you have located the controls and understand their operation and function, it is time to start your tiller. Remember, improper use of the tiller could result in injury. Give complete and undivided attention to what you are doing.

Read all instructions on starting and stopping tiller before actually starting the engine. Know how to stop engine quickly if necessary.

1. Refer to the engine STARTING instructions in the engine section of this operator's manual.
2. Move the tiller to suitable ground.
3. Pull throttle control about halfway out.
4. Choke the engine. (Do not choke the engine if you are starting a warm engine.)
5. Start engine by pulling starter rope.

If tines turn when clutch lever is in neutral (up) position, stop engine immediately! Readjust clutch cable (see "Clutch Cable Adjustment" - page 11).

6. Gradually push choke in as engine warms up.
7. Engage and disengage tines with clutch lever to be certain tiller operates properly.

   If tiller moves forward in the neutral position (clutch lever up), or does not move with the clutch lever held down, readjust the clutch cable (see "Clutch Cable Adjustment").

To Stop Engine:

1. Release clutch grip lever.
2. Push throttle control all the way in.

MAINTENANCE

LUBRICATION

The best assurance you have of getting the most dependable service from your tiller is to keep the unit clean, rust free and well lubricated.

1. **Engine** - Refer to the engine operating and maintenance instructions (pages 13-17) for all maintenance and lubrication instructions.
2. **Wheels** - Remove, clean and lubricate wheels once a season for average home use using SAE 30 wt. oil.
3. **Idler Pulley Shaft** - Oil shaft, Fig. 13, once a season (for average home use) using SAE 30 wt. oil. Turn idler pulley while oiling to distribute oil evenly. **NOTE:** Be careful not to get any oil onto the belt.

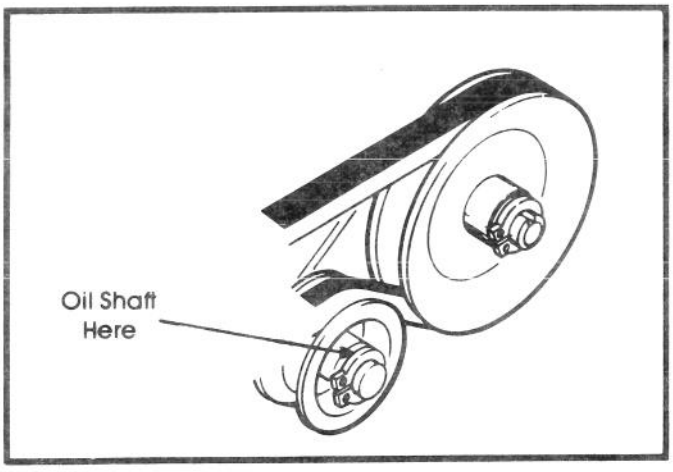


FIGURE 13

4. **Chain Case** - To check the oil level of the tiller chain case raise handle until it is approximately straight up and down. Wipe dirt from around oil fill screw and remove, Fig. 14.

   Oil should be level with the bottom of the oil fill screw hole in this position. If it isn't, add (EP) SAE 140 heavy-duty oil to bring oil up to proper level. Replace oil fill screw after oil is at proper level. The oil level should be checked after every 25 hours of operation, or if there are signs of continuous leakage.

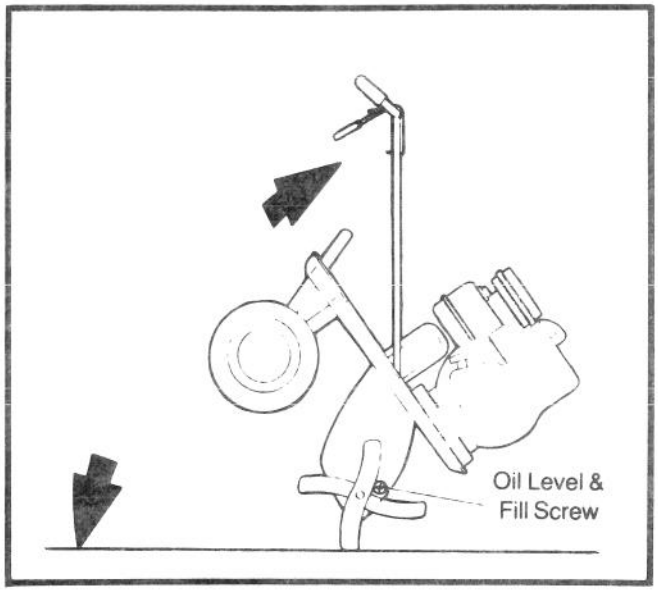


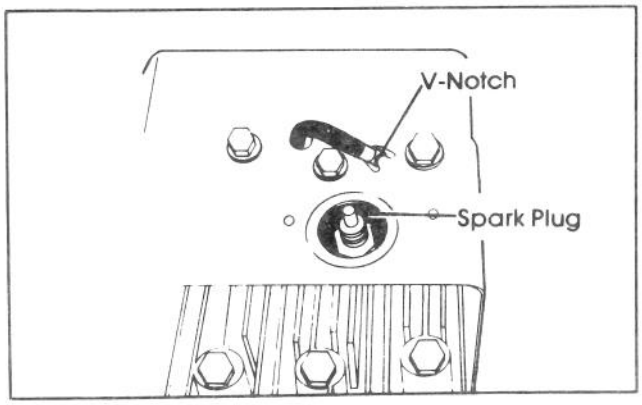
FIGURE 14

MAINTENANCE

ADJUSTMENT AND SERVICING

Never attempt to make adjustments on the tiller while it is in operation or while the engine is running. Always turn engine off before attempting to make any adjustment.

WARNING: TO PREVENT ACCIDENTAL STARTING when servicing the engine or equipment, always remove the spark plug or wire from the spark plug and insert in holding tab (V-notch) as shown below. Also push throttle control all the way in.



CLUTCH CABLE ADJUSTMENT

If the clutch cable is too loose during assembly or as a result of belt wear it may cause slippage and poor performance. If the cable is too tight it will cause the tines to turn and the tiller to move even when the clutch lever is in the neutral (up) position.

The correct adjustment is made by slightly overtightening then loosening the clutch cable as follows:

IMPORTANT! When adjusting and operating tiller clutch cable must run through "U" shaped bracket ("U" bracket location shown in Fig. 4 and 6).

1. Push down on handle to raise tines off of ground and pull the engine starter rope slowly with the clutch lever released (up).

   A. If the tines move when rope is pulled, go to step 2.

   B. If the tines do not move tighten cable by turning nylon adjustment stud one full turn clockwise into spring (Fig. 15) and again pull starter rope with tines off the ground and the clutch lever up (released). Repeat tightening procedure until tines move, then go to step 2.

2. Now loosen cable (turn stud counterclockwise) just enough so there is no movement of the tines when starter rope is pulled with tines off the ground and the clutch lever up (released). Be certain cable still runs through "U" bracket on bottom of handle support. **NOTE:** Be sure to remove cable from stud before turning stud.

3. When cable is adjusted correctly reattach spark plug wire to spark plug.

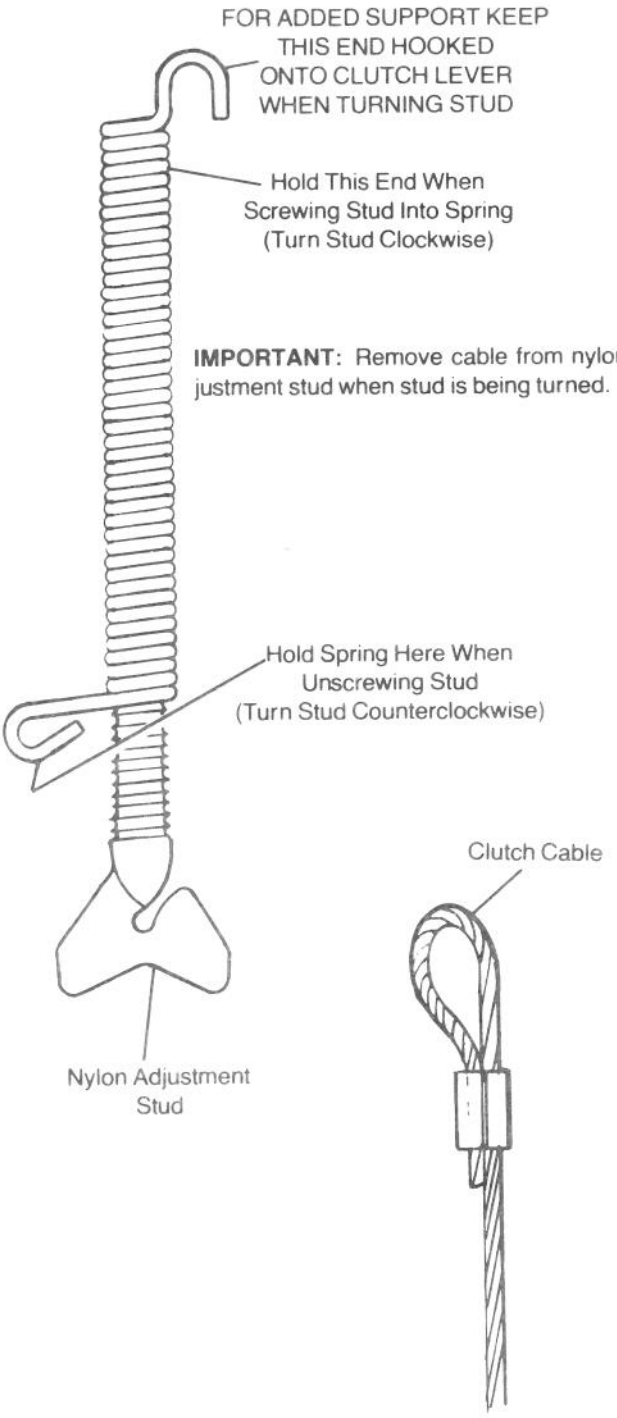


FIGURE 15

A2317

MAINTENANCE

WHEEL HANGER ADJUSTMENT

To provide a comfortable handle bar height at various tilling depths, the wheel hanger can be adjusted in either of two (2) positions, Fig.16.

To Adjust:

1. Remove spring clip and clevis pin.
2. Move wheel hanger to either hole position to raise or lower handle to position most comfortable to you.
3. Insert clevis pin and secure with spring clip.

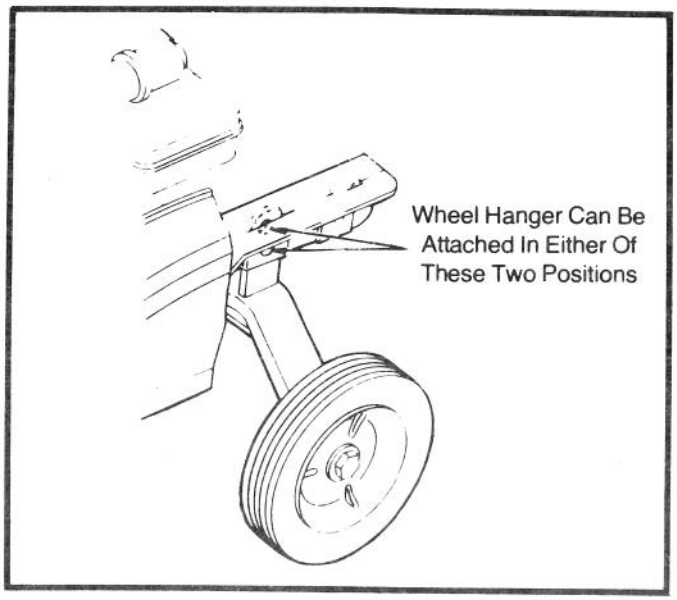


FIGURE 16

BELT ADJUSTMENT

No adjustment required.

BELT REPLACEMENT

The belt on this tiller was specifically designed and engineered to provide long, trouble-free service. If belt replacement is required, order a replacement belt from your TORO dealer to be sure you have a belt that will provide the life and service required.

To Replace Belt:

1. Remove belt guard from tiller by removing cap screw at top of belt guard and screw under belt guard, Fig. 17.
2. Remove old belt by slipping the belt over the front of engine pulley, Fig. 18, and turning pulley until belt comes off. Remove from rear input pulley.
3. Replace with new belt. When replacing the belt, fit the belt around the rear input pulley first and then around the front of the engine pulley, Fig. 18.
4. Replace belt guard. **The belt guard must always be secured to tiller before operating.**

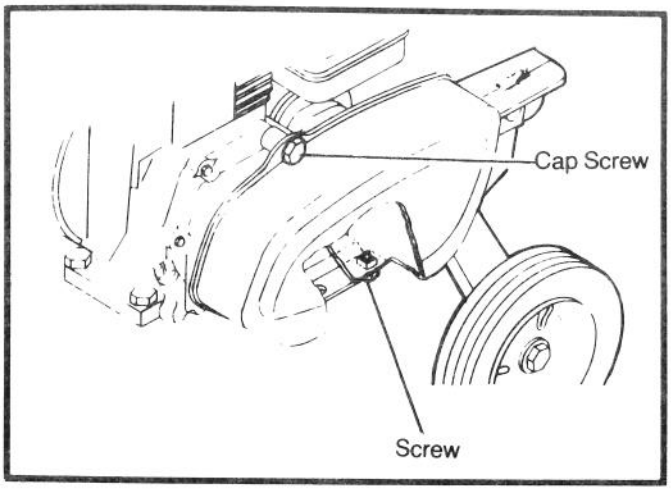


FIGURE 17

STORAGE

For short term storage clean off the tiller and store in a dry place.

If tiller is not to be used for an extended period of time it should be serviced and stored in a dry place.

1. Refer to the engine section for engine storage instructions.
2. Cover exposed metal surfaces with a thin coat of SAE #30 wt. oil.
3. Lubricate per instructions on page 10.
4. Before using the tiller again, check all lubrication points, fill fuel tank and review safety and operating instructions in this Operator's Manual.

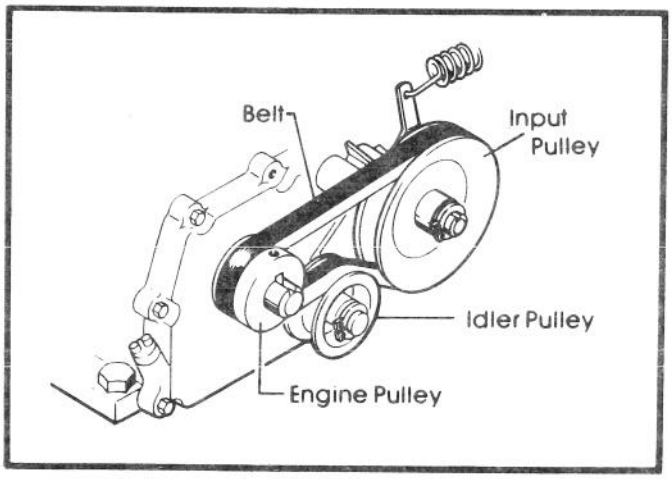
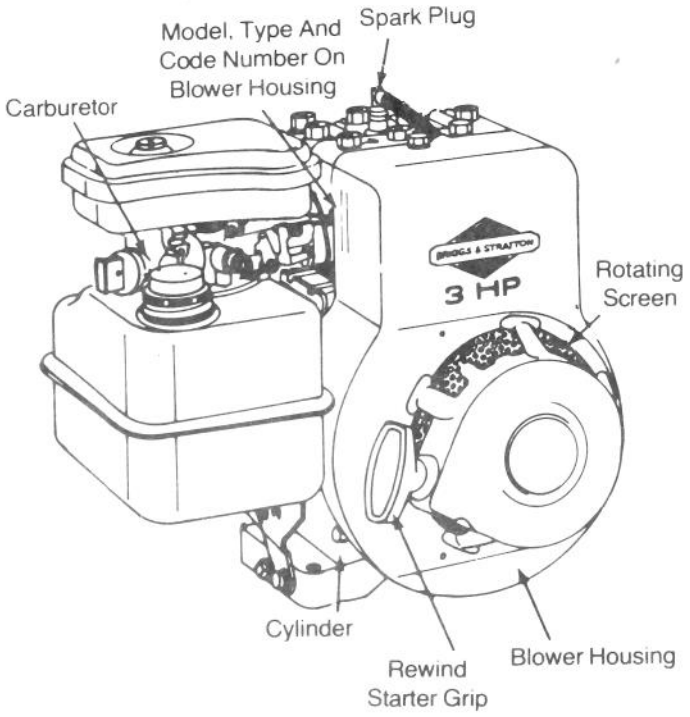


FIGURE 18

A2318

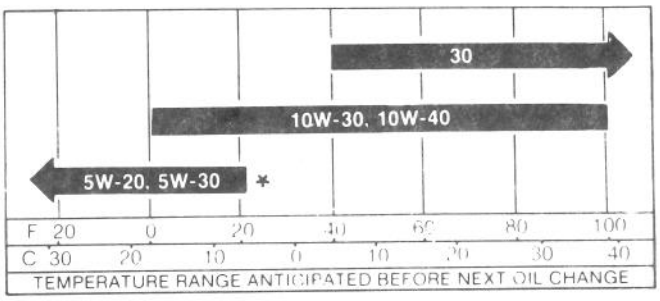
ENGINE OPERATING AND MAINTENANCE INSTRUCTIONS



BEFORE STARTING

Use a high quality detergent oil classified "For Service SF, SE, SD or SC." Detergent oils keep the engine cleaner and retard the formation of gum and varnish deposits. Nothing should be added to the recommended oil.

RECOMMENDED SAE VISCOSITY GRADES

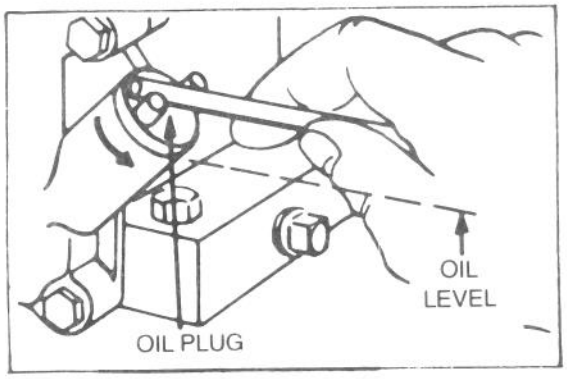


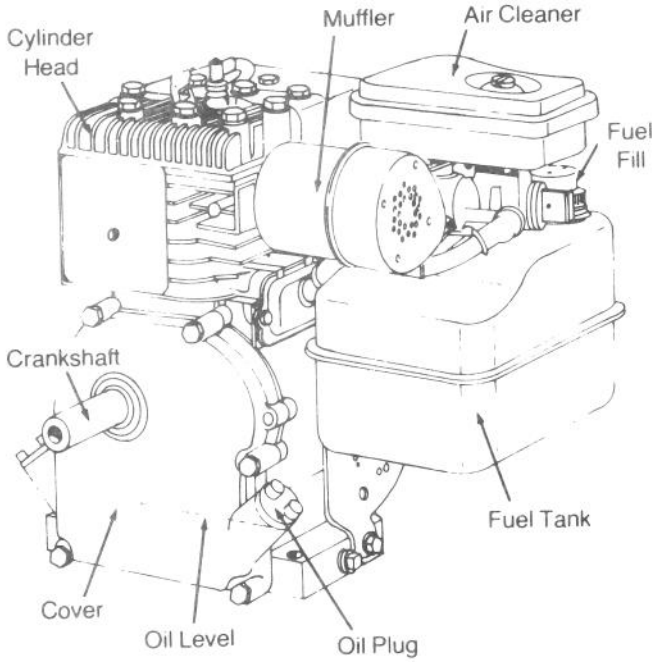
* If not available, a synthetic oil may be used having 5W-20, 5W-30 or 5W-40 viscosity.

TO FILL CRANKCASE WITH OIL

Place engine level. Clean area around oil fill before removing oil plug.

Oil Plug Remove oil plug. Fill crankcase to point of overflowing. POUR SLOWLY. Capacity approximately 1¼ pints (0.59 liters). Replace oil plug.





FILL FUEL TANK

Use clean, fresh, "regular grade leaded or low-lead gasoline. DO NOT MIX OIL WITH GASOLINE.

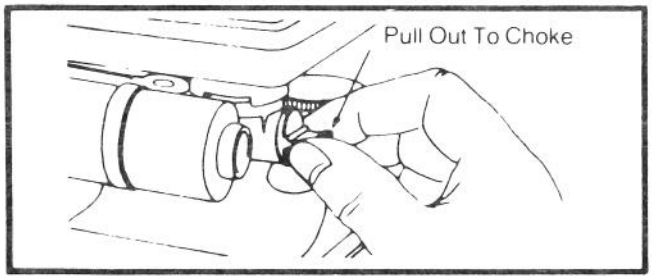
NOTE: The use of "lead-free" gasoline produces fewer combustion deposits, but may shorten valve life if carburetor adjustment is too lean.

ENGINE OPERATING AND MAINTENANCE INSTRUCTIONS

STARTING

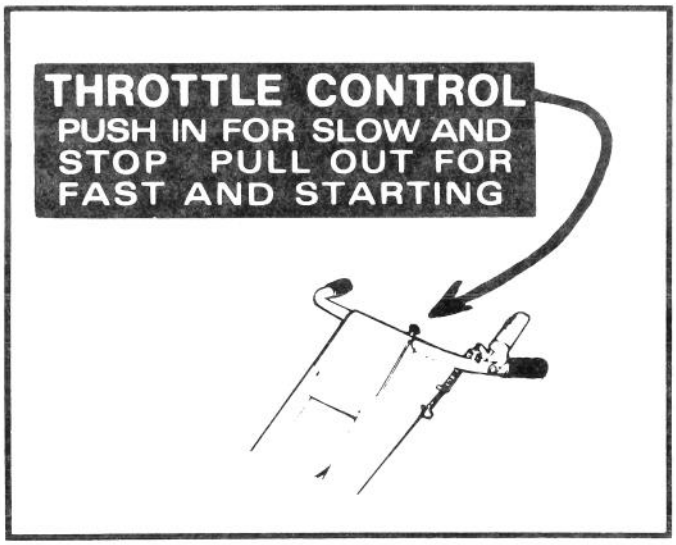
Start, store and fuel engine in a level position

CHOKE ENGINE: Pull choke out as illustrated



NOTE: A warm engine requires less choking than a cold engine

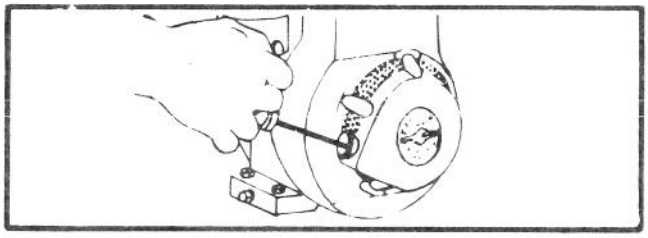
THROTTLE CONTROL LEVER: Move throttle control to start position.



TO START ENGINE

DANGER: ALWAYS KEEP HANDS AND FEET CLEAR OF ROTATING MACHINERY

Rewind Starter. Grasp starter grip as illustrated and pull out cord rapidly to overcome compression and prevent kick-back. Repeat if necessary with choke opened slightly. When engine starts open choke gradually



TO STOP ENGINE

Push throttle control all the way in.

MAINTENANCE

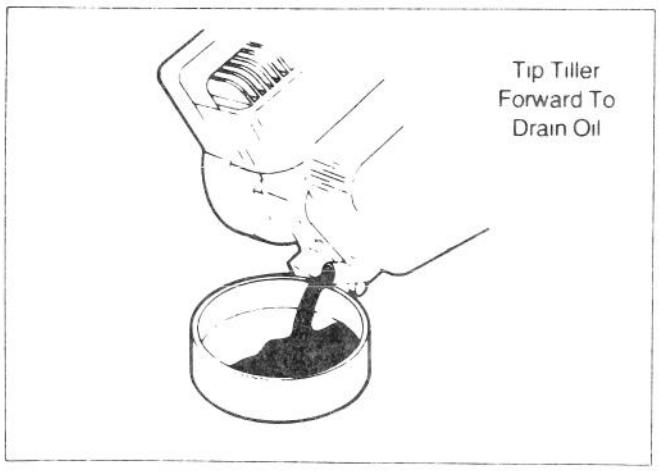
WARNING: TO PREVENT ACCIDENTAL STARTING when servicing the engine or equipment, always remove the spark plug or wire from the spark plug and insert in holding tab (V-notch).

CHECK OIL LEVEL regularly - after each five hours of operation. BE SURE OIL LEVEL IS MAINTAINED.

CHANGE OIL after first five hours of operation. Thereafter change every 25 hours of operation. Drain oil while engine is warm, as follows:

1. Clean area around oil plug.
2. Drain gasoline from fuel tank.
3. Tip and hold tiller about 45° forward.

   HINT: If necessary have someone hold tiller in this position.
4. Place oil pan directly under opening; remove oil plug and allow oil to drain completely.
5. Lower tiller to level position and refill with new oil of proper grade (see oil chart in BEFORE STARTING section).
6. Wipe up any spilled or excess oil and replace oil plug.



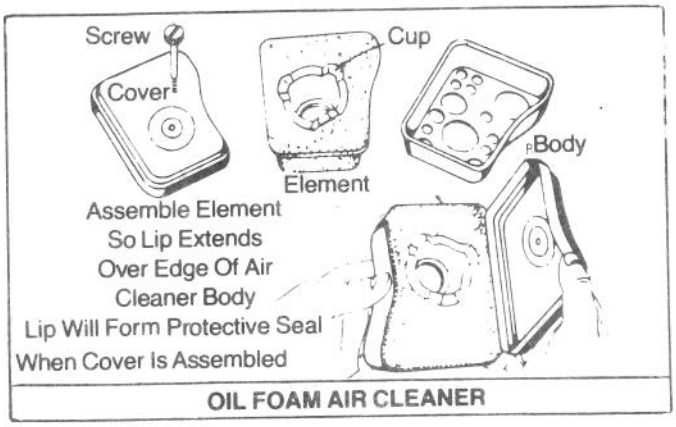
ENGINE OPERATING AND MAINTENANCE INSTRUCTIONS

TO SERVICE AIR CLEANER
"Oil Foam" Air Cleaner

Clean and re-oil foam element at three month intervals or every 25 hours, whichever occurs first.

NOTE: Service air cleaner more often under dusty conditions.

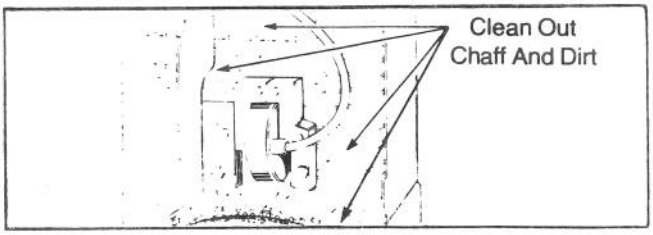
1. Remove screw.
2. Remove air cleaner carefully to prevent dirt from entering carburetor.
3. Take air cleaner apart and clean.
   A. WASH foam element in kerosene or liquid detergent and water to remove dirt.
   B. Wrap foam in cloth and squeeze dry.
   C. **Saturate foam with engine oil.** Squeeze to remove excess oil.
4. Reassemble parts and fasten to carburetor securely with screw.



OIL FOAM AIR CLEANER

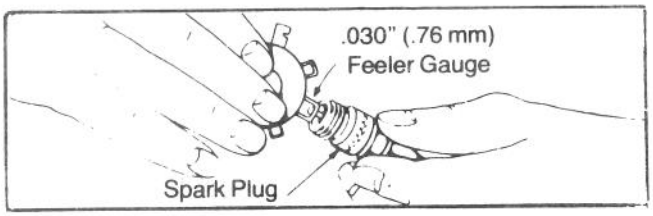
CLEAN COOLING SYSTEM - Grass, chaff or dirt may clog the rotating screen and the air cooling system, especially after prolonged service. Yearly or every 100 hours, whichever occurs first, remove the blower housing and clean the areas shown to avoid overspeeding, overheating and engine damage. Clean more often if necessary.

A2321



DANGER: Periodically clean muffler area to remove all grass, dirt and combustible debris.

SPARK PLUG - Clean and reset gap at .030" every 100 hours of operation.



CAUTION: Do not blast clean spark plug. Spark plug should be cleaned by scraping or wire brushing and washing with a commercial solvent.

Sparking can occur if wire terminal does not fit firmly on spark plug, or if stop switch vibrates against spark plug. Reform terminal or repair switch if necessary.

REMOVE COMBUSTION DEPOSITS every 100-300 hours of operation. Remove cylinder head and cylinder head shield. Scrape and wire brush the combustion deposits from cylinder, cylinder head, top of piston and around valves. Use a soft brush to remove deposits. Re-assemble gasket, cylinder head and cylinder head shield. Turn screws down finger tight with the three longer screws around the exhaust valve, if so equipped. Torque cylinder head screws in a staggered sequence to 140 inch pounds (15.82 Nm).

SPARK ARRESTER EQUIPPED MUFFLER - If engine muffler is equipped with spark arrester screen assembly, remove every 50 hours for cleaning and inspection. Replace if damaged.

CLEAN ENGINE - Remove dirt and debris with a cloth or brush. Cleaning with a forceful spray of water is not recommended as water could contaminate the fuel system.

ADJUSTMENTS

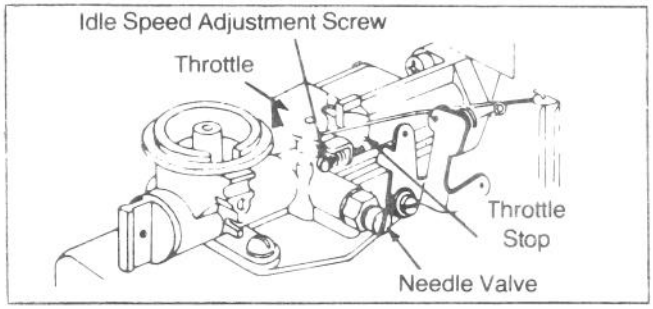
CARBURETOR ADJUSTMENTS

Minor carburetor adjustments may be required to compensate for differences in fuel, temperature, altitude or load.

NOTE: The air cleaner must be assembled to carburetor when running engine.

TO ADJUST CARBURETOR - Gently turn needle valve clockwise until it **just** closes. Valve may be damaged by turning it in too far.

Now open needle valve 1½ turns counterclockwise. This initial adjustment will permit the engine to be started and warmed up (approximately 5 minutes) prior to final adjustment.



FINAL ADJUSTMENT

Place throttle control in "FAST" position. Turn needle valve in until engine slows (clockwise - lean mixture) then turn it out past smooth operating point until engine runs unevenly (rich mixture). Now turn needle valve to the midpoint between rich and lean so the engine runs smoothly. Next, adjust idle RPM. Rotate throttle counterclockwise and hold against stop. Adjust idle speed adjusting screw to obtain 1750 RPM. Release throttle - engine should accelerate without hesitation or sputtering. If engine does not accelerate properly, the carburetor should be re-adjusted, usually to a slightly richer mixture.

CONTROL ADJUSTMENTS:

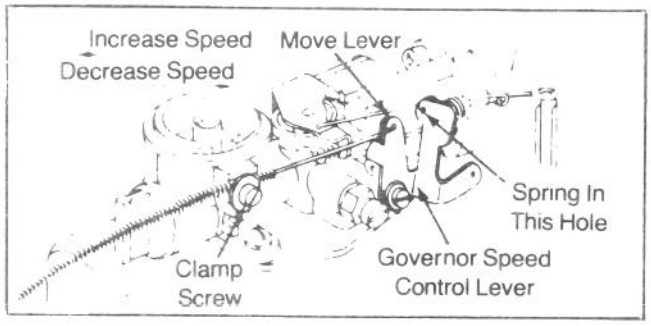
The speed control must be properly adjusted to start and operate the engine at maxium speed.

GOVERNOR SPEED CONTROL LEVER

The acceptable operating speed range is 1800 to 3600 RPM. Idle speed is 1750 RPM. DO NOT EXCEED THE 3600 RPM MAXIMUM.

THROTTLE CONTROL

Controls on powered equipment should move governor speed lever in a direction that will elongate spring to increase speed.



To Adjust:

Loosen clamp screw on carburetor or fuel tank bracket and move casing in or out to obtain proper speed.

A2322

ENGINE OPERATING AND MAINTENANCE INSTRUCTIONS

GENERAL INFORMATION

This engine is a single-cylinder, L-head, air-cooled type.

MODEL 80202

Bore ..... 2⅜" (60.33 mm)
Stroke ..... 1¾" (44.45 mm)
Displacement ..... 7.75 cu. in. (127.0 cc)
Horsepower ..... 3.00 Max. @ 3600 RPM
Torque (Ft. Lbs.) ..... 4.6 Max. @ 3100 RPM

The horsepower rating listed is established in accordance with the society of Automotive Engineers Test Code - J607. For practical operation, the horsepower loading should not exceed 85% of this rating. Engine power will decrease 3½% for each 1,000 feet (304.8 m) above sea level and 1% for each 10° above 60° F (16° C).

In some areas, local law requires the use of a resistor spark plug so as to supress ignition signals. If an engine was originally equipped with a resistor spark plug, be sure to use the same type of spark plug for replacement.

TUNE-UP SPECIFICATIONS

Spark Plug Type	Champion	Autolite	Robert Bosch
Short Plug	CJ-8	235	WS9E
Long Plug	J-8	295	--
Resistor Short Plug	RCJ-8	245	WSR9E
Resistor Long Plug	RJ-8	306	--

Spark Plug Gap ..... .030" (.76 mm)
Ignition Point Gap ..... .020" (.51 mm)
Intake Valve Clearance ..... .005"-.007" (.13-.18 mm)
Exhaust Valve Clearance ..... .009"-.011" (.23-.28 mm)

STORAGE INSTRUCTIONS

Engines to be stored over 30 days should be completely drained of fuel to prevent gum deposits forming on essential carburetor parts, fuel filter and tank.

NOTE: The use of a fuel additive, such as STA-BIL, or an equivalent, will minimize the formation of fuel gum deposits during storage. Such an additive may be added to the gasoline in the fuel tank of the engine, or to the gasoline in a storage container.

a. All fuel should be removed from the tank. Run the engine until it stops from lack of fuel. The small amount of fuel that remains in the sump of the tank should be removed by absorbing it with a clean, dry cloth.

b. While engine is still warm, drain oil from crankcase. Refill with fresh oil.

c. Remove spark plug, pour approximately ½ ounce (15 cc) of engine oil into cylinder and crank slowly to distribute oil. Replace spark plug.

d. Clean dirt and chaff from cylinder, cylinder head fins, blower housing, rotating screen and muffler areas.

e. Store in a clean and dry area.

A2323

TROUBLE SHOOTING

Problem	Possible Causes	Corrective Action
Engine does not start.	1. Gas tank is empty.	1. Fill fuel tank with gasoline: Refer to Fill Fuel Tank With Gasoline, page 13.
	2. Choke not in FULL position.	2. Move choke to FULL CHOKE position: Refer to Starting and Stopping Instructions, page 14.
	3. Spark plug loose.	3. Tighten spark plug to 15 ft.-lb. (20.4 Nm)
	4. High tension wire loose or disconnected from spark plug.	4. Install high tension wire on spark plug.
	5. Spark plug gap is incorrect.	5. Set gap between electrodes at 0.030 of an inch (0.76 mm).
	6. Spark plug is defective.	6. Install new, correctly gapped plug: Refer to Engine Operating and Maintenance Instructions.
	7. Faulty points or condenser.	7. Contact Authorized TORO Service Dealer.
Engine starts hard or loses power.	1. Dirt, water, or stale fuel in gas tank.	1. Drain gas and clean fuel tank. Fill tank with clean, fresh gasoline: Refer to Fill Fuel Tank With Gasoline, page 13.
	2. Vent hole in fuel tank cap is plugged.	2. Clean or replace fuel tank cap.
	3. Air cleaner is dirty.	3. Clean the air cleaner element: Refer to To Service Air Cleaner, page 15.
Engine operates erratically.	1. Spark plug is defective.	1. Install new, correctly gapped plug: Refer to Engine Operating and Maintenance Instructions, page 17.
	2. Spark plug is gapped incorrectly.	2. Set gap between electrodes at 0.030 of an inch (0.76 mm).
	3. Air cleaner is dirty.	3. Clean the air cleaner element: Refer to To Service Air Cleaner, page 15.

A2324

TROUBLE SHOOTING

Problem	Possible Causes	Corrective Action
Engine idles poorly.	1. Air cleaner is dirty.	1. Clean the air cleaner element: Refer to To Service Air Cleaner, page 15.
	2. Oil level in crankcase is low.	2. Add oil to crankcase: Refer to Fill Crankcase With Oil, page 13.
	3. Air slots in engine shroud are plugged.	3. Remove obstruction from slots.
	4. Cooling fins and air passages under engine blower housing are plugged.	4. Remove obstruction from cooling fins and blower housing: Refer to Clean Cooling System.
	5. Improper idle adjustment.	5. Adjust carburetor properly, page 16.
Engine misfires at high speed.	1. Air gap between electrodes of spark plug is too close.	1. Set air gap at 0.030 of an inch (0.76 mm).
	2. Carburetor adjusted incorrectly.	2. Adjust carburetor: Refer to Carburetor Adjustments in the Engine Operating and Maintenance section.
Engine overheats.	1. Cooling air flow is restricted.	1. Remove any obstruction from slots in shroud, blower housing, air passages and cooling fins on engine.
	2. Oil level in crankcase is low.	2. Add oil to crankcase: Refer to Fill Crankcase With Oil, page 13.
	3. Incorrect spark plug.	3. Install Champion RCJ8 spark plug that is gapped at 0.030 of an inch.
Tiller vibrates abnormally.	1. Tine section is loose.	1. Secure tine section with clevis pin and hair pin cotter.
	2. Engine mounting bolts are loose.	2. Tighten engine mounting bolts.
	3. Improper carburetor adjustment.	3. Adjust carburetor properly, page 16.
	4. Air cleaner plugged.	4. Service air cleaner, page 15.
Tines do not rotate.	1. Belt is broken.	1. Contact Authorized TORO Service Dealer.
	2. Clutch cable is adjusted incorrectly.	2. Adjust drive clutch belt: Refer to Clutch Cable Adjustment, page 11.

A2325

IDENTIFICATION AND ORDERING

MODEL AND SERIAL NUMBERS

The tiller has two identification numbers: a model number and a serial number. The two numbers are stamped on a decal which is on the right side of the frame below the handle support bracket.

Record the model and serial numbers below and keep this manual in a safe place for future reference.

Model No. _____
Serial No. _____

In any correspondence the tiller, supply the model and serial numbers to assure that correct information and replacement parts are obtained.

To order replacement parts from an Authorized TORO Service Dealer, supply the following information:

1. Model and serial number of the tiller.
2. Part number, description, and quantity of part(s) desired.

NOTE: Do not order by reference number if a parts catalog is being used; use the PART NUMBER.

The Toro Promise

A Two Year Limited Warranty
On All
Gasoline Powered Consumer Products

The Toro Company promises to repair these TORO Products if defective in materials or workmanship. The following time periods from the date of purchase apply:

Residential Product . . . . . 2 Years
Residential Products Used Commercially . . . 45 Days

The costs of parts and labor are included, but the customer pays the transportation costs. Just return any residential product to an Authorized TORO Service Dealer or TORO Distributor.

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

1. Contact any Authorized TORO Service Dealer, TORO Master Service Dealer, or TORO Distributor (the Yellow Pages of your telephone directory is a good reference source).
2. He will either instruct you to return the product to him or recommend another Authorized TORO Service outlet which might be more convenient.
3. Bring the product along with your original sales slip, or other evidence of purchase date, to the service dealer.
4. The servicing dealer will inspect the unit, advise you whether the product is defective and, if so, make all repairs necessary to correct the defect without extra charge to you.

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

Write:
TORO Customer Service Department
8111 Lyndale Avenue South
Minneapolis, Minnesota 55420

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

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

Some states do not allow limitations on how long 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 Service Dealer using Toro approved replacement parts.

Repairs or attempted repairs by anyone other than an Authorized TORO Service Account 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.