



Owner/Operator Manual

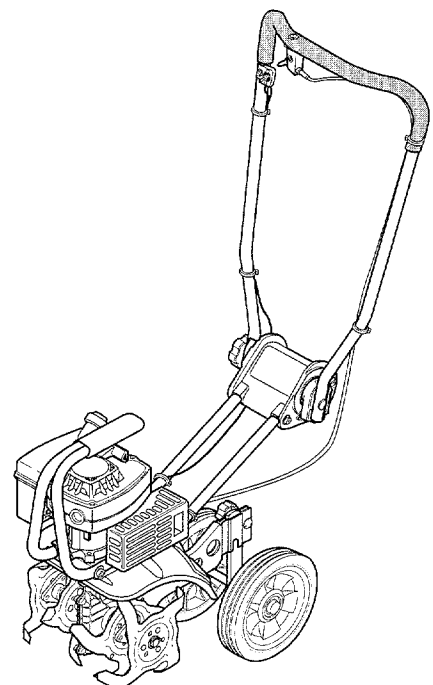
Tiller/Cultivator with Edger Attachment

- Safety
- Assembly
- Operation
- Maintenance/Service
- Repair Parts

Models

12097

12159 *30 LENS*



SAFETY RULES



CAUTION: ALWAYS DISCONNECT SPARK PLUG WIRE AND PLACE WIRE WHERE IT CANNOT CONTACT SPARK PLUG TO PREVENT ACCIDENTAL STARTING WHEN SETTING UP, TRANSPORTING, ADJUSTING OR MAKING REPAIRS.



TRAINING

- Read this Owner/Operator Manual and the separate Engine Owner's Manual very carefully before operating this equipment. Be completely familiar with the controls and the proper use of the equipment. Know how to stop the unit and disengage the controls quickly. A replacement Manual is available by contacting the Factory.
- Never allow children or untrained adults to use this equipment. Let adults operate the unit only if instructed properly.
- Keep the area of operation clear of all persons, particularly small children and pets. Keep bystanders at least 25 feet from the area of operation.
- Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people, their property, and themselves.
- Familiarize yourself with all of the safety and operating decals on this equipment and on any of its attachments or accessories.
- Do not run engine in an enclosed area. Engine exhaust contains carbon monoxide gas, a deadly poison that is odorless, colorless, and tasteless. Do not operate this equipment near buildings, windows, or air conditioning equipment.
- Do not allow hands or any other part of the body or clothing near the rotating tines or near any other moving part. The tines begin to rotate forward once the engine is started and the throttle control lever is squeezed. The tines continue to rotate until the operator releases the throttle control lever.
- Before inspecting or servicing any part of the equipment, shut off engine, make sure all moving parts have come to a complete stop, then disconnect spark plug wire from spark plug and move wire away from the plug.
- Do not operate this equipment if you are under the influence of alcohol, medication, or when you are tired or ill.

PREPARATION

- Thoroughly inspect the area where the equipment is to be used and remove all foreign objects.
- Make sure that the throttle control lever is disengaged and is in the neutral position before you begin to start the engine.
- Do not operate the machine without wearing adequate outer garments. Avoid loose garments or jewelry that could get caught in moving parts of the machine or its engine.

- Do not operate the equipment when barefoot or when wearing sandals, sneakers, or similar lightweight footwear. Wear protective footwear that will protect your feet and improve footing on all surfaces.
- Wear approved safety glasses when operating this equipment. The operation of any powered machine can result in foreign objects being thrown by high-speed rotating parts.
- Do not till near underground electric cables, telephone lines, pipes, or hoses. If in doubt, contact your utility or telephone company to locate underground services.
- Handle fuel with care. It is highly flammable and has explosive vapors. Take these precautions:
 - a. Use an approved fuel container.
 - b. Add fuel before starting the engine. Never remove the cap of the fuel tank or add fuel while the engine is running or when the engine is hot. Operators shall not smoke.
 - c. Keep matches, cigarettes, cigars, pipes, open flames, and sparks away from the fuel tank and fuel container.
 - d. Fill fuel tank outdoors and with extreme caution. Never fill fuel tank when indoors. Use a funnel or spout to prevent spillage.
 - e. Replace all fuel tank and fuel container caps securely.
 - f. If fuel is spilled, do not attempt to start the engine, but move the machine away from the area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
- Never make adjustments to your equipment when the engine is running or spark plug wire is connected (unless specifically recommended in Owner/Operator Manual).

OPERATION

- The correct operator's position is when you are standing behind the handlebars, hands on handlebar grips, facing forward toward the engine. Do not leave this position while using the engine throttle lever.
- Do not put hands or feet near or under rotating parts.
- Exercise extreme caution when on or crossing gravel drives, walks or roads. Stay alert for hidden hazards or traffic. Do not carry passengers.
- After striking a foreign object, stop the engine, let all moving parts come to a complete stop, disconnect the spark plug wire and prevent it from touching the spark plug, then carefully inspect the machine for damage.



LOOK FOR THIS SYMBOL TO POINT OUT IMPORTANT SAFETY PRECAUTIONS. IT MEANS— ATTENTION!!! BECOME ALERT!!! YOUR SAFETY IS INVOLVED.

SAFETY RULES

Repair the damage before restarting and operating the machine.

- Exercise caution to avoid slipping or falling.
- If the machine should start to vibrate abnormally, stop the engine. Disconnect the spark plug wire and prevent it from touching the plug. Check immediately for the cause. Vibration is generally a warning of trouble. Fix the problem before using the equipment again.
- Stop the engine, disconnect the spark plug wire and prevent it from touching the spark plug whenever you leave the equipment, before unclogging the tines, or when making any repairs, adjustments or inspections.
- Take all possible precautions when leaving the machine unattended. Always stop the engine. Disconnect the spark plug wire and prevent it from touching the plug.
- Before cleaning, repairing, or inspecting, stop the engine and make certain all moving parts have stopped. Disconnect the spark plug wire and prevent it from touching the spark plug to avoid accidental starting.
- Never operate equipment without proper guards, plates, or other protective safety devices in place.
- Do not run the engine in an enclosed area. The exhaust fumes from the engine contain extremely dangerous carbon monoxide gas. This gas is colorless, odorless, tasteless and deadly poisonous.
- Keep children and pets away.
- Be aware that the equipment may unexpectedly bounce upward or jump forward if the tines should strike extremely hardpacked soil, frozen ground, or buried obstacles such as large stones, roots or stumps. If you are in doubt about the tilling conditions, always use the following operating precautions to assist you in maintaining control of the equipment:
 - a. Stand behind the equipment, using both hands on the handlebars. Relax your arms, but use a secure hand grip.
 - b. Start tilling at shallow depths, working gradually deeper with each pass.
 - c. Clear the tilling area of all large stones, roots, and other debris.
 - d. In an emergency, stop the tines by releasing the engine throttle lever on the handlebar. To stop the engine, move the engine on-off switch to OFF.
- Do not overload the machine's capacity by attempting to till too deeply at too fast a rate.
- Never operate the equipment on slippery surfaces. Look behind and use care when backing up.
- Do not operate the equipment on a slope that is too steep for safety. When on slopes, slow down and make sure you have good footing.
- Never allow bystanders near the unit.
- Only use attachments and accessories that are factory-approved.
- Never operate the equipment without good visibility or good light.
- Never operate the unit if you are tired, or under the influence of alcohol, drugs, or medication.
- Do not tamper with the engine governor settings on the machine; the governor controls the maximum safe operating speed and protects the engine and all other moving parts from damage caused by engine over-speed. Authorized service shall be sought if a problem exists.
- Do not touch engine parts which may be hot from operation. Allow parts to cool before inspecting, cleaning or repairing.
- Remember: you can stop the tines by releasing the engine throttle lever. Move the engine on-off switch to OFF to shut the engine off.
- Never transport this machine when the engine is running.
- Terminals and non-insulated electrical parts shall be protected against shorting during normal servicing, refueling or lubrication.
- Use extreme caution when reversing or pulling the machine toward you.
- Start the engine carefully according to instructions and with feet well away from the tines.

MAINTENANCE/STORAGE

- Keep the tiller, attachments and accessories in safe working condition.
- Check all nuts, bolts, and screws at frequent intervals for proper tightness to be sure equipment is in safe working condition.
- Never store equipment with fuel in fuel tank inside a building where fumes may reach an open flame or spark (hot water and space heaters, furnaces, clothes dryers, stoves, electric motors, etc.).
- Allow the engine to cool before storing the equipment.
- Keep the engine free of grass, leaves, or grease to reduce the chance of a fire hazard.
- Store gasoline in a cool, well-ventilated area, safely away from any spark- or flame-producing equipment. Store gasoline in an approved container, safely away from the reach of children.
- Never perform maintenance when engine is running or spark plug wire is connected unless instructed to do so.
- If fuel tank must be drained, do so outdoors.
- Follow manufacturer's recommendations for safe loading, unloading, transport, and storage of machine.



WARNING:

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

CAUTION

TO AVOID INJURY:

- READ THE OWNER / OPERATOR MANUAL.
- KNOW LOCATION AND FUNCTION OF ALL CONTROLS.
- KEEP ALL SAFETY DEVICES AND SHIELDS IN PLACE AND WORKING.
- NEVER ALLOW CHILDREN OR UNINSTRUCTED ADULTS TO OPERATE TILLER.
- SHUT OFF ENGINE AND DISCONNECT SPARK PLUG WIRE BEFORE UNCLOGGING TINES OR MAKING REPAIRS.
- KEEP BYSTANDERS AWAY FROM MACHINE.
- KEEP AWAY FROM ROTATING PARTS.
- USE EXTREME CAUTION WHEN REVERSING OR PULLING THE MACHINE TOWARDS YOU.

MODEL NUMBER: _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

THE MODEL AND SERIAL NUMBERS WILL BE FOUND ON A DECAL LOCATED ON THE HANDLEBARS OF YOUR MACHINE.

YOU SHOULD RECORD BOTH THE SERIAL NUMBER AND DATE OF PURCHASE AND KEEP IN A SAFE PLACE FOR FUTURE REFERENCE.

CONGRATULATIONS on your purchase of a Tiller/Cultivator with Edger Attachment. It has been designed, engineered and manufactured to give you the best possible dependability and performance.

Should you experience any problems you cannot easily remedy, please contact your nearest authorized Dealer or the Factory.

Please read and retain this Manual. The instructions will help you assemble and maintain your machine properly. Always observe the "SAFETY RULES."

PRODUCT SPECIFICATIONS

HORSEPOWER:	2 HP
DISPLACEMENT:	3.0 CU. IN.
FUEL CAPACITY: (24:1 gasoline to 2-cycle oil mixture)	20 ozs.
SPARK PLUG (GAP 0.030-in.):	Champion CJ-6Y* or equivalent
IGNITION	Electronic
NET ENGINE WEIGHT	7.5 LBS.

* In Canada, replace spark plug with a resistor plug.

WARNING: This machine is equipped with an internal combustion engine and should not be used on or near any unimproved forest-covered, brush-covered or grass-covered land unless the engine's exhaust system is equipped with a spark arrester muffler meeting applicable local or state laws (if any). If a spark arrester muffler is used, it should be maintained in effective working order by the operator.

In the state of California the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal lands. This engine is not equipped with a spark arrester for the muffler. A spark arrester for the muffler is available through your nearest authorized Engine Dealer.

This machine meets voluntary safety standard B71.8 – 1996, which is sponsored by the Outdoor Power Equipment Institute, Inc., and is published by the American National Standards Institute.

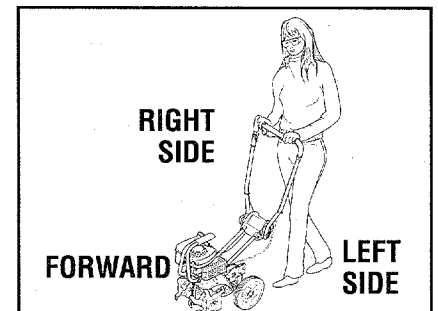


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OPERATOR'S POSITION
References in this Manual to LEFT and RIGHT sides of the tiller are given from the operator's position behind the handlebars (unless specified otherwise).

ACCESSORIES AND ATTACHMENTS

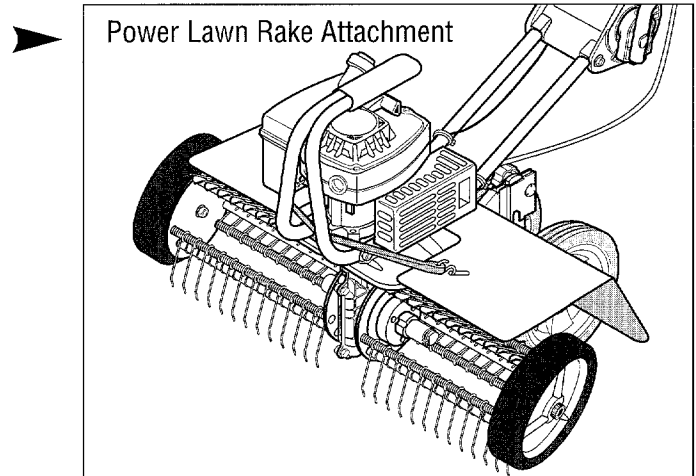
These accessories and attachments were available when the Tiller/Cultivator was purchased. They are also available at your local authorized Tiller/Cultivator dealer. Your dealer can order repair parts for you when you provide the model number of your Tiller/Cultivator.

OPTIONAL ATTACHMENTS

Power Lawn Rake Attachment– Model 12575

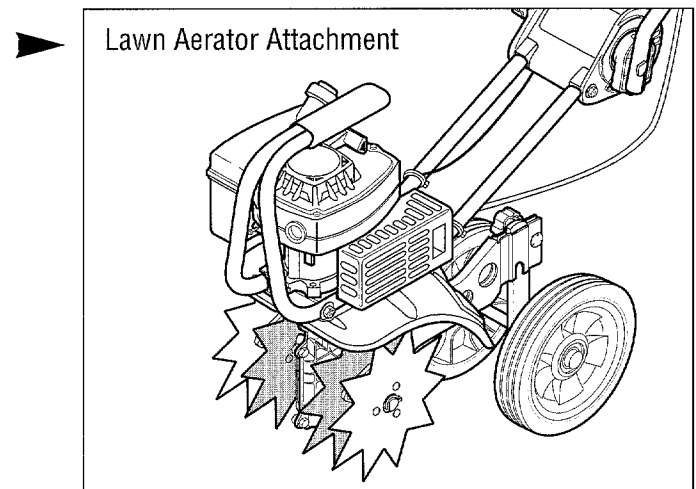
Matted grass and debris not only looks unattractive, but stifles lawn growth and overall health. This attachment mounts without tools and features dozens of tempered steel “fingers” that spring off the surface to penetrate and loosen matted grass without disturbing root growth. An 18"-wide swath covers a large lawn area quickly.

The Power Lawn Rake is a valuable attachment because it saves you a lot of time and it keeps your lawn healthy and vigorous.



Lawn Aerator Attachment– Model 12574

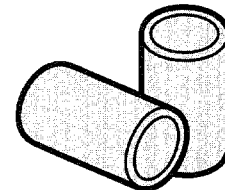
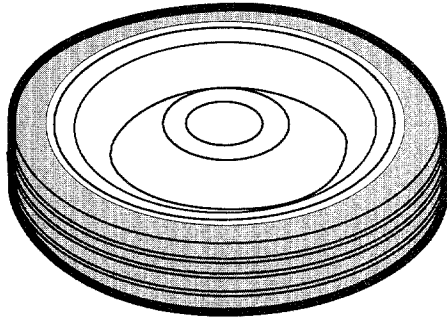
Helps promote healthy, dense lawns by aerating the lawn and loosening the soil to contribute to better root growth. Four (4) tempered steel tines puncture the surface of the lawn, letting nutrients more easily reach the roots. No tools are needed to mount or remove this optional attachment. When mounted, it takes the place of the standard tine sections.



CONTENTS OF HARDWARE PACK

Parts bag contents (not shown full size)

(1) Border/Edger Wheel

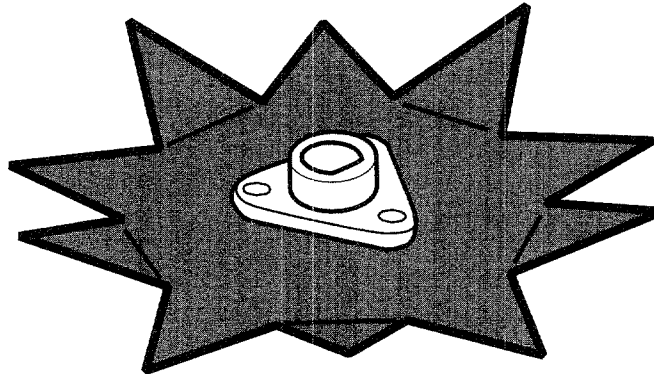


(2) Bushings for Narrow Width Tilling



(1) Short Bushing
for Border/Edger

Parts packed separately in carton (not shown full size)



(1) Border/Edger Tine

ASSEMBLY

Read these instructions in their entirety before you attempt to assemble or operate your new equipment. Your new equipment has been assembled at the factory and only requires an adjustment of handlebar height.

The Border Edger Attachment does not need to be assembled or installed until you are ready to do edging projects (refer to instructions in this Section).

To ensure safe and proper operation of your machine, all parts and hardware you install or adjust must be tightened securely. Use the correct tools to ensure proper tightness.

IMPORTANT: THE CORRECT MIXTURE OF UNLEADED AUTOMOTIVE GASOLINE AND TWO-CYCLE MOTOR OIL (USE A 24:1 RATIO OF GAS TO TWO-CYCLE OIL) MUST BE ADDED TO THE FUEL TANK BEFORE STARTING THE ENGINE. SPECIFICATIONS AND MIXING INSTRUCTIONS ARE COVERED IN THE "OPERATION" SECTION.

UNPACKING INSTRUCTIONS

- Inspect your machine immediately. Be sure neither the carton nor contents have been damaged. If you find or have reason to suspect damage, contact the Factory for assistance.
- Remove any packing material from around the machine. Before disposing of the carton or any of the packing materials, be sure to check them thoroughly for any small parts.
- Perform the assembly on a clean, level surface. If you need to move the machine, be careful not to severely bend any of the control cables on the equipment.
- **Before starting any assembly steps, disconnect the engine spark plug wire from the spark plug. Refer to Figure 4 on Page 9.**

Tools Needed For Assembly:

An adjustable wrench, pliers, and slotted-head and Phillips-head screwdrivers.

ASSEMBLY STEPS

STEP 1: Unfold and Adjust Handlebars

- The unit was shipped with the handlebars folded over in the storage position. (Be careful when you move the upper handlebar not to pinch the control cables running alongside the handlebars. Push the cables out and away before swiveling the handlebar.) Loosen the handlebar knob (A, Figure 1) and carefully unfold the handlebars up into the operating position. Do not force the handlebar — if it does not move freely, continue to loosen the knob.
- There are three handlebar height settings. Select one by aligning the five teeth on the handlebar ratchet with five of the seven handlebar pivot slots— refer to Figure 2. Carefully move the upper handlebar so all five teeth are

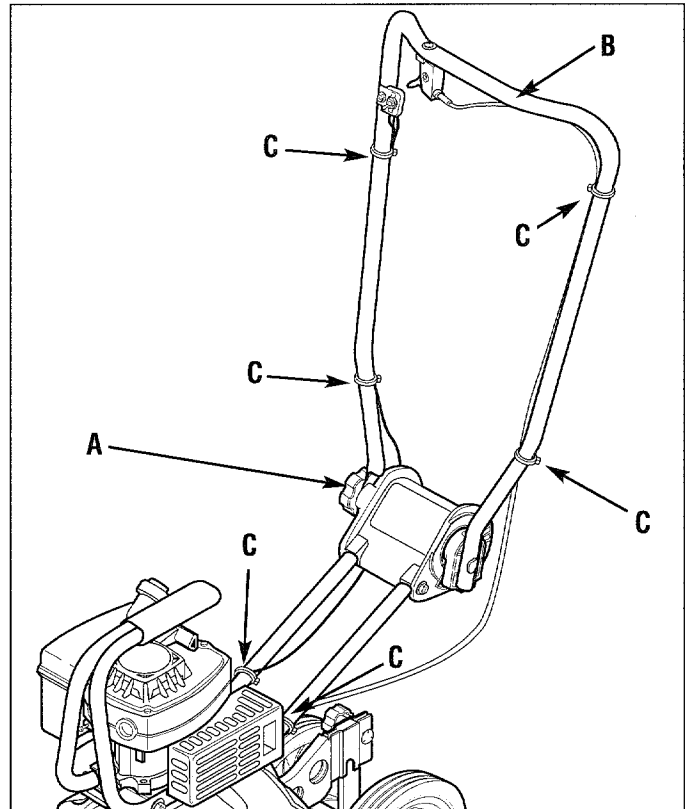


Figure 1: Loosen knob (A). Unfold handlebars (B). Slide plastic ties (C) to the locations shown.

each within a slot. **NOTE:** Try the middle five slots first. Move the upper handlebar to the desired height, then rock the upper handlebar back and forth to "feel" when the teeth and slots are engaged.

- Retighten the handlebar knob.
- Check the locations of the plastic ties (C, Figure 1) which secure the control cables to the handlebars. The ties must be positioned as shown in Figure 1.

NOTE: There is just one storage position for the handlebars— folded over and down as originally shipped to you.

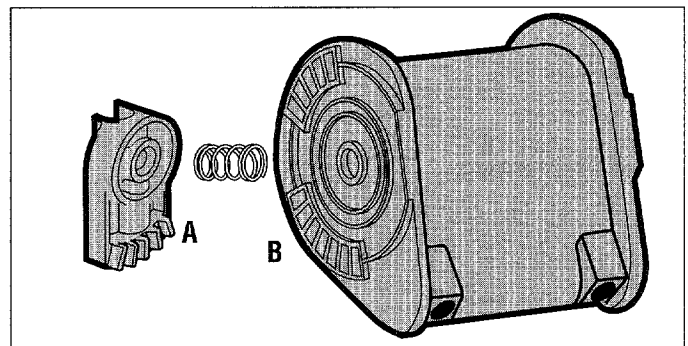


Figure 2: Move upper handlebar up or down to mate ratchet teeth (A) with corresponding slots (B). Three height positions are available. Retighten knob.

ASSEMBLY

STEP 2: Inspect and Tighten Hardware

- Using common hand tools, test all nuts, bolts and screws on your equipment for tightness. Secure any loose hardware. *Note:* Use a 7/16" socket with an extension to check hardware connecting ends of handlebar.

IMPORTANT: DO NOT TIGHTEN THE ENGINE GOVERNOR SCREW (A) SHOWN IN FIGURE 3. THIS SCREW IS FACTORY-ADJUSTED FOR PROPER ENGINE OPERATION.

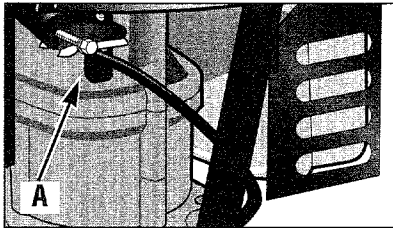


Figure 3: Do not adjust or tighten the factory-set engine governor screw (A).

WARNING: Experience indicates that alcohol-blended fuels (called gasohol or using ethanol or methanol) can attract moisture which leads to separation and formation of acids during storage. Acidic gas can damage the fuel system of an engine while in storage. To avoid engine problems, the fuel system should be emptied before storage for 30 days or longer. Drain the gas tank, start the engine and let it run until the fuel lines and carburetor are empty. Use fresh fuel next season. See STORAGE instructions for additional information. Never use engine or carburetor cleaner products in the fuel tank or permanent damage may occur.

STEP 3: Add a Mixture of Gasoline and Two-Cycle Motor Oil to the Fuel Tank



WARNING

Gasoline and its vapors are highly flammable and explosive. Keep gasoline away from possible ignition sources.

Do not smoke while mixing the gasoline and two-cycle oil together or when filling the fuel tank.

Failure to follow these precautions could result in the fuel igniting, causing personal injury or property damage.

- Because your equipment has a two-cycle ("two-stroke") engine, it runs exclusively on a mixture of regular unleaded automotive gasoline and quality two-cycle motor oil. **IMPORTANT:** THE CORRECT MIXTURE

RATIO IS 24 PARTS GASOLINE TO 1 PART TWO-CYCLE OIL. If two-cycle motor oil is not added to the gasoline in the proper ratio, engine damage will occur.

- Use unleaded regular gasoline. Only use unleaded premium gas if unleaded regular is not available.
- Do not use a multi-viscosity two-cycle motor oil or regular automotive motor oil. These may not lubricate the engine properly and may foul the spark plug. Also do not use gasoline containing METHANOL (wood alcohol).
- Do not mix fuel directly in the fuel tank. Always use a clean, safety-approved fuel container.
- Use the chart at left to mix together the correct amounts of gasoline and two-cycle motor oil.**

To Mix: First fill a clean container with one-fourth of the amount of gasoline you will be mixing. Then add in ALL of the two-cycle engine oil required for the entire amount of gasoline you will be using. Mix thoroughly. Finally, add in the remaining three-quarter's of the gasoline and mix that in thoroughly.

FUEL MIXTURE CHART (Mixture Ratio is 24 parts gasoline to 1 part two-cycle oil)					
U.S. Measure		Imperial Measure		Metric Measure	
Gas	Oil	Gas	Oil	Gas	Oil
1 Gal.	5 ozs.	1 Gal.	6 ozs.	4 liters	.167 liter
2 Gal.	11 ozs.	2 Gal.	13 ozs.	8 liters	.333 liter

To Fill Engine Fuel Tank:

- Engine must be cool.
- Clean area around fuel tank gas cap. Remove the gas cap. Insert a clean funnel into the fuel tank.
- Slowly pour gasoline/oil mixture into fuel tank. Fill tank no higher than 1/2" from top of tank to allow for gasoline expansion. Clean up fuel spills right away.

STEP 4: Connect Spark Plug Wire

- Connect the spark plug wire to the spark plug securely. Refer to Figure 4 below.

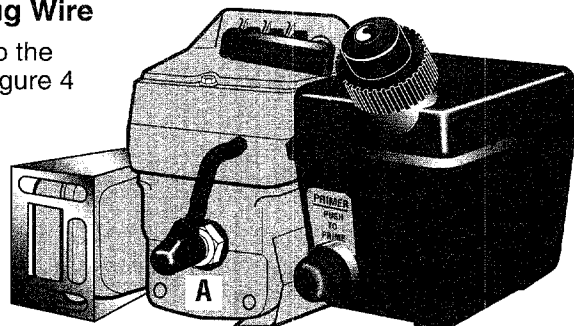


Figure 4: Securely connect spark plug wire (A) to the spark plug.

ASSEMBLY

STEP 5: To make borders and edges, install the Edger Attachment



WARNING

Contact with rotating tines or other moving parts can cause serious personal injury.

Before installing or removing attachments, or adjusting or servicing the machine, stop the engine, let all moving parts come to a complete stop, disconnect the spark plug wire, and move the wire away from the spark plug.

If your first projects call for making borders or edges near walkways, drives, flower beds, etc., and not tilling or cultivating jobs, then you must remove the four tine sections and install the Edger Attachment in their place (this attachment was shipped with your machine— components are shown on Page 7).

To Install the Edger Attachment:

- Collect the components (see Figure 6): (A) Border/Edger Tine; (B) Long Bushing; (C) Border/ Edger Wheel; and (D) Short Bushing.
- Prop the machine forward carefully on the front of the tubular carrying handle. The work surface should be firm and flat. **NOTE:** Usually the Border/Edger tine is mounted on the right-hand side of the machine for right-handed persons, and on the left-hand side of the machine for left-handed persons.
- Flip open the ring on the ring lock pins and remove the ring lock pin on each tine shaft (see Figure 5 and DETAIL, Figure 6). **IMPORTANT: The ring lock pin is under spring tension -- wear gloves when removing or replacing the ring lock pin to protect your fingers.**
- Mark the position of each tine section (Left-Outer, Left-Inner, etc.) before removing the four tine sections from the tine shaft. (It is important for proper tilling performance that the tines be reinstalled in their original posi-

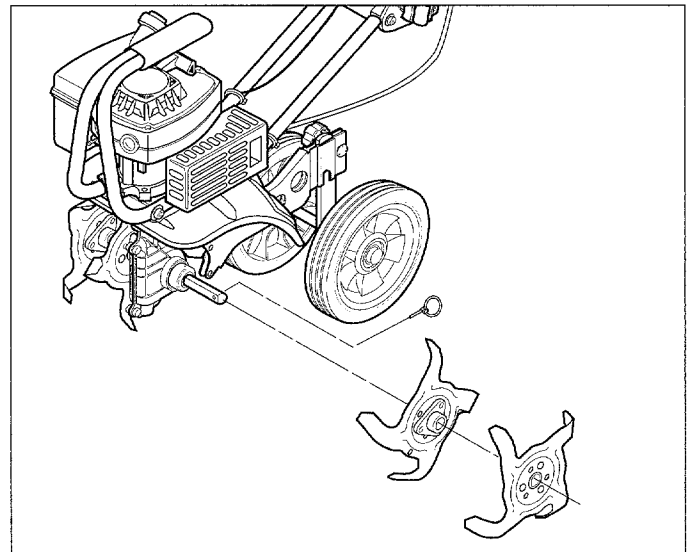


Figure 5: Remove ring lock pins and tines from both sides of the tine shaft. Keep left and right-side tines separated and marked for easier reinstallation.

tions.) Refer to Figure 5 and to Figure 15 for detailed tine position information. Put the four tines aside.

- Install the short bushing (D, Figure 6) on the right-hand or left-hand tine shaft (see **NOTE** at left). Then place the Border/Edger wheel (C) on the same shaft – the wheel hub should face toward the tiller. Insert the ring lock pin through the rounded side of the tine shaft and snap the ring down over the shaft.
- Slide the long bushing (B) on the opposite side shaft. Then install the Border/Edger tine (A). The tine blades must point outward. Secure in place with the ring lock pin.

See the "Operation" section for information and full instructions on using the Border/Edger Attachment.

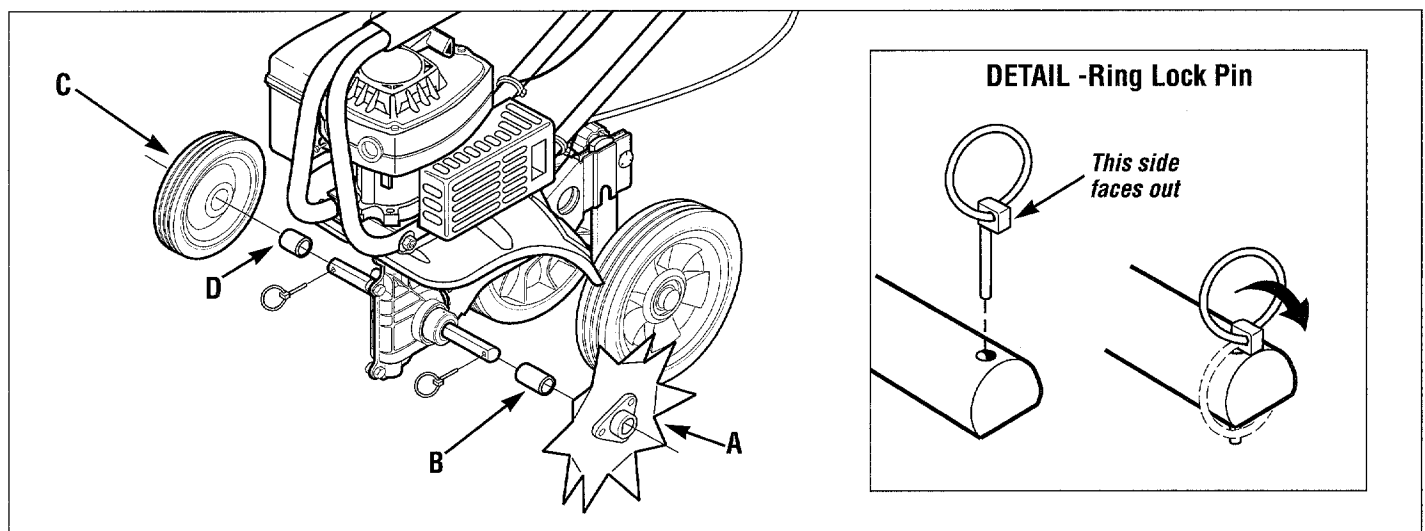


Figure 6: The Border/Edger tine (A) can be mounted on left or right sides of machine (with long bushing B). The Border/Edger wheel (C) mounts on the other side (with short bushing D).

OPERATION

KNOW YOUR EQUIPMENT

READ THIS OWNER'S MANUAL AND ALL SAFETY RULES BEFORE OPERATING YOUR EQUIPMENT. Know the location and function of all features and controls on the equipment. Save this manual for future reference.

MEETS ANSI B71.8 – 1996 SAFETY STANDARD

This machine meets voluntary safety standard B71.8 – 1996, which is sponsored by the Outdoor Power Equipment Institute, Inc., and is published by the American National Standards Institute, Inc.



WARNING

Contact with rotating tines or other moving parts will cause serious personal injury!

Before inspecting or servicing any part of the machine, shut off engine, let all moving parts come to a complete stop, disconnect the spark plug wire, and move the wire away from the spark plug.

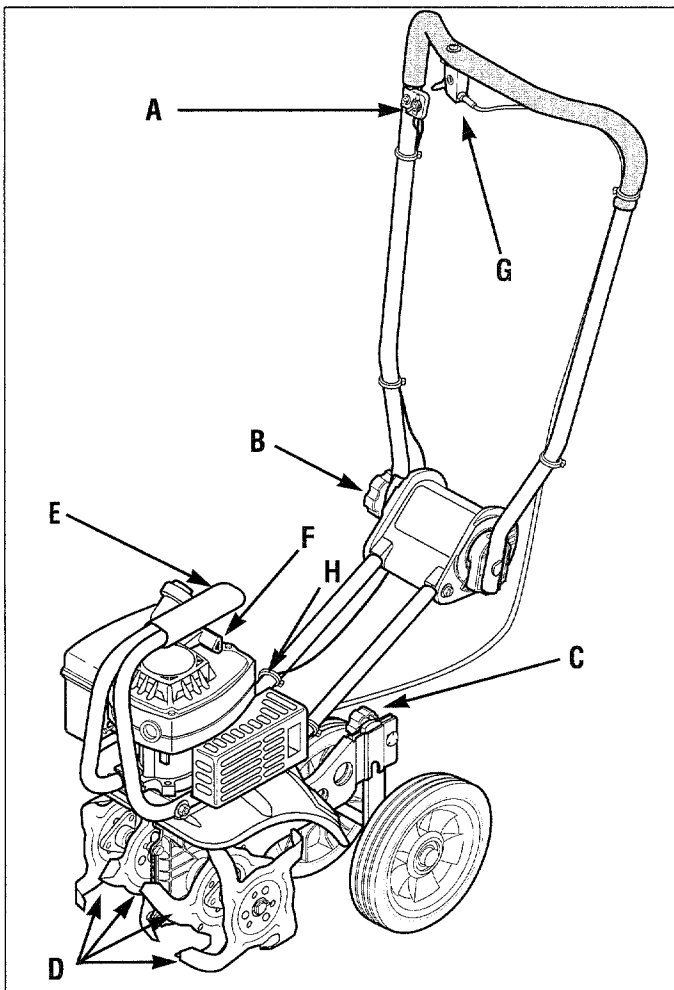


Figure 7: Features and controls on your equipment.

Engine On-Off Switch (A, Fig. 7)

Located on right side of handlebar, in front of the hand grip. Move switch to ON prior to starting engine. Move switch to OFF position to stop the engine.

Handlebar Height Adjustment (B, Fig. 7)

Three operating position heights, plus a storage position are available. Loosen the adjustment knob, and carefully raise or lower the handlebar to the desired position—the five teeth must mesh with the ratchet slots. Retighten the adjustment knob securely. While retightening, move handlebar up and down slightly to ensure the ratchet teeth and slots mesh smoothly and fully.

Tilling Depth Adjustment Knob (C, Fig. 7)

Loosen this knob to allow the Wheel Bracket to move up or down on the Height Adjustment Bar. This bracket adjusts up or down to help control the tilling depth of the tines. Move the bracket down for deeper tilling; up for shallow tilling. It's recommended that you initially use a shallow tilling setting, so start with the Wheel Bracket fairly high up. **IMPORTANT: DO NOT MOVE THE WHEEL BRACKET ANY HIGHER THAN THE TOP OF THE ADJUSTMENT BAR.** Keep in mind any adjustment must result in your personal comfort and control.

Adjustable Tine Positions (D, Fig. 7)

The four tine sections are positioned on the tine shaft for maximum performance under a wide variety of conditions. However, the two outer tine sections may be removed to permit narrower tilling or close cultivating; and the two inner tine sections may be swapped to make tilling passes more effective in very stony soil. Two bushings are supplied and are to be used in place of the two outer tine sections when they are not mounted.

Carrying Handle (E, Fig. 7)

When the handlebar is folded down into the storage position, the machine is perfectly balanced and can be carried by the carrying handle. The carrying handle also serves as a bumper, and as a strong tie-down anchor point when inside a vehicle.

Engine Recoil Start Rope (F, Fig. 7)

The recoil start rope is used to start the engine. It should be pulled out slowly until resistance is felt, then pulled rapidly. Always let the rope rewind slowly.

Engine Throttle Lever (G, Fig. 7)

This lever provides an infinite range of tine rotation speeds. Squeeze the lever after the engine is started to cause forward tine motion. Squeezing the lever a little at a time gradually increases tine speed. Release the lever to stop all tine motion. When starting the engine, this lever must not be squeezed.

OPERATION

Fuel Primer Bulb (H, Fig. 7)

The fuel primer bulb injects fuel into the carburetor for easier starting. *Priming the engine for starting is necessary unless the engine is warm and has fuel in the tank.*

IMPORTANT: After each priming squeeze or push on the priming bulb, hesitate before repeating. This lets fuel move efficiently by letting air re-enter the bulb.

High-Volume Priming (see Figure 8) is used when starting a new engine for the first time, after running out of fuel or after long storage. Use your thumb and forefinger to squeeze the sides of the primer bulb in line with the colored rib mark. As fuel enters the priming system, the priming action will feel more firm. Squeeze the primer bulb 6 times. (This process removes air from the priming system.)

Standard-Volume Priming (see Figure 8) is used if the engine is cool or has been in storage briefly, but still has fuel in the fuel tank. To perform Standard-Volume Priming, use your forefinger to push in the bulb twice if above 55°F, or three times if below 55°F.

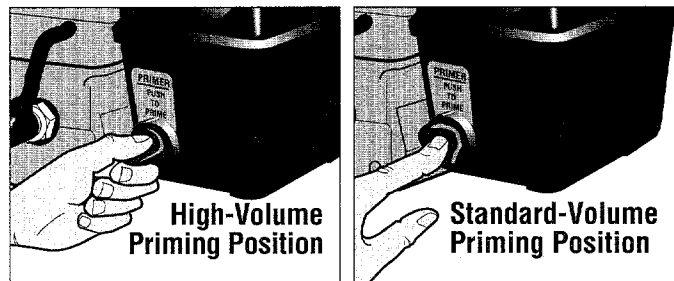


Figure 8: Fuel primer bulb.

PRE-START PREPARATION

Prior to starting the engine, make the following checks and perform the following services:

- Disconnect the spark plug wire from the spark plug.
- The engine on-off switch must be in the OFF position.
- Check that all wires and cables are properly and securely connected. It is very important that the six plastic wrap-around ties on the handlebars be positioned as illustrated in Figure 9. The control cables they help secure must not be kinked or jammed in the handlebar.
- Adjust handlebar height to desired operating position and securely tighten the handlebar knob.
- Check hardware for tightness.
- Add the correct fuel mixture (24 parts gasoline to 1 part two-cycle motor oil) to the fuel tank if fuel has not already been added. Fill the tank no higher than 1/2" below the top of the tank.
- Adjust the equipment for tilling depth as follows:
 - a. Loosen tilling depth adjustment knob (A, Fig. 10).
 - b. Move the wheel bracket (B, Figure 10) up in relation to the height adjustment bar (C). Moving the bracket upward sets your machine for shallower tilling, recommended for initial use.
IMPORTANT: Do not move wheel bracket any higher than top of adjustment bar.
 - c. Retighten the depth adjustment knob.
- Reconnect the spark plug wire to the spark plug.

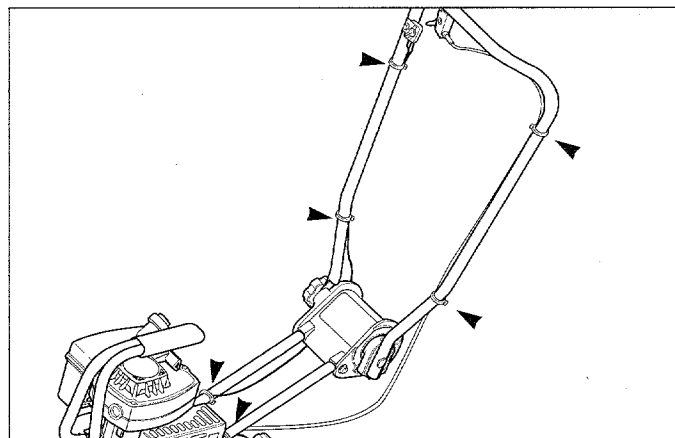


Figure 9: Plastic ties securing control cables to handlebars must be located in the positions shown by arrows.

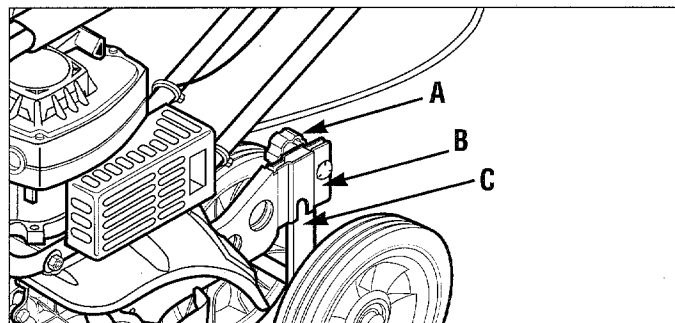


Figure 10: To adjust tilling depth, loosen knob (A) and move wheel bracket (B) up or down in relation to height bar (C). Retighten knob.



WARNING

Gasoline is highly flammable and its vapors are explosive. Follow these safety practices to prevent injury from fire or explosion:

- Never fill tank if engine is running or hot from use. Let engine and muffler cool down before refueling.
- Do not permit open flames, sparks, matches, or smoking in the fueling area.
- Fill fuel tank outdoors in a well-ventilated area.

- Wipe up any fuel spills and move tiller away from fumes before starting the engine.
- Use only an approved fuel container and lock it safely away from children.
- Store fuel and the machine in a well-ventilated area. Do not store fuel or equipment where fuel vapors may reach an open flame or spark, or an ignition source (a hot water heater, furnace, clothes dryer, electric motor, or the like).
- Let engine cool down before storing machine.

OPERATION

STOPPING AND STARTING THE ENGINE



WARNING

Do not touch Engine Throttle Lever while starting the engine.

Tines may propel the machine forward if the engine speed is advanced from idle. Failure to comply can result in personal injury or property damage.

Stopping the Engine

To stop the engine, move On-Off Switch to OFF position.

NOTE: The on-off wire must always be securely connected at both ends. Check regularly to see this wire is firmly attached to its connecting points.

Starting the Engine

- Move the On-Off Switch to the ON position. Determine which of the three starting conditions described next applies to you:

Priming When First Time Starting:

Use this priming method to start a new engine for the first time, after running out of gas, or after extended storage. Prime the engine using High-Volume priming. See Figure 8. Use thumb and forefinger to squeeze side of primer bulb that is in line with the light-colored rib on the primer body. As fuel enters the priming system, the priming action will feel more firm. Squeeze the primer bulb 6 times. This process removes air from the priming system.

Priming When Cold Starting:

To prime the engine after it has been sitting idle or has been in brief storage and has fuel in the tank, use the Standard Volume method (Figure 8). Push in top of primer bulb twice if above 55°F, or three times if below 55°F.

When Warm Starting:

Do not use the primer bulb to restart the engine after it has been stopped after running, still has fuel in the tank, and has not cooled completely.

Pull Out Starting Rope:

After priming the carburetor, assume the starting position, keeping your feet positioned safely away from the tines. See Figure 11.

Start the engine using one hand to pull out the recoil start rope while the other hand stabilizes the machine. To stabilize the machine, put one hand on the foam part of the upper handlebar. Use your other hand to slowly pull out the recoil start rope until you feel resistance. Let the rope rewind. Then, with a quick arm motion, pull the rope all the way out, up to 10 times. Let the start rope rewind slowly.

Allow the engine to warm up for several seconds. If engine either fails to start or to continue running, push in primer bulb two times. Grasp start rope and pull with a rapid, full stroke, up to 10 times.

TROUBLESHOOTING:

Push the primer bulb in 2 more times. Using a rapid full stroke, pull out the starting rope up to 10 times. If engine still does not start, wait 15 minutes. Do not prime engine further. Grasp start rope and pull with a rapid, full stroke up to 10 times.

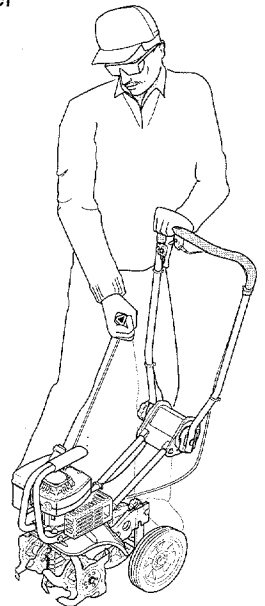


Figure 11: Starting position.

BASIC OPERATION

• Use your equipment for busting sod, preparing seedbeds, and for cultivating n gardens and flower beds.

• The machine is easy to operate, but it is important that you start out slowly and read this Section thoroughly before you start to use your equipment.

Please remember that tilling depth is determined by soil conditions, the depth adjustment setting you select, engine speed, and the amount of pressure applied to the handlebars. With experience, you will find the right combinations for a variety of tilling and

cultivating applications. Generally, the equipment provides best results when the soil has moderate moisture content and a granular texture.

- Let the machine do most of the work. The tines will pull the machine forward, letting you adjust forward speed by pressing down or lifting the handlebars.



Figure 11A: Assume operator's position once engine starts.

OPERATION

TILLING AND CULTIVATING

- Roll the machine to the area in which it will be used.
- Adjust the tilling depth to the desired position (refer to Page 12).
- Verify the engine On/Off Switch is in ON position. Check to be sure the on/off wire is securely connected to the terminals on the switch and on the engine.
- Start the engine. Assume the operator's position behind the handlebars, facing forward toward the engine. Using the handlebar, tilt the machine backward enough to raise the tines off the ground. Squeeze the engine throttle lever, then release the lever. The engine should speed up and then return to idle speed. The tines should stop rotating or they may rotate very slowly. Lowering them back to the ground should stop any rotation.

NOTE: If the tines continue to rotate when the engine is idling, either the idle speed is too high or the centrifugal clutch is malfunctioning. If this occurs, contact the Factory or your local authorized Dealer.

- Squeeze the engine throttle lever closed to start the tines rotating. Lower them to begin digging. Firmly hold the handlebars to prevent the machine from moving forward too quickly and to allow enough time for the tines to dig deeply enough.

Tilling Patterns

- When preparing a seedbed, go over the same path twice in the first row, then overlap one-half (1/2) the machine width on each succeeding pass (see Figure 12).
- After going up and down the rows in one direction, make second passes at a right angle across all the original passes. See Figure 13. Again, overlap each pass to thoroughly pulverize the entire seedbed area. In very hard ground, it may take three (3) or four (4) passes before the desired depth is achieved.
- If your garden is not wide enough to till lengthwise and then crosswise, then you should first overlap by one-half (1/2) the machine width, followed by successive passes at one-quarter (1/4) machine width. This overlapping method assures thorough break-up of the ground.

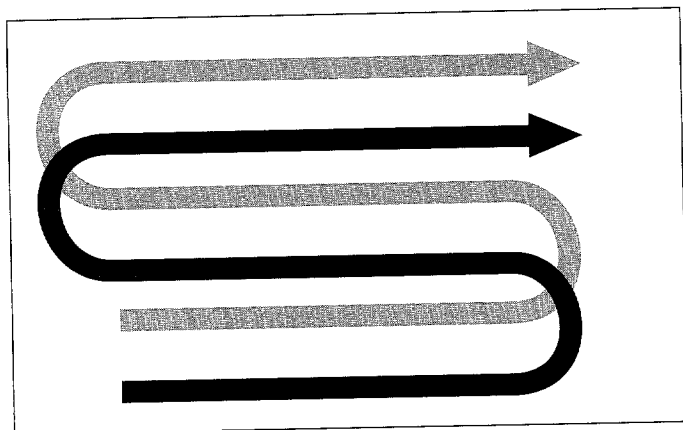


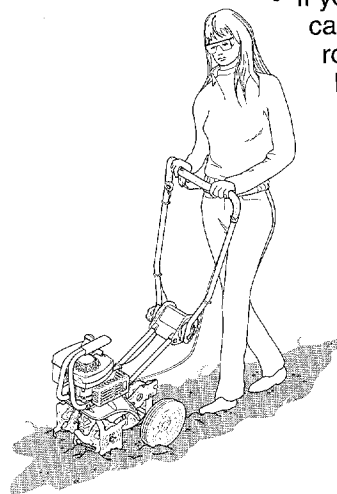
Figure 12: Use an overlap technique on every pass.

Tilling Depths

- Remember to go easy when you start to till in the garden. Do not try to till too deeply in the first pass through sod or very hard ground. If the machine jumps or bucks, use a shallower depth setting and reduce engine speed.
- Applying downward pressure on the handlebars lets the tines dig at a shallower depth. Lifting the handlebars lets the tines dig in more deeply.
- In very hard soil, start tilling at a very shallow depth. With each succeeding pass, till more deeply. For easier tilling, water very hard soil a few days before tilling. Avoid working the soil when it is soggy or wet. Wait a day or two after heavy rain for the ground to dry.

Cultivating

- The equipment can also be used for cultivating (shallow tilling that disrupts weeds and aerates the upper crust of soil).
- Shallow tilling is very important! Do not till deeper than 1"-2" to avoid injuring nearby plant roots. Till frequently, so weeds do not grow large and cause needless tangling in the tines.



- If you plan your garden area carefully, you can space seed rows far enough apart to allow sufficient room for the equipment to cultivate after the plants have grown.

Figure 14: Cultivating keeps weeds under control; plants and flowers healthy.

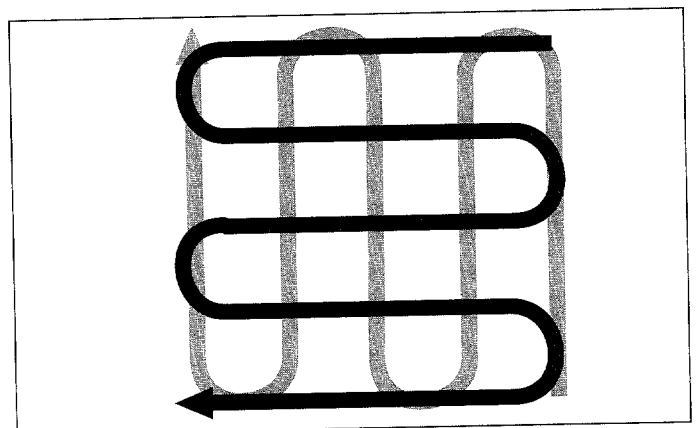


Figure 13: Make a second set of passes at a right angle over the first set of passes.

OPERATION

TIPS & TECHNIQUES

- Adjust engine speed to the tilling conditions. The rotating tines help to pull the machine forward. **Use slower engine speeds and a shallow tine depth setting when first learning to use the equipment and whenever you are tilling on hard, rough or uneven ground.**
- Regulating the amount of pressure applied to the handlebars helps to control tilling depth. Depending upon soil firmness and texture, you may have to push down or lift up on the handlebars to achieve the correct tilling depth.
- Set the handlebars at a height which gives you maximum control at all times. Set your adjustment so the machine feels comfortable and well-balanced.
- If the machine stays and tills in one spot, try swinging the handlebars from side to side to start the machine moving forward again.

Optional Tine Positions

Depending upon the tilling or cultivating project to be done, you have a choice of three tine patterns:

Wide Tine Pattern— Your unit, as shipped from the factory, is set up for general tilling and cultivating. This tine pattern employs all four tine sections arranged as shown in Figure 15, "A". This pattern provides the widest possible tilling width – 9".

Narrow Tine Pattern— To obtain a narrower tilling width (6"), remove the outside tine section on the left and right-sides of the unit. This pattern is shown below in Figure 15, "B". It's great for flower beds. The tine removal procedure is explained in the "Maintenance/Repairs" section.



WARNING

Contact with rotating tines will cause serious personal injury.

Before attempting to remove or clean tines, stop the engine, let all moving parts stop completely, then disconnect spark plug wire and move wire away from plug.

Stony Soil Tine Pattern— When tilling deeply in stony soil, stones may jam frequently between the inner tines and the machine hood. To minimize this, swap the positions of the two inner tine sections. Refer to Figure 15, "C". The procedure for swapping the tine positions is explained in the "Maintenance/Repairs" section.

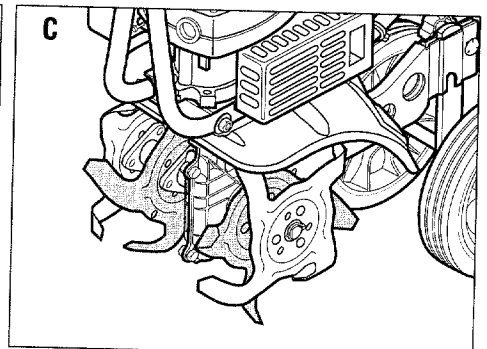
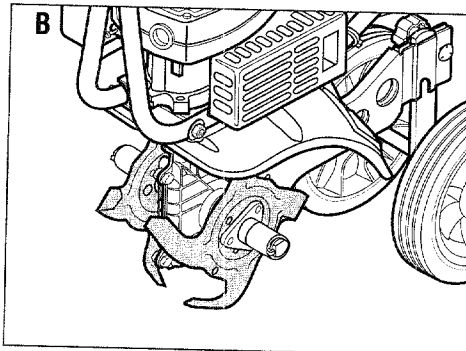
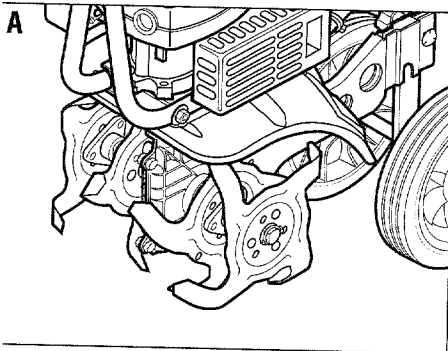


Figure 15: "A" shows all four tine gangs in standard position; "B" shows two outer gangs removed for narrow tilling; "C" shows the two inner gangs have been swapped for stony tilling conditions.

MAKING BORDER EDGES

Making clean, sharp edges next to walkways, driveways, paths, planted areas, patios, etc., with your Edger Attachment is easily accomplished. Refer to page 10 in this manual for instructions on attaching this accessory.

Usually the edger blade is mounted on the right side for right-handed person and on the left side for a left-handed person.

Take your time when creating an edge along a walkway path or drive. Decide how far away the edge is going to be from the walk or drive, then slowly proceed using a walk or drive as your sight line.

The built-in maneuverability of the equipment helps you create a near-perfect circle, or to negotiate a meandering or abruptly-changing path.

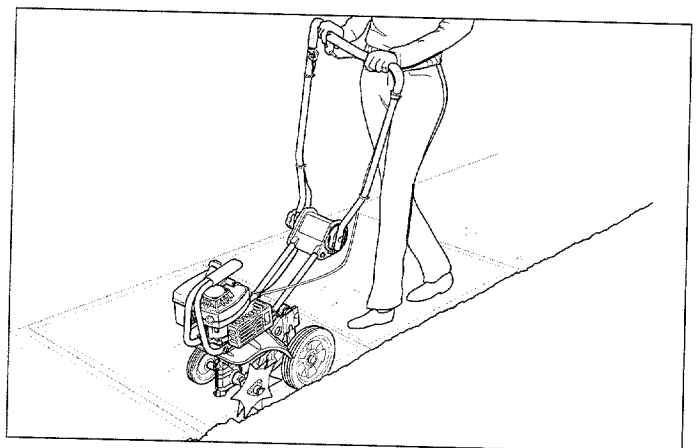


Figure 15A: Make sharp, clean edges with the Border/Edger Attachment.

MAINTENANCE/SERVICE



WARNING

Before inspecting, cleaning, or servicing the machine, shut off engine, make sure that all moving parts have come to a complete stop, and disconnect spark plug wire, moving wire away from plug.

Failure to follow these instructions can result in personal injury or property damage.

- Note 1— After the first five (5) hours of use.
 Note 2— Clean daily when conditions are extremely dusty or dirty.
 Note 3— Spark plug may be checked annually or every 5 operating hours.

REQUIRED MAINTENANCE SCHEDULE

REQUIRED MAINTENANCE	Before Each Use	After Each Use	Every 25 Hours	Every 75 Hours	End of Season
Check Tightness of Bolts and Nuts			•		
Clean Cooling System of Debris	•				
Check Transmission Lubricant (1)			•		•
Service Air Filter (2)			•		
Inspect Spark Plug (3)					•
Clean dirt/debris from equipment					•
Clean Engine Exhaust Ports (see Factory or authorized Dealer)				•	
Clean Tine Shaft		•			

EQUIPMENT MAINTENANCE

Transmission Maintenance

The transmission was factory-lubricated with grease and should not require any further lubrication.

However, you should check for sufficient lubrication after the initial five (5) hours of operation, and every twenty-five (25) operating hours thereafter. If needed, use a high-quality, automotive-grade petroleum-base grease.



WARNING

Before tipping engine or equipment to service transmission, drain fuel from tank by running engine until fuel tank is empty.

To check the transmission:

- Stop the engine, let it cool, and disconnect the spark plug wire before proceeding.
- Place the machine down on its left side so the right end of the tine shaft points up.
- Remove the ring lock pin and both right-side tines. (See "Tine Removal" in this section.)

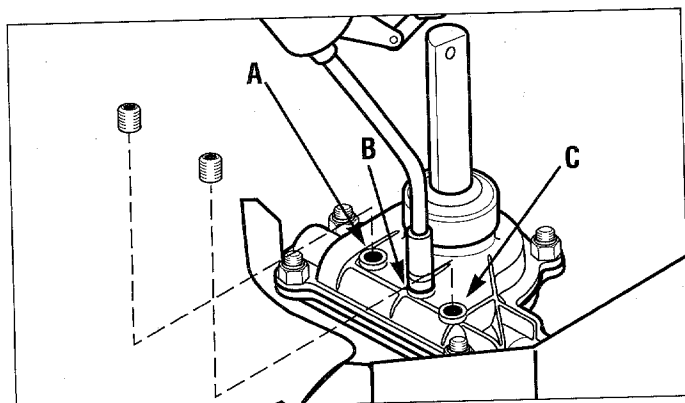


Figure 16: Transmission housing lubricant check and fill locations (A,B,C). Refer to text for instructions.

- Clean the transmission housing thoroughly so dirt and debris can not enter the transmission.
- Remove all three threaded plugs (Figure 16) from the transmission with a hex wrench. Lubricant should be visible in the top two holes. If so, replace all plugs. If lubricant is needed, proceed as follows.

To lubricate the transmission:

- Place the nozzle of a standard grease gun up against the rim of the middle hole. Push the nozzle firmly against the opening.
- Apply grease until it begins to come out of the bottom hole. Replace the bottom plug securely. Then apply grease to the top fill hole. Add until it begins to come out of the middle hole. Reinstall the plugs in the middle and top holes.
- Reinstall the right-side tines. Before reinstalling the tines, use a fine grade sandpaper to clean any rust off the shaft. Then coat the tine shaft with a few drops of oil to make future tine removal easier.

Other Lubrication Locations

- **Handlebar Ratchet Slots—**
Spray occasionally with a silicone lubricant. The ratchet slots and mating teeth will align more quickly and easily with lubrication.
- **Engine Throttle Lever Cable—**
Squeeze the lever closed and spray a lubricant (like WD40) into the cable area.
- **Tine Shaft—**
After each use, remove all tine sections, clean tine shaft with sandpaper and apply a light coat of oil to the tine shaft. This will make future tine removal easier.

Hardware/Electrical Connections

Before each use, examine hardware and electrical connections, verifying hardware is tight, wire connections are secure, and wire sheathing is in good condition.

MAINTENANCE/SERVICE

ENGINE MAINTENANCE

Engine Lubrication

The engine on your equipment is a two-cycle ("two-stroke") engine. Lubrication is provided by mixing the proper type and amount of two-cycle oil with unleaded regular gasoline. See Page 9 for mixing instructions.

Attempting to operate the engine on gasoline alone (without the appropriate amount of two-cycle oil mixed in) will cause the engine to overheat and seize up.

Engine Air Filter

It is extremely important that air filter service be performed by the maintenance schedule and according to the steps that follow. Your equipment has two thin flocked filters and a thick foam filter. See Figure 17.

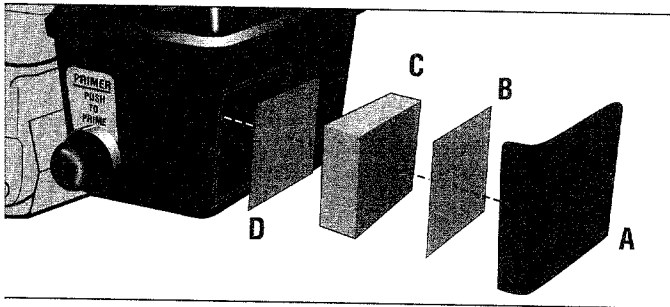


Figure 17: Engine air filter assembly. Cover (A); larger flocked filter (B); foam filter (C); smaller flocked filter (D).

IMPORTANT: Never run engine without air filter assembly properly installed on engine.

o Remove and Inspect the Air Filter Components:

- Loosen both cover screws.
- Remove the cover along with the screws.
- Remove the outer, larger flocked filter.
- Remove the thick foam filter.
- Remove the inner, smaller flocked filter.
- Inspect all three filters for discoloration or dirt accumulation. If either is present, service the filters.
- Thoroughly clean inside of cover and body.

o Service the Air Filters:

Thick Foam Filter Service—

Clean and re-oil every three (3) months or every 25 operating hours. Clean and re-oil daily if used in extremely dusty conditions.

Wash in water and detergent solution and squeeze (don't twist) until all dirt is removed.

Rinse thoroughly in clear water.

Wrap in a clean cloth and squeeze until dry.

Saturate with motor oil and squeeze (don't twist) to distribute oil and remove excess oil.

Thin Flocked Filters Service—

Wash both flocked filters in a water and detergent mix.

Rinse thoroughly in clear water, then air dry the filters.

Reassemble filter components as shown in Figure 17.

Carburetor Adjustment

! WARNING

Do not tamper with the engine governor screw which is factory-set for the proper engine speed. Overspeeding the engine beyond the factory high speed setting can be dangerous and will void the engine warranty. Authorized service shall be sought if a problem exists.

! WARNING

The temperature of the muffler and adjacent engine areas may exceed 150°F (65° C). Contact may cause burns. Avoid these areas. Remove the spark plug lead and ground the lead to the engine to prevent accidental starts and fires.

Failure to do this could cause personal injury.

If the engine is running poorly or has low power under tilling conditions, an idle mixture screw adjustment to the carburetor may solve the problem. However, first inspect and service the spark plug and the air filter before making a carburetor adjustment. If the engine continues to run poorly (and the fuel mixture is fresh), proceed to the carburetor adjustment instructions below.

This factory-engineered instruction has been designed to provide continued optimum engine operating performance after the engine break-in period, which is approximately 5 to 10 hours. The adjustment, when properly performed as described below, will not void the engine warranty. A common screwdriver is needed. If you prefer, see an authorized Engine Dealer for adjustment.

Prior to Carburetor Adjustment:

- Let the engine cool for 30 minutes before continuing.
- From the operator's position behind the handlebars, lay the machine down on its left side (muffler side).

Carburetor Adjustment:

- Locate the carburetor idle mixture screw (see Figure 17A). It is directly under the air filter and is black. **Do Not Adjust The Silver-Colored Screw.**
- Turn the idle mixture screw 1/16 of a turn clockwise.
- Return the Tiller/Cultivator to its normal upright operating position and reconnect the spark plug lead.

If the engine continues to run poorly, please contact an authorized Engine Dealer.

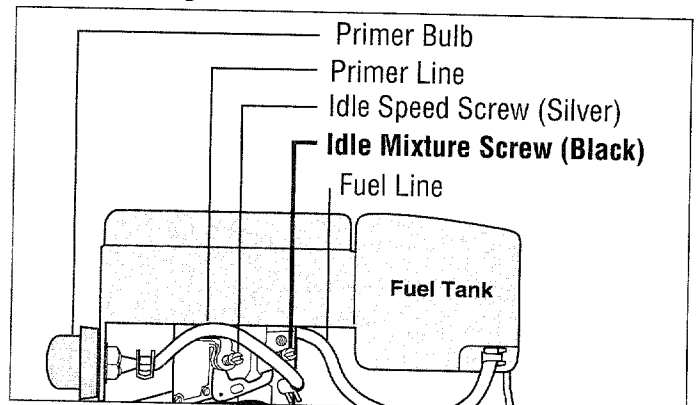


Figure 17A: Idle Mixture Screw can be adjusted.

Spark Plug

Inspect spark plug annually or every 75 operating hours. Before inspecting, clean around the plug. Then remove plug to check the electrodes, gap and porcelain jacket. Use a wire feeler gauge to be

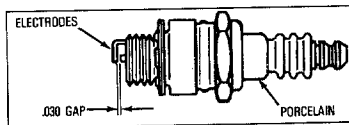


Figure 18: Set spark plug electrode gap at .030".

sure the gap is .030". If replacing the plug, use a Champion CJ-6Y or equivalent.

Cooling System

It is important to frequently check for, and remove, all grass clippings, dirt and other debris that may accumulate on the engine: around the cooling fins; on the air intake screen; and on levers and linkage. This helps to ensure adequate air cooling and correct engine speed.

TINE REMOVAL AND INSTALLATION



WARNING

Avoid contact with the cutting edges on the tines.

To avoid personal injury when removing or installing tines, wear heavy work gloves. The engine must be off, all moving parts completely stopped, and the spark plug wire disconnected from the spark plug and moved away from the plug.

Knowing how to remove and reinstall the tine sections will help you accomplish the following tine configurations: a) to change from the standard 9" tilling width to a narrower 6" tilling width for smaller areas; b) to swap the positions of the two inner tine sections to adapt to very stony soil conditions; c) to replace damaged or badly worn tine sections. **IMPORTANT: The ring lock pin (A, Figure 19) is under spring tension -- wear gloves when removing or replacing the ring lock pin to protect your fingers.**

To Create a Narrow 6" Wide Tilling Width:

- For easy tine access, prop the machine forward carefully so it rests on the front of the tubular carrying handle. The work surface should be flat and firm.
- Flip open the ring (A, Figure 19) on the ring lock pin that secures either the left or right side tine sections. Pull the ring lock pin out of the tine shaft.
- Slide the outer tine section off the tine shaft and mark it as to which side it is from (left or right) and whether it's an outer or inner tine section.
- Keep the inner tine section on for a 6" wide tilling swath and then add one of the long bushings provided with the unit. See Figure 20. Insert the ring lock pin through the rounded side of the tine shaft and snap the ring down over the shaft (see DETAIL, Figure 6, page 10).
- Repeat on the opposite side of the machine.

For Stony Soil Conditions, Configure Tines As Follows:

- If tilling in stony soil, remove the ring lock pin (A, Figure 19) from both sides of the machine. Remove both outer tine sections. Identify each section as a left or right side tine and whether it is an inner or outer section.
- Remove the inner tine sections and swap their positions (inner right-side section goes on left side of machine, and vice-versa).
- Replace the two outer tine sections on the sides of the machine from which they came. See Figure 21.

- Insert the ring lock pins through the rounded side of the tine shafts and snap the ring down over the shafts (see DETAIL, Figure 6, page 10).

To Replace Worn Tine Sections:

- Remove the ring lock pin (A, Figure 19) from both sides of the unit. Remove the old tine sections and replace them with new tine sections. (The tines are too worn if tilling takes much longer than before and soil is not being mixed thoroughly enough.) Insert the ring lock pins through the rounded side of the tine shafts and snap the ring over the shaft (see DETAIL, Fig. 6, pg. 10).

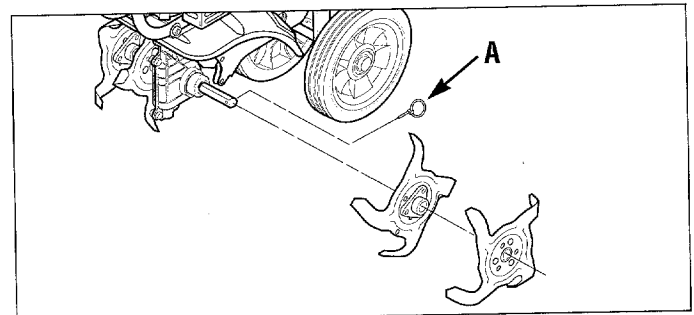


Figure 19: Remove ring lock pin (A) to take off tines.

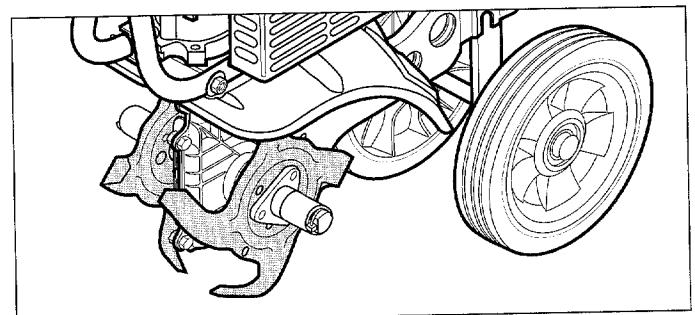


Figure 20: Narrow tilling configuration.

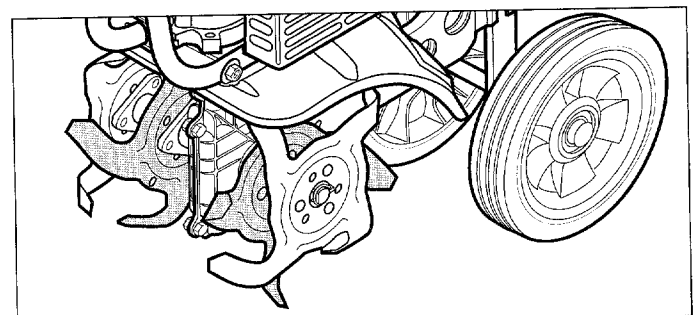


Figure 21: Stony soil tine configuration.

STORAGE



WARNING

Never store your equipment when there is a fuel mixture in the fuel tank.

Never place your equipment near any source of sparks or open flame (such as from a hot water heater, a space heater or clothes dryer).

Failure to comply can result in serious personal injury or property damage.

IMPORTANT: It is important to prevent gum deposits from forming in essential fuel system parts such as carburetor, fuel filter, fuel hose, or tank during storage. Also, experience indicates that alcohol-blended fuels (called gasohol or using ethanol or methanol) can attract moisture which leads to separation and formation of acids during storage. Acidic gas can damage the fuel system of an engine while in storage.

Off-Season Storage Procedure

- Drain the fuel tank of all of the gasoline/two-cycle oil mixture. **NOTE:** Do not use a fuel mixture that is older than one season in order to avoid varnish deposits throughout the fuel system. Dispose of the fuel mixture properly.
- Start engine and run until fuel mixture is used up. This will prevent poor performance from stale fuel when your equipment is taken out of storage.
- Let the engine cool down after the fuel mixture has been used up. Clean dirt and debris from the engine cooling fins, linkage and other engine surfaces.
- Remove the spark plug. Pour a few drops of two-cycle engine oil into the engine's spark plug hole. Pull out the starter rope several times to distribute the oil over the internal cylinder wall.
- Reinstall the spark plug.
- Remove the tines. Clean all soil and debris from the dust covers and tine shaft. Lubricate the tine shaft with a coating of light oil. Replace the tines securely.
- Cover the engine and store the equipment in a dry, sheltered location.

NOTE: Fuel stabilizer (such as STA-BIL) is an acceptable alternative in minimizing the formation of fuel gum deposits during storage. Add stabilizer to the fuel mixture in the fuel tank or the fuel storage container. Always follow the mix ratio instructions on the stabilizer container. Run engine at least 10 minutes after adding stabilizer to allow the stabilizer to reach the carburetor. Do not drain the gas tank and carburetor if using fuel stabilizer.

TROUBLESHOOTING POINTS

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Engine does not start.	<ol style="list-style-type: none"> 1. Spark plug wire disconnected. 2. Out of gas/two-cycle oil fuel mixture. 3. Stale fuel mixture. 4. Priming procedure not correct. 5. Dirty air filter(s). 6. Worn, corroded or broken spark plug. 7. On-Off Switch in OFF position. 	<ol style="list-style-type: none"> 1. Reconnect wire to spark plug. 2. Check fuel tank. Add fuel mixture. 3. Drain old mixture. Add fresh mixture. 4. Refer to pages 12 and 13 for priming and starting procedure. 5. Clean or replace air filters. 6. Replace spark plug. 7. Move On-Off Switch to ON.
Engine runs poorly or has low power under tilling conditions.	<ol style="list-style-type: none"> 1. Fouled spark plug. 2. Dirty air filter(s). 3. Stale fuel mixture. 4. Carburetor out of adjustment. 	<ol style="list-style-type: none"> 1. Remove, inspect, clean spark plug. 2. Clean or replace dirty air filters. 3. Drain old mixture. Add fresh mixture. 4. Adjust carburetor referring to instructions on Page 17.
Engine overheats.	<ol style="list-style-type: none"> 1. Engine cooling system clogged. 2. Carburetor out of adjustment. 	<ol style="list-style-type: none"> 1. Remove blower housing. Remove debris. 2. Authorized Engine Dealer.
Tines stop rotating.	<ol style="list-style-type: none"> 1. Object wedged between tines and hood. 2. Internal transmission problem. 	<ol style="list-style-type: none"> 1. Remove wedged object. 2. Authorized Engine Dealer.

OPERATING AND SAFETY DECALS

A.



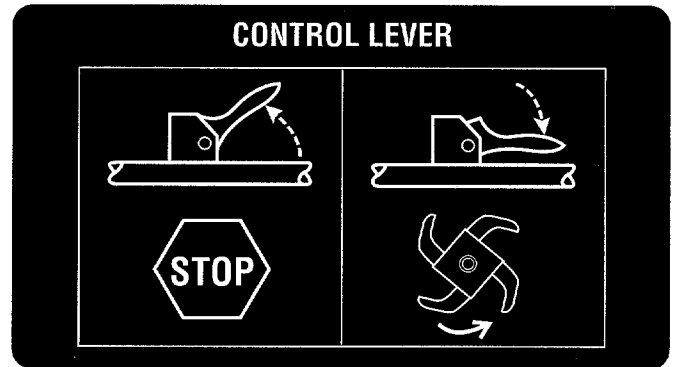
B.



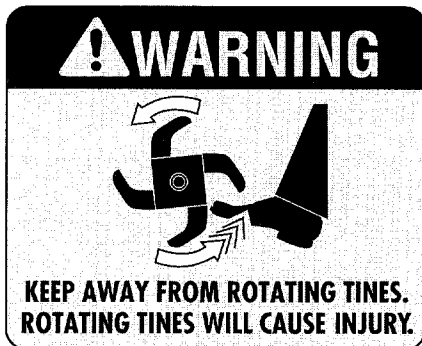
C.



D.

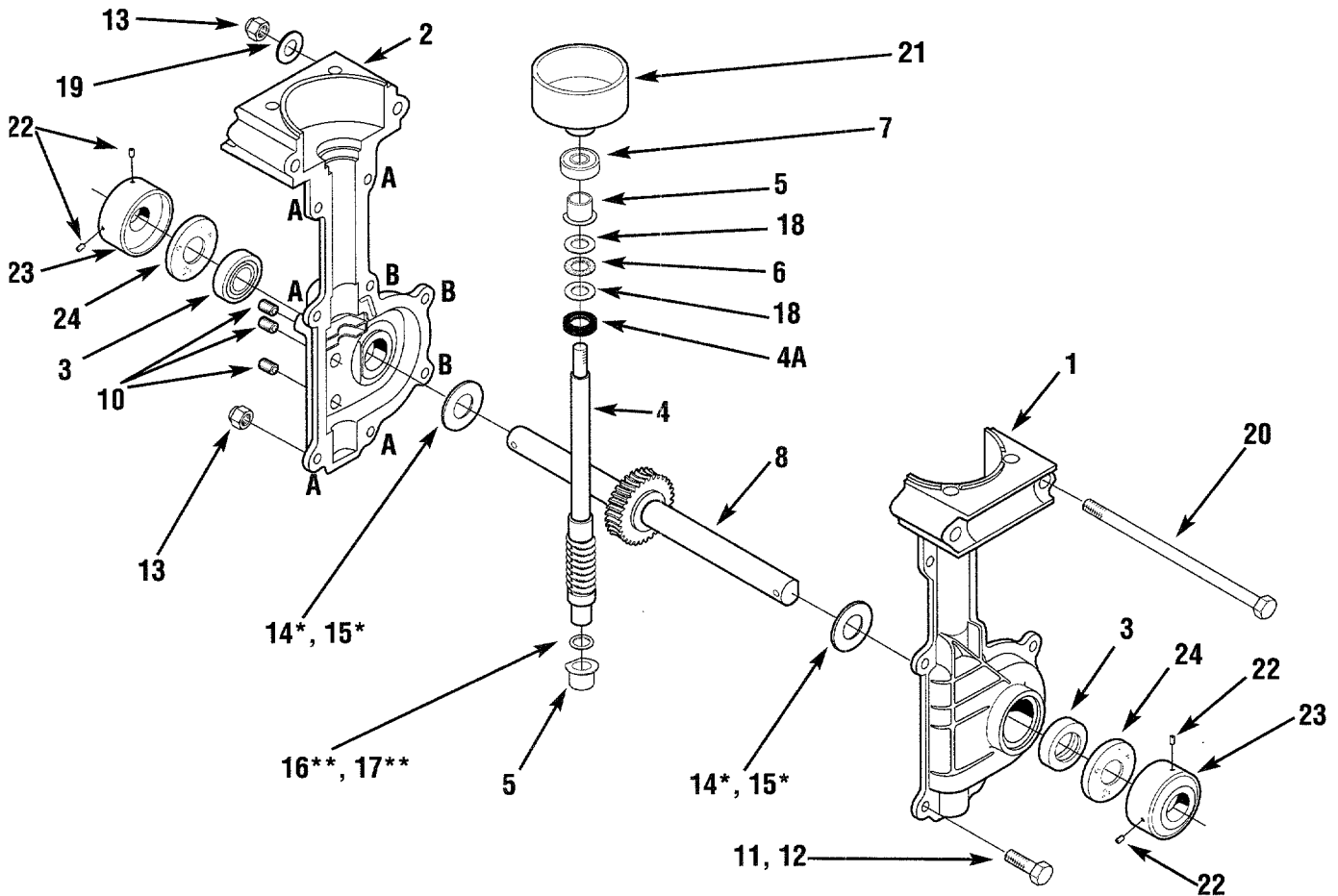


E.



Ref. Letter	Part #	Description and Location	Qty.
A	1904552	Warning Decal– located at rear of tine hood	1
B	1909936	On-Off Ignition Switch Decal– located at top of handlebars	1
C	1909939	Starting Stabilization Decal– located at top of handlebars	1
D	1909935	Control Lever Decal–located at point where handlebars fold	1
E	1904553	Warning Decal– located at rear of tine hood	1

2HP MODEL REPAIR PARTS

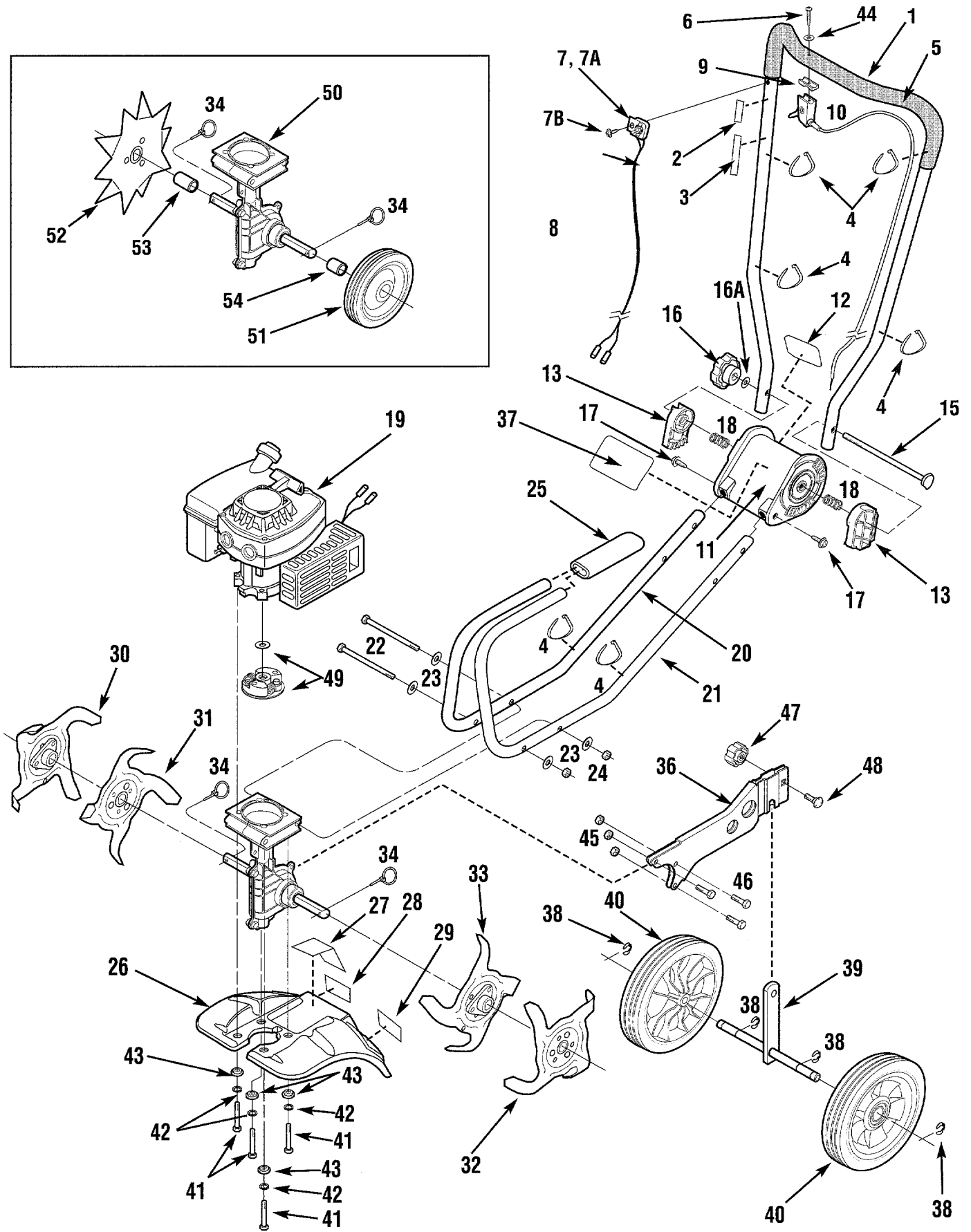
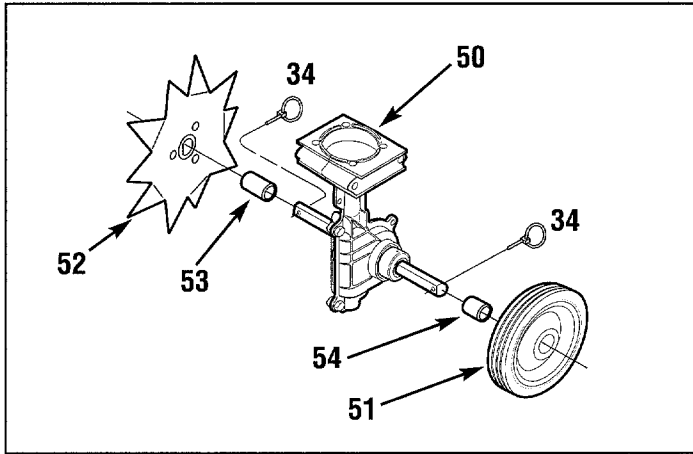


TRANSMISSION ASSEMBLY COMPONENTS

Ref #	Part #	Description	Qty
1	1915039	Transmission Case, with pressed-in bushing, left-side	1
2	1915040	Transmission Case, with pressed-in bushing, right-side	1
3	1983632	Oil Seal	2
4	1983634	Shaft, worm-input	1
4A	1909923	Oil Seal, input	1
5	1983731	Bearing, input	2
6	1983636	Bearing, thrust	1
7	1983637	Ball Bearing	1
8	1904416	Shaft Assembly. Includes pressed-on worm gear and two ring lock pins	1
9	----	Ref. Number Not Used	
10	1185741	Plug, 1/8"	3
11	1111600	Screw, 1/4"-20 x 7/8" (five locations, identified as "A" on transmission case)	5

Ref #	Part #	Description	Qty
12	1100069	Screw, 1/4"-20 x 1" (three locations, identified as "B" on transmission case)	3
13	1817146	Lock Nut, Nyloc, 1/4"-20	8
14*	1983635	Thrust Washer, output (.050")	As Req'd.
15*	1983640	Thrust Washer, output (.040")	As Req'd.
16**	1983641	Thrust Washer, input (.020")	As Req'd.
17**	1983642	Thrust Washer, input (.035")	As Req'd.
18	1983638	Thrust Washer	2
19	1107381	Flat Washer, 1/4"	2
20	1983663	Screw, Hex Hd., 1/4"-20 x 5"	2
21	1909486	Clutch Drum and Hub	1
22	1747166	Set Screw, 1/4"-28 x 3/8"	4
23	1915055	Dust Cover	2
24	1983713	Felt Washer	2

2HP MODEL REPAIR PARTS



2HP MODEL REPAIR PARTS

Ref #	Part #	Description	Qty
TILLER/CULTIVATOR COMPONENTS			
1	1903775	Upper Handlebar Assy. (incl. Ref. 2, 3, 5)	1
2	1909936	Decal, On/Off Ignition Switch	1
3	1909939	Decal, Starting Stabilization	1
4	1763682	Tie, Plastic	6
5	1904320	Handlebar Grip, PVC	2
6	1750608	Screw, #10-16 x 1-1/2"	1
7	1983718	Switch, Engine Ignition	1
7A	1981012001	Bracket Switch	1
7B	1766503	Screw, Phillips Hd., #12-24	1
8	1909812	Wire, Engine Ignition On/Off	1
9	1909775	Spacer, Throttle Control	1
10	1909794	Lever and Cable Assy, Throttle	1
11	1904129	Handlebar Pivot Assy.(incl. Ref. 12 & 37)	1
12	1909935	Decal, Control Lever	1
13	1909702	Ratchet, Handlebar Pivot	2
14	---	Ref. Number Not Used	
15	1909722	Bolt, Handlebar Pivot	1
16	1763767	Knurled Knob, Handlebar Pivot	1
16A	1107382	Washer, Flat, 5/16"	1
17	1904193	Screw, Slotted Hex Hd., 1/4"-14 x 3/4"	2
18	1909766	Spring, Handlebar Pivot	2
19	---	Engine, 2HP Tecumseh (contact your Authorized Engine Dealer)	1
20	1909670001	Lower Handlebar, Right Side	1
21	1909669001	Lower Handlebar, Left Side	1
22	1983663	Bolt, Hex Hd., 1/4"-20 x 5"	2
23	1107381	Flat Washer, 1/4" I.D.	4
24	1817146	Locknut, 1/4"-20	2
25	1909720	Foam Sleeve, Lower Handlebar	1
26	1904203 1916443	Hood Assy. Incl. Ref. 27 & 28. See (A) below. Hood Assy. Incl. Ref. 27 & 28. See (B) below.	1
27	1904552	Decal, Warning	1
28	1904553	Decal, Warning	1
29	--	Ref. Number Not Used	
30	1909540	Tine, Outer, Right-Hand Side	1
31	1909539	Tine, Inner, Right-Hand Side	1
32	1909712	Tine, Outer, Left-Hand Side	1
33	1909711	Tine, Inner, Left-Hand Side	1
34	1904321	Ring Lock Pin	2
35	---	Ref. Number Not Used	
36	1909680	Wheel Bracket	1
37	1909943 1916441	Logo Decal. See (A) below Logo Decal. See (B) below	1

Ref #	Part #	Description	Qty
38	1729775	E-Rings	4
39	1909517001	Axle	1
40	1909853	Wheel	2
41	1100807	Screw, Hex Cap, 1/4"-20 x 2"	4
42	1100241	Washer, Lock 1/4"-20	4
43	1909838	Spacer, Engine Mounting	4
44	94019	Washer, Flat	1
45	1817146	Locknut, 1/4"-20	3
46	1100069	Screw, 1/4"-20 x 1"	3
47	1909835	Knob	1
48	90077	Carriage Bolt	1
49	1909487	Clutch Rotor with Washer	1
50	1909803	Transmission Assembly (see Page 21)	

EDGER ATTACHMENT COMPONENTS

34	1893445	Flat Washer	2
34A	1177548	Lockwasher, External Tooth, 5/16"	2
35	1909835	Knurled Retaining Knob, Tine Shaft	2
51	1903777	Edger Wheel	1
52	1903781	Edger Tine	1
53	1983648	Long Bushing	1
54	1903778	Short Bushing	1

ADDITIONAL ATTACHMENTS

----	12575	Power Lawn Rake Attachment	1
----	12574	Lawn Aerator Attachment	1

(A) - For Model 12097

(B) - For Model 12159

For customer assistance, contact your nearest authorized dealer or:

Garden Way Incorporated • 1 Garden Way • Troy, New York 12180

Customer Service: 1-800-437-8686 • Technical Service: 1-800-520-5520 • Parts Service: 1-800-648-6776 • FAX (518) 391-7332

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