

# **RYOBI®**

## **410R**

# **OWNER'S MANUAL**



**IMPORTANT**

**FOR STARTING  
INSTRUCTIONS  
REFER TO PAGE 9**

**MODEL NO. 410R**



## INTRODUCTION

### THANK YOU

Thank you for purchasing this quality product. This modern power tool has been designed to provide you with many hours of useful service. You will find it to be a great labor-saving device.

This owner's manual provides you with easy-to-understand operating instructions. Read the entire manual and follow all of the instructions to keep your new power tool in top operating condition.

### PRODUCT REFERENCES, ILLUSTRATIONS AND SPECIFICATIONS

All information, illustrations and specifications in this manual are based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

Copyright © 1992 Ryobi Outdoor Products, Inc. All Rights Reserved.

### SERVICE INFORMATION

Service on this power equipment within and after the warranty period can be performed by any authorized service dealer.

Dial **1-800-345-8746** to obtain the listing of servicing dealers in your area.

**DO NOT RETURN UNIT TO RETAILER.**



**NOTE: PROOF OF PURCHASE WILL BE REQUIRED FOR WARRANTY SERVICE.**

**MAKE SURE THIS MANUAL IS READ AND CAREFULLY UNDERSTOOD BEFORE STARTING OR OPERATING THIS EQUIPMENT.**

## CONTENTS

I. Safety Warnings .....	2-3
II. Assembly Instructions .....	4
A. Wheel Bracket Assembly .....	5
B. Handlebar Assembly .....	5-6
C. Throttle Cable Assembly .....	6-7
III. Oil and Fuel Information .....	7
IV. Starting/Stopping Instructions .....	9
V. Operating Procedures .....	10
VI. Maintenance and Repair Instructions .....	11-16
A. Tine Adjustment .....	11
B. Tine Replacement .....	11
C. Air Filter Maintenance .....	12
D. Carburetor Adjustments .....	13
E. Storage Procedures .....	14
VIII. Troubleshooting Chart .....	15
VII. Specifications .....	16
XI. Warranty .....	16

## SAFETY WARNINGS

THE PURPOSE OF SAFETY SYMBOLS IS TO ATTRACT YOUR ATTENTION TO POSSIBLE DANGERS. THE SAFETY SYMBOLS, AND THE EXPLANATIONS WITH THEM, DESERVE YOUR CAREFUL ATTENTION AND UNDERSTANDING. THE SAFETY WARNINGS DO NOT BY THEMSELVES ELIMINATE ANY DANGER. THE INSTRUCTIONS OR WARNINGS THEY GIVE ARE NOT SUBSTITUTES FOR PROPER ACCIDENT PREVENTION MEASURES.

### SYMBOL

### MEANING



**WARNING:** Failure to obey a safety warning can result in injury to yourself and others.



**NOTE:** Advises you of information or instructions vital to the operation or maintenance of the equipment.



## SAFETY WARNINGS

### FUELING AND PRE-OPERATIONAL

- Gasoline(petrol) is extremely flammable and its vapors can explode if ignited. Always stop the engine and allow it to cool before filling the fuel tank. Do not smoke while filling the fuel tank. Keep sparks and open flames away from the area.
- Store gasoline and fuel only in containers designed and approved for the storage of such materials.
- Pressure can build up in the fuel tank. Loosen the fuel tank cap slowly to relieve any pressure in the tank.
- Add fuel in a clean, well-ventilated area. Wipe up any spilled fuel immediately. If fuel has been spilled, allow it to dry completely before starting the engine.
- Move the unit at least 3 m (10 ft.) from the fueling point before starting the engine.
- Thoroughly inspect the unit for loose or damaged parts before each use. Do not use until adjustments or repairs are made.
- Avoid accidental starting. Be in the starting position whenever pulling the starting rope.
- Keep all bystanders, especially children, and pets at least 10 m (33 ft.) away from the area.

### DURING OPERATION

- Wear safety glasses or goggles at all times when operating this unit.
- Dress properly. Do not operate this unit when barefoot or wearing open sandals. Always wear sturdy, rubber-soled footwear. The use of gloves, ear/hearing protection and long pants are recommended.
- Do not wear loose fitting clothing or articles such as scarves, strings, chains, ties, etc., because they could get drawn into the air intake. Also make sure long hair does not get drawn into the air intake.
- Keep hands, face and feet away from all moving parts.
- Do not touch the muffler or cylinder. These parts get extremely hot from operation and remain hot for a short time after the equipment is turned off.
- Always hold the unit with both hands when operating. Keep a firm grip on the handles or grips.
- Operate the unit only in a well-ventilated area, outdoors. Carbon monoxide exhaust fumes can be lethal in a confined area.

- If you strike or become entangled with a foreign object, stop the engine immediately and check for damage. Repair any damage before further operation is attempted. Do not operate the unit with loose or damaged parts.
- Use the right tool. Do not use this unit for any job except that for which it is intended.
- Do not overreach. Keep proper footing and balance at all times.
- Always remain alert. To prevent injury to yourself and others, do not operate this unit if you are fatigued.
- Do not operate the engine faster than the speed necessary to cultivate. Do not run the engine at high speed when not cultivating.
- Always stop the engine when walking from one location to another.
- Keep the tines and guard clear of debris.
- Never attempt to clear the tines and guard of debris with the engine running.
- Never operate the cultivator without the tine cover in place and properly secured.
- Stay clear of the rotating tines.
- Avoid heavy contact with solid objects that might stop the tines. If heavy contact occurs, stop the engine and inspect the unit for damage.
- Use only genuine replacement parts when servicing this unit. These parts are available from your authorized service dealer. The use of non-standard parts, or other accessories or attachments not designed for this unit, could result in serious injury to the user or damage to the unit.

### AFTER OPERATION

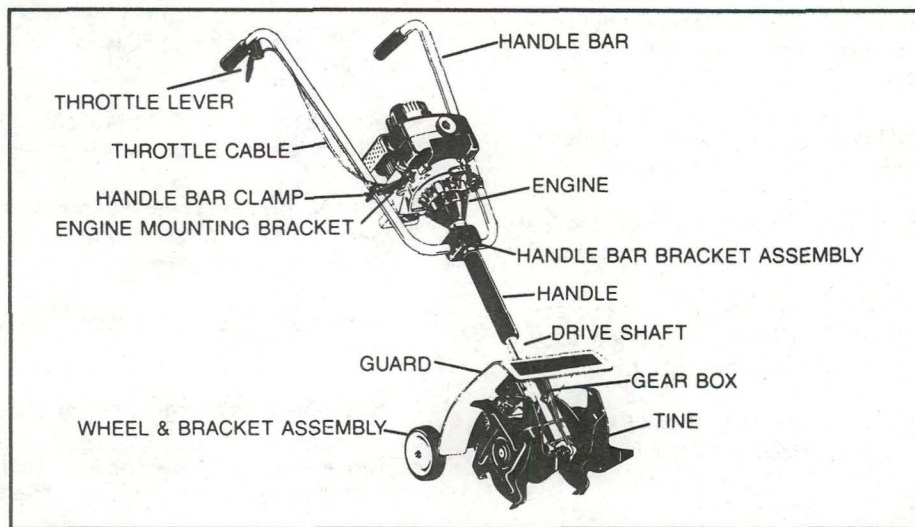
- Store the unit in an appropriate area to prevent unauthorized use and damage.
- Store the unit indoors in a dry location, out of the reach of children.
- Allow the unit to cool before putting it into storage.
- Only qualified personnel should perform any repairs or maintenance procedures that are not described in this manual.
- Clean the tines with a hose and water to remove any buildup. Then oil the tines with machine oil to prevent rust.
- Always wear gloves when servicing or cleaning the tines because they become very sharp from use.



## ASSEMBLY INSTRUCTIONS



**NOTE:** Your yard and garden cultivator has been completely assembled except for the handlebar, throttle cable and wheel bracket assembly (Refer to Fig. 1 for complete assembly). A screwdriver (supplied) is required for assembly.



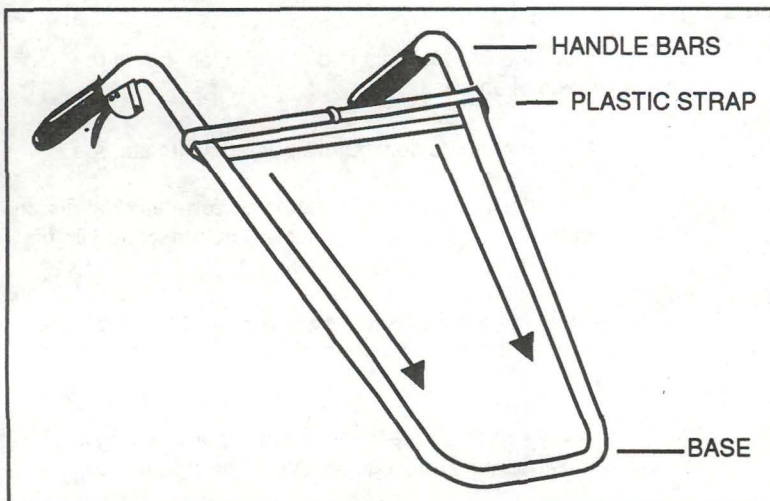
**Fig. 1**

1. Carefully unpack the contents and unwrap the throttle cable without bending or kinking it.



### WARNING

Do not cut the plastic strap off of the handlebars. The strap is under heavy spring tension and can cause serious personal injury if cut. To remove, slide the plastic strap down toward the base of the handlebars (Fig. 2).



**Fig. 2**



## WHEEL BRACKET ASSEMBLY

1. Assemble the wheel and adjustment bracket with 2 carriage bolts, 2 lock washers and 2 wing nuts to the guard (Fig. 3).

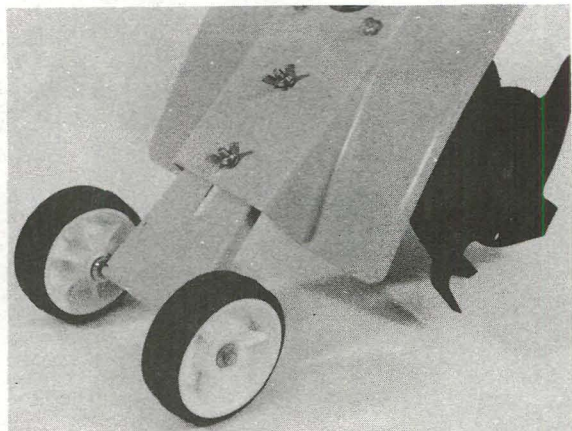


Fig. 3

2. Make sure the square shoulder of the bolts are through the slotted holes in the guard. Tighten the wing nuts (Fig. 4).

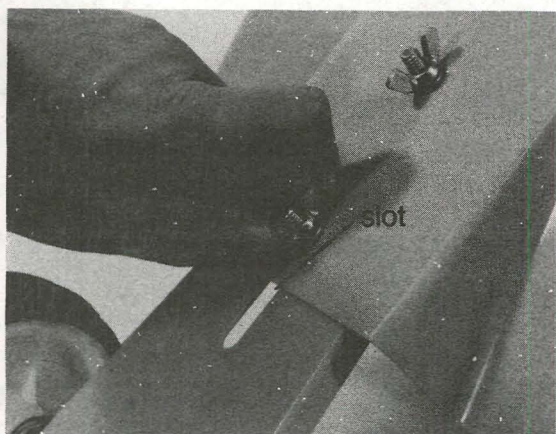


Fig. 4



**NOTE:** Adjusting the wheel bracket assembly up or down will vary the depth of the tine penetration for cultivating.

## HANDLEBAR ASSEMBLY

1. Assemble the handlebars to the handlebar bracket (Fig. 5). Do not tighten the screws.



Fig. 5



**NOTE:** The screws can be mounted from the top or bottom of the bracket assembly.

2. Position the handlebars to the engine mounting brackets (Fig. 6).

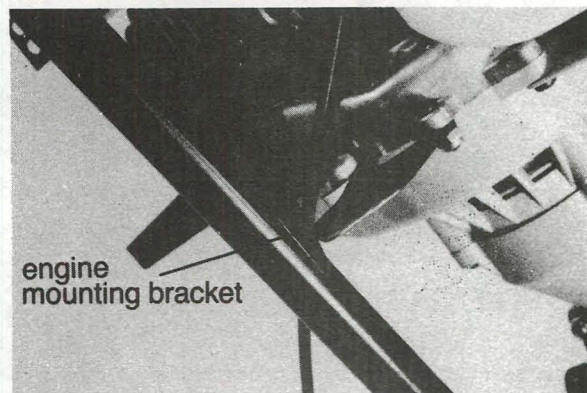


Fig. 6



**NOTE:** Positioning onto the engine mounting brackets may require slightly spreading the handlebars.



3. Untape the 2 handlebar clamps from the handlebars and slide them over the engine mounting brackets.
4. Center the handlebars and tighten the 2 clamp T-bolts and 4 handlebar bracket screws (Figs. 7 and 8).

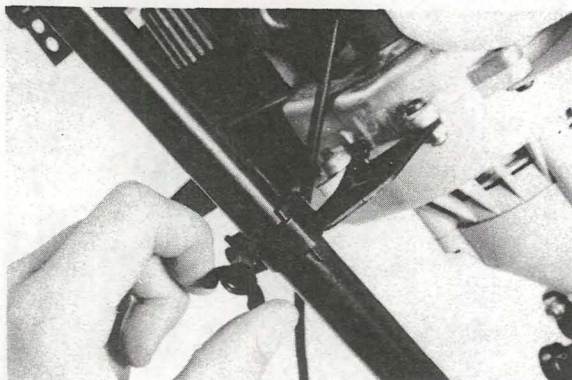


Fig. 7

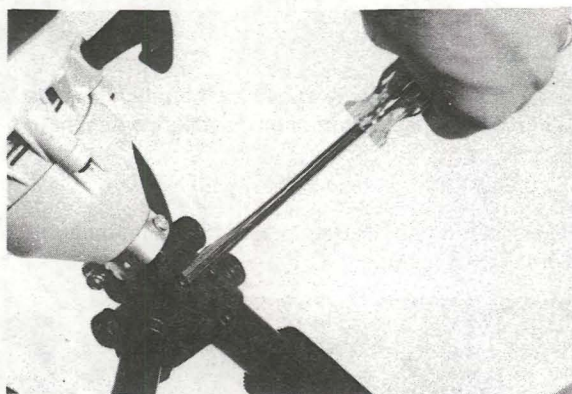


Fig. 8

## THROTTLE CABLE ASSEMBLY

1. Wrap the throttle wire once around the handlebars as shown in Fig. 9.

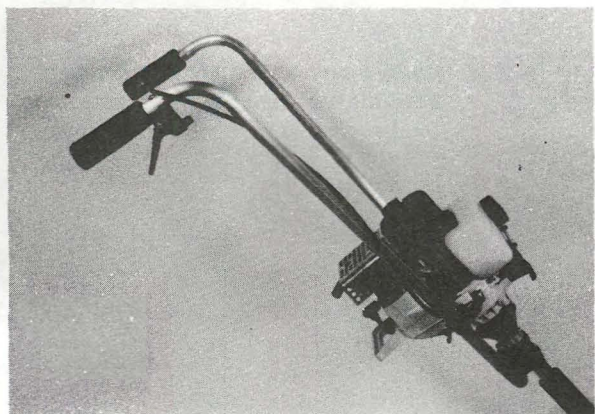


Fig. 9

2. Depress the throttle trigger to show the location hole for the throttle wire (Fig. 10).

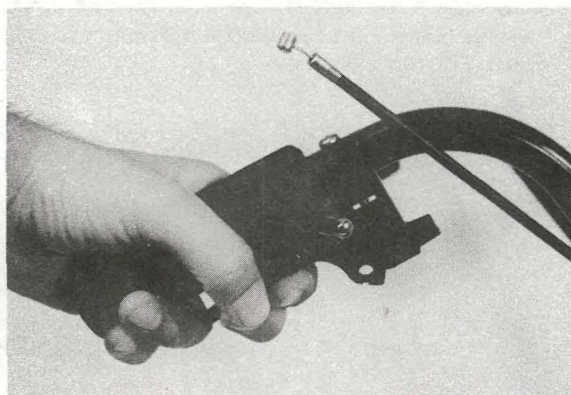


Fig. 10

3. With the throttle trigger depressed, place the barrel end of the throttle wire inside the hole of the trigger (Fig. 11).

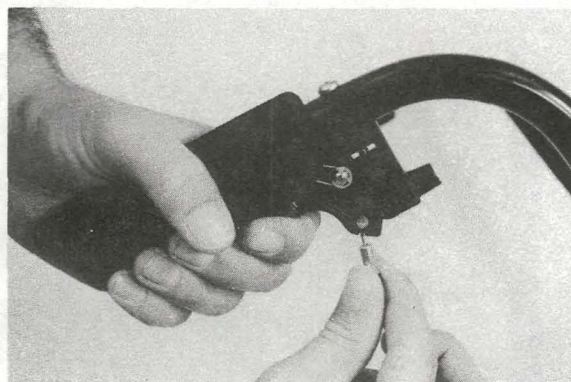


Fig. 11

4. Route the throttle wire outside the handlebar through the slot in the trigger and the trigger housing releasing the housing (Fig. 12).

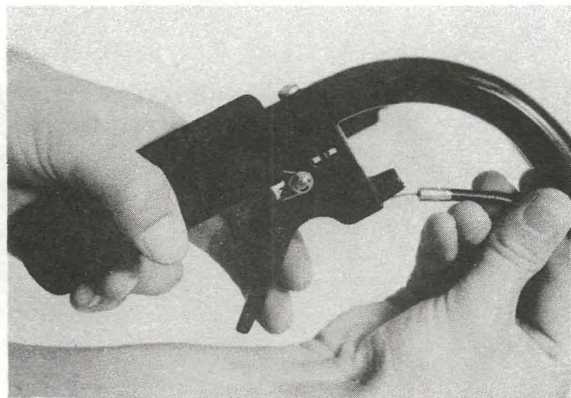


Fig. 12



4. Place the throttle cable housing inside of the trigger housing.
5. Route the throttle cable through the clip of the engine mount bracket (Fig. 13).

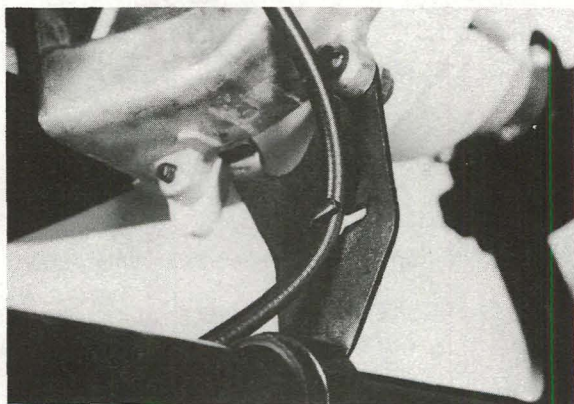


Fig. 13



#### WARNING

Always disconnect the throttle cable from the trigger and engine mount bracket clip before folding the handle bars to store the unit. Failure to do so will damage the throttle cable and wire (Fig. 14).

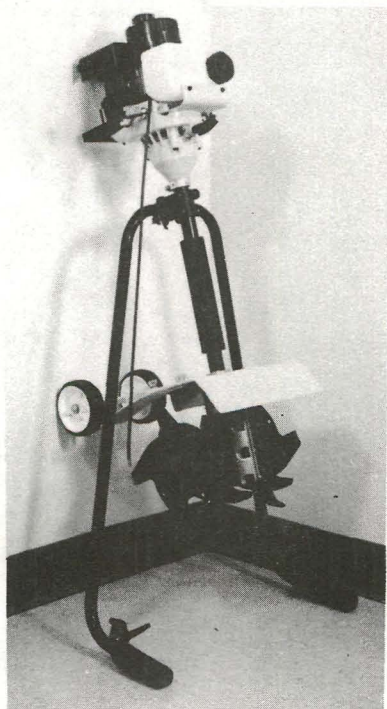


Fig. 14

## OIL & FUEL INFORMATION

**NOTE:** BE SURE TO READ THESE INSTRUCTIONS CAREFULLY BEFORE ATTEMPTING TO START OR OPERATE THIS UNIT. Using old or improper oil or fuel, or improperly mixing the oil and fuel can cause engine damage. This type of damage will void the engine warranty.



### WARNING

Gasoline is extremely flammable and its vapors can explode if they are ignited. Always stop the engine and allow it to cool before filling the fuel tank. Do not smoke while filling the tank. Keep sparks and open flames away from the area.

### RECOMMENDED OIL TYPE

IDC® or Ryobi® 2-cycle oil is recommended for this power tool.

If another brand of 2-cycle oil is used, make sure it is high quality oil that is formulated for small, air-cooled engines.

### RECOMMENDED FUEL TYPE

Use clean, fresh, regular grade, leaded gasoline with an octane rating of 87 or greater. Unleaded regular grade gasoline is an acceptable alternative, but regular grade leaded gasoline is preferred.

### OIL AND FUEL MIXING INSTRUCTIONS

**NOTE:** For proper engine operation and maximum reliability, pay strict attention to the oil and fuel mixing instructions. Use a **32:1 fuel/oil ratio** when you use IDC® or Ryobi® 2-cycle oil. Using improperly mixed fuel can severely damage the engine.

Use the following procedure to ensure complete mixing:

1. Put a small amount of fresh gasoline into a clean 1 (U.S.) gallon (3.785 liter) fuel can.
2. Add one 4-ounce (118 ml) can of IDC® or Ryobi® 2-cycle oil.

**NOTE:** If you use oil other than IDC® or Ryobi® 2-cycle oil, add 6 oz. (0.177 liters) oil.

3. Fill the remainder of the fuel can with gasoline.
4. Screw the fuel can cap on tightly and SHAKE THE CAN VIGOROUSLY FOR 30 SECONDS.



4 oz. (0.018 liters)  
IDC® or Ryobi® 2-Cycle Oil

to

1 (U.S.) gallon (3.785 liters) regular leaded gas

IDC® or Ryobi® 2-CYCLE OIL  
MIXING RATIO 32:1

### FILLING THE FUEL TANK

1. Fill or add fuel to the tank only when the cultivator is in a horizontal position as shown in Fig. 15.

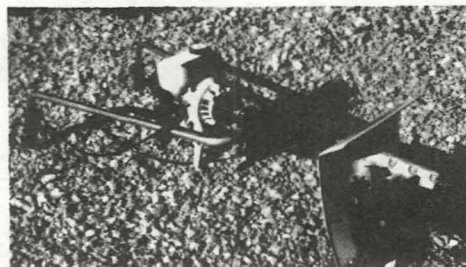


Fig. 15



## STARTING/STOPPING INSTRUCTIONS

1. **MIX OIL WITH GAS** - 1 IDC or RYOBI 4-oz. (0.118 liters) can of 2-cycle oil with 1 (U.S.) gallon (3.785 liters) of regular or unleaded gas. (Regular is preferred).
2. If the unit is equipped with an ignition switch, **BE SURE THE IGNITION SWITCH IS "ON"!** See Fig. 16 for the location of the ON/OFF SWITCH.
3. **FULLY PRESS AND RELEASE THE PRIMER BULB 5 TO 7 TIMES.** See Fig. 17 for the primer bulb location.
4. **PLACE THE CHOKE LEVER IN THE FULL "CHOKE" POSITION.** See Fig. 19.
5. **HOLD THE UNIT IN THE STARTING POSITION WITH THE CULTIVATOR TILTING BACK ENOUGH TO CLEAR THE GROUND SURFACE.** See Fig. 18.
6. **SQUEEZE THE THROTTLE TRIGGER TO FULL THROTTLE** (Fig. 20). Hold or lock the trigger in this position.
7. **PULL THE STARTER ROPE BRISKLY** until you hear the engine sound like it wants to run. (Normally 2 to 5 pulls). See Fig. 18.
8. **PLACE THE CHOKE LEVER IN THE "PARTIAL" POSITION.** Pull the starter rope briskly 1 to 3 times to start the engine. See Fig. 19.
9. If the engine does not start, repeat steps 2 to 8.
10. After the engine warms up for 5 to 10 seconds, **PLACE THE CHOKE LEVER IN THE "RUN" POSITION.** See Fig. 19.
11. **TO STOP THE ENGINE,** place the **IGNITION SWITCH** in the **"OFF"** position until the engine comes to a complete stop. See Fig. 16.



Fig. 16

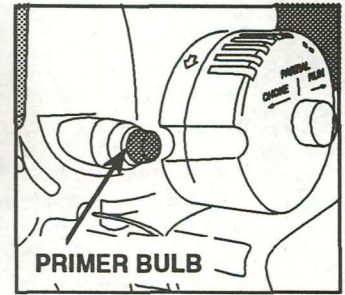


Fig. 17



Fig. 18

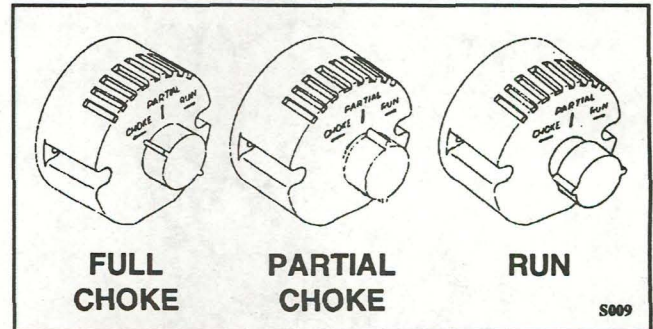


Fig. 19

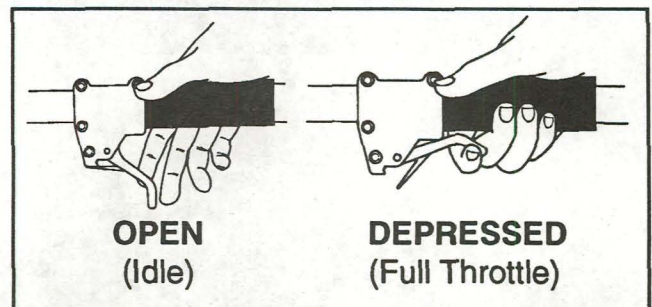



Fig. 20

 **NOTE:** To prevent vapor lock, avoid setting the unit in the sun.



## OPERATING INSTRUCTIONS



### WARNING

To avoid personal injury, never carry the cultivator while the engine is running.

Stay clear of the rotating tines. Stop the engine and disconnect the lower drive shaft from the unit prior to making adjustments and cleaning.

The gear housing gets very warm after extended periods of use. To avoid burns, do not touch the housing until it has cooled down.



**NOTE:** The cultivator may be transported by pushing it on wheels or carrying it by the handle as shown in Figs. 21 and 22.



### WARNING

Never carry the cultivator while the engine is running.

1. Move the cultivator to the work area prior to starting the engine.



Fig. 21

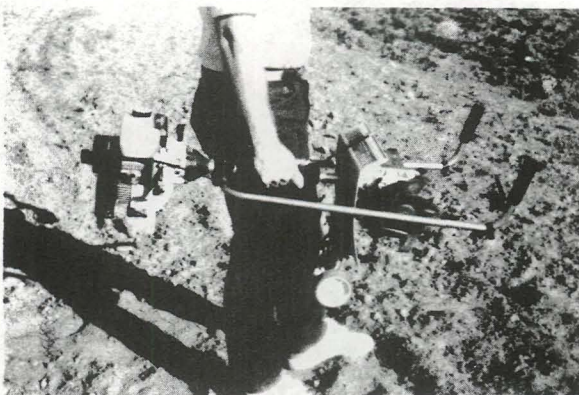


Fig. 22

2. With the engine running and the tines off the ground, depress the throttle trigger to increase the engine speed.
3. Holding both of the handlebar grips firmly, slowly lower the tines make contact with the ground (Fig. 23).



Fig. 23

4. As cultivating action begins, pull back on the cultivator so that the tines can penetrate the ground (Fig. 24).



Fig. 24

5. Once the ground has been broken, continue at a moderate pace until you are familiar with the controls and the handling of the cultivator.
6. Pull the cultivator backwards to improve the depth of cultivation and reduce your effort.
7. If the tines are digging too deep or not deep enough, adjust the tines per **Tine Adjustment**.



**NOTE:** To cultivate in confined areas or narrow rows, remove the left and right outer tines. Refer to **Tine Replacement**.



**NOTE:** To remove unwanted vegetation, adjust the tines to break no more than 2 inches of soil. This will help to keep the other unwanted seed from germinating.



## MAINTENANCE AND REPAIR

### TINE ADJUSTMENT

Tine adjustment will vary depending on the type of soil being cultivated and how it will be used. Generally, adjusting the tines to break the soil 4 to 6 inches is recommended for most gardens. Adjust the tines as follows:

1. Stop the engine and disconnect the plug wire.
2. Loosen (do not remove) the two wing nuts on the tine guard.
3. Slide the wheel bracket assembly up for shallower and down for deeper tine penetration.
4. Once the tines are in the desired position, tighten the wing nuts, making sure that the carriage bolts are seated properly through the bracket.
5. If the tine depth is not correct, repeat steps 2-4.

### TINE REPLACEMENT



#### WARNING

Always wear gloves when working with the tines because they become very sharp from use.

All 4 tines should be replaced at the same time because they will wear evenly through normal use. Work on one side at a time.

1. Turn ignition switch to the **OFF** position and disconnect the spark plug wire.
2. Remove the hitch pin clips and clevis pins (Fig. 25).

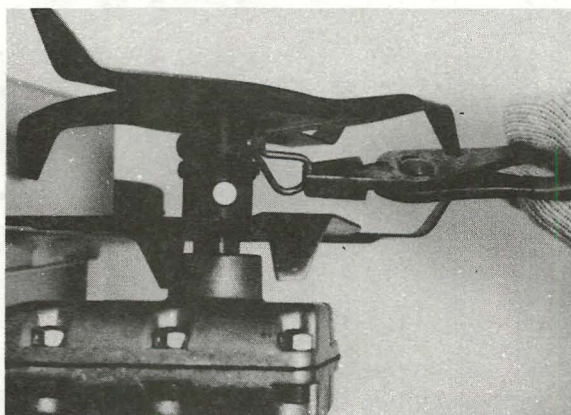


Fig. 25

3. Remove the tines and felt cushions from the shaft.
4. Clean and oil the shaft.
5. Replace the tines and felt cushions by reversing steps 2 & 3 (Fig. 26).

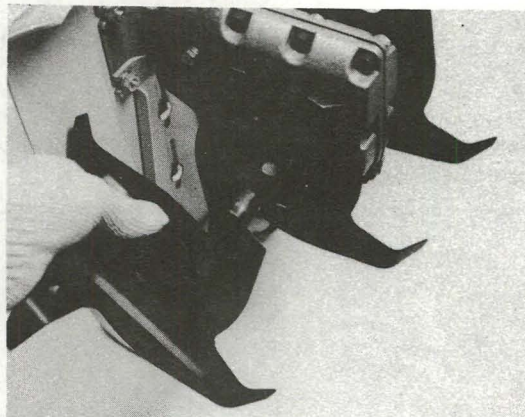


Fig. 26



**NOTE:** When installed correctly, the hubs on the tines will face each other and the letter "R" stamped on the tines will appear on the right side of the cultivator and the letter "L" will appear on the left side. It is important that the tines are installed correctly.

6. Repeat this procedure on the opposite side.



## AIR FILTER MAINTENANCE



**NOTE: CLEAN AND RE-OIL THE AIR FILTER EVERY 10 HOURS OF OPERATION.** Your unit's air filter is one of the most important areas to maintain. If it is not maintained as followed, you will void the warranty.

1. Remove the air filter from the carburetor/air filter cover assembly (Fig. 27).

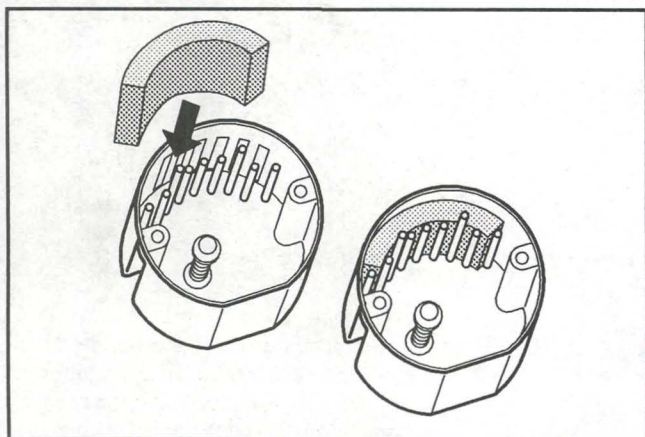


Fig. 27

2. Wash it in detergent and water (Fig. 28). Rinse the filter thoroughly and allow it to dry.

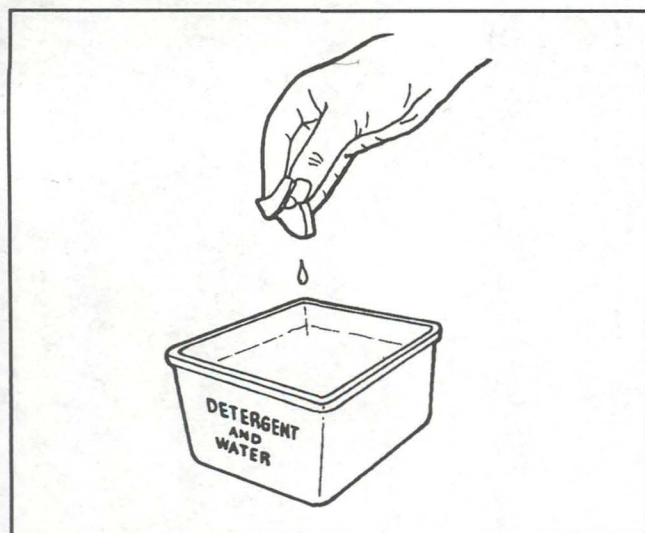


Fig. 28

3. Apply clean SAE 30 oil to the filter (Fig. 29).

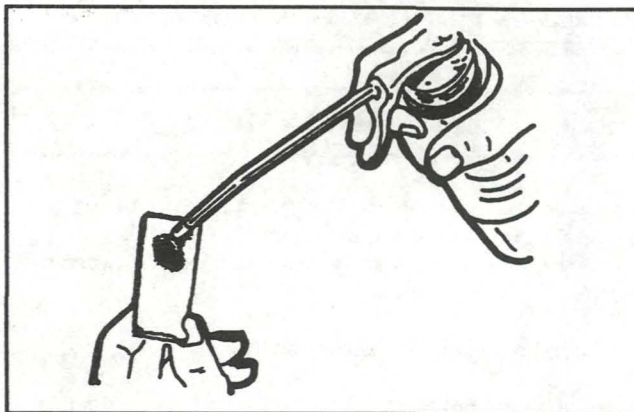


Fig. 29

4. Squeeze the filter to spread the oil (Fig. 30).

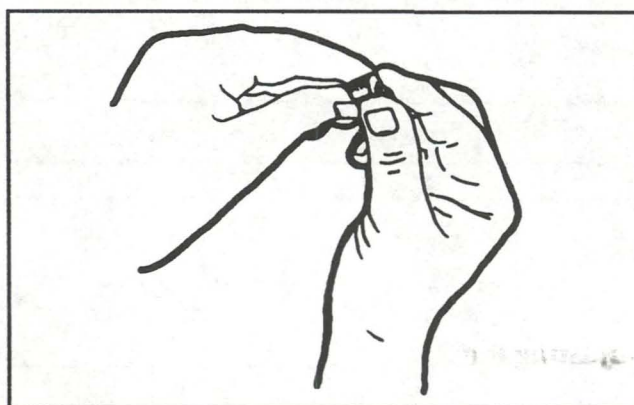


Fig. 30



## CARBURETOR ADJUSTMENT

This unit is equipped with a diaphragm-type carburetor that has been carefully calibrated at the factory. In most cases, no further adjustment will be required.

The condition of the air filter is important to the operation of the trimmer. A dirty air filter will restrict the air flow, which upsets the fuel-air mixture in the carburetor. The resulting symptoms are often mistaken for an out-of-adjustment carburetor. Therefore, **check the condition of the air filter before adjusting the carburetor**. Refer to **Air Filter Maintenance** on page 12.

If the following conditions are experienced, it may be necessary to adjust the carburetor:

- The engine will not idle
- The engine hesitates or stalls on acceleration
- The loss of engine power that is not corrected by cleaning the air filter and muffler
- The engine operates in an erratic or fuel-rich condition (indicated by excessive exhaust smoke from the muffler).

The carburetor has 2 basic adjustments: the *idle speed* and the *idle mixture* adjustments. The high speed mixture is preset; no high speed adjustment is possible.

**NOTE:** Careless adjustments can seriously damage your unit.

### Adjusting the Carburetor

1. Stop the engine. Remove the carburetor/air filter cover assembly (Fig. 31). Locate the adjusting screws (underneath the choke lever and air filter base).
2. **Initial Idle Speed Setting** - Back the idle speed screw **counterclockwise** (Fig. 32) out until it *does not contact* the carburetor throttle lever. Then turn the screw in, **clockwise**, until it *begins to move* the throttle lever; then continue turning **2 full turns**.
3. **Initial Idle Mixture Setting:** Turn the idle mixture screw **clockwise** (Fig. 32) until it is *lightly seated*. Then turn the screw **counterclockwise 1-1/2 turns**.
4. Start and warm up the engine.
5. Release the throttle trigger and let the engine idle. If the engine stops, turn the idle speed screw **clockwise 1/8 turn** at a time as required until the engine idles.

**NOTE:** When closing idle mixture adjustment screw, turn it finger-tight — do not force it. Forcing it with a screwdriver will damage the screw tip and the seat in the carburetor body.

6. **Final Idle Speed And Idle Mixture Settings:** Adjust the idle speed and mixture for smoothest engine idle.
  - a. Adjust the idle mixture screw for the fastest idle; then turn the screw **counterclockwise 1/8 turn**.
  - b. Squeeze the throttle trigger. If the engine falters or hesitates on acceleration, turn the idle mixture screw **counterclockwise 1/16 turn** at a time until rapid acceleration is achieved.

If the idle speed has changed significantly because of steps a and b above, readjust the idle speed screw.

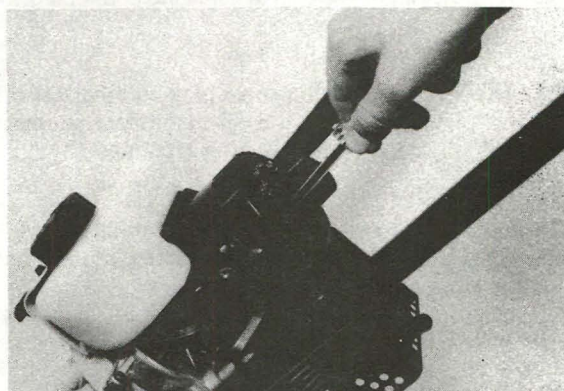


Fig. 31

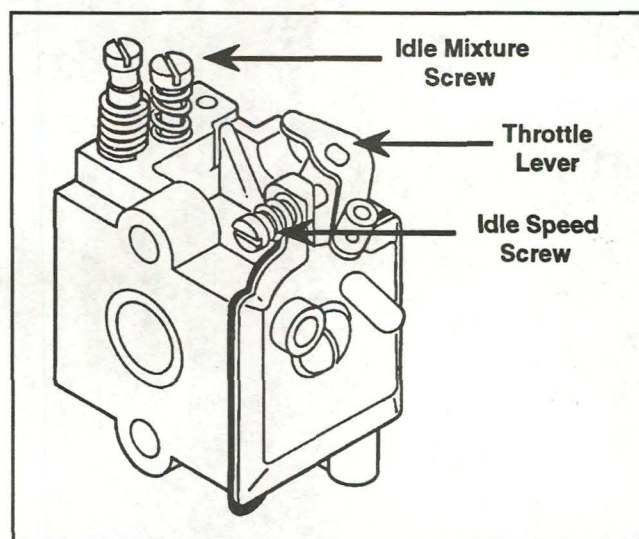


Fig. 32

**NOTE:** If the carburetor adjustments do not help the unit to run properly, contact your authorized service dealer.



## STORAGE PROCEDURES

If the unit will be stored for an extended period of time, use the following storage procedure.

1. Drain all fuel from the fuel tank and drain into a container with the same 2-cycle fuel mixture. Do not use fuel that has been stored for more than 30 days. Dispose of the old fuel/oil mix in a safe manner and use a fresh mix.
2. Start the engine and allow it to run until it stalls. This ensures that all fuel has been drained from the carburetor.
3. Allow the engine to cool. Remove the spark plug and put approximately one ounce of any high quality motor oil or 2-cycle oil into the cylinder. Pull the starter rope slowly to distribute the oil. Reinstall the spark plug.



**NOTE:** Remove the spark plug and drain all of the oil from the cylinder before attempting to start the unit after storage.

4. Thoroughly clean the unit and inspect for any loose or damaged parts. Repair or replace damaged parts and tighten loose screws, nuts or bolts.
5. The unit is now ready for storage.
6. Store the unit in a dry, well-ventilated area.



## TROUBLESHOOTING

PROBLEM	CAUSE	ACTION
Engine Will Not Start	Ignition switch is "OFF" Empty fuel tank Primer bulb wasn't pushed enough Engine flooded	Turn switch to "ON" Fill fuel tank. Press primer bulb fully and slowly five times Use starting procedure WITHOUT USING CHOKE.
Engine Will Not Idle	Cutting head bound with grass Carburetor Misadjusted	Stop engine and clean cutting head Adjust carburetor.
Engine Will Not Accelerate	Carburetor Misadjusted	Adjust carburetor.
Engine Lacks Power or Stalls When Cutting	Dirty air filter	Clean or replace air filter.
Cutting Head Will Not Advance Line	Head Out of Line  Inner Spool Bound Up Head Dirty Indexing Teeth Worn or Burred Line Welded  Line Twisted When Refilled  Not Enough Line Is Exposed	Refill with new cutting line  Replace inner spool Clean spools Replace spools Disassemble, remove the welded section and rewind the line  Disassemble and rewind spool  Push the Bump Knob and pull out 102 mm (4 in) of line until the line is outside of the cutting head.
If further assistance is required, contact your local authorized service dealer.		



# SPECIFICATIONS

## ENGINE

Manufacturer ..... Ryobi Outdoor Products  
 Engine Type ..... Air-Cooled, 2-Cycle  
 Ignition Type ..... Electronic  
 Displacement ..... 31 cc (1.9 cu. in)  
 Bore ..... 1.37 in (34.79 mm)  
 Stroke ..... 1.25 in (31.75 mm)  
 Spark Plug Gap ..... .025 in (.635 mm)  
 Flywheel Torque ..... 150 lbf•in (17.25 g/cm)  
 C.D. Module Air Gap ..... .010-.015 in (.254-.381 mm)  
 Piston Side Ring Clearance ..... .005 in (.127 mm)  
 Compression Average ..... 120-90 lbs (55-41 kg)  
 Piston Ring Width ..... .046 in (1.16 mm)  
 Spark Plug ..... Champion DJ8J  
 Piston Ring End Gap ..... .085 in (2.159 mm)#  
 Operating RPM ..... 7000 rpm  
 Lubrication ..... Fuel/Oil Mixture  
 Fuel/Oil Ratio ..... 32:1  
 Carburetor ..... Diaphragm, All-Position  
 Ignition Switch ..... Toggle On/Off  
 Starter ..... Auto Rewind  
 Muffler ..... Baffled with Guard  
 Clutch Type ..... Centrifugal  
 Throttle ..... Manual Spring Return  
 Bearings ..... Needle and Ball  
 Crankshaft ..... Cantilevered

## ENGINE

Connecting Rod ..... Stamped Steel  
 Fuel Tank ..... HD Polyethylene  
 Fuel Tank Capacity ..... 18 oz (530 ml)  
 Drive Shaft Housing ..... Steel Tube  
 Drive Shaft ..... 1/4 in (6.5 mm)  
 Throttle Control ..... Finger-Tip Trigger  
 Operating Weight ..... 22.5 lbs (11.2 kg)

# Check with ring installed in the cylinder.

## COLD ENGINE TORQUE SPECIFICATIONS

Cylinder Bolts ..... 120 lbf•in (13.8 g/cm)  
 Muffler Bolts ..... 67 lbf•in (7.6 g/cm)  
 Reed Mount to Crankcase ..... 30-35 lbf•in (3.8 g/cm)  
 Carb to Reed Mount ..... 40 lbf•in (4.6 g/cm)  
 Shroud Mounting Bolts ..... 120 lbf•in (13.8 g/cm)  
 Module Mounting Screws ..... 28 lbf•in (3.22 g/cm)  
 Starter Housing Screws ..... 40 lbf•in (4.6 g/cm)  
 Air Cleaner Cover Screws ..... 40 lbf•in (4.6 g/cm)  
 Flywheel Nut ..... 150 lbf•in (17.25 g/cm)  
 Spark Plug ..... 150 lbf•in (17.25 g/cm)

## Limited One-Year Warranty

Ryobi Outdoor Products, Inc. warrants each new ROP Outdoor Power Equipment for one (1) year according to the following terms.

This warranty extends to the original retail purchaser only and commences on the date of original retail purchase.

Any part of the ROP Outdoor Power Equipment manufactured or supplied by ROP and found in the reasonable judgement of ROP to be defective in material or workmanship will be repaired or replaced by an authorized ROP service dealer without charge for parts and labor.

The ROP Outdoor Power Equipment, including any defective part, must be returned to an authorized service dealer within the warranty period. The expense of delivering the ROP Outdoor Power Equipment to the dealer for warranty work and the expense of returning it back to the owner after repair or replacement will be paid for by the owner. ROP's responsibility in respect to claims is limited to making the required repairs or replacements and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any ROP Outdoor Power Equipment. Proof of purchase will be required by the dealer to substantiate any warranty claim. All warranty work should be performed by an authorized ROP service dealer.

This warranty is limited to forty-five (45) days from the date of original retail purchase for any ROP Outdoor Power Equipment that is used for rental or commercial purposes, or any other income-producing purpose.

This warranty does not cover any ROP Outdoor Power Equipment that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in the ROP Owner's Manual. This warranty does not apply to any damage to the ROP Outdoor Power Equipment that is the result of improper maintenance or to any ROP Outdoor Power Equipment that has been altered or modified so as to adversely affect the products operation, performance or durability or that has been altered or modified so as to change its intended use. In addition, the warranty does not extend to repairs made necessary by normal wear or by the use of parts or accessories, which are either incompatible with the ROP Outdoor Power Equipment or adversely affect its operation, performance or durability.

ROP reserves the right to change or improve the design of any ROP Outdoor Power Equipment without assuming any obligation to modify any product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE ONE (1) YEAR WARRANTY PERIOD OR FORTY-FIVE (45) DAYS FOR PRODUCTS USED FOR ANY INCOME-PRODUCING PURPOSE. ACCORDINGLY, ANY SUCH IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE APPROPRIATE ONE-YEAR OR FORTY-FIVE DAY WARRANTY PERIOD. ROP'S OBLIGATION UNDER THIS WARRANTY, IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS, AND ROP DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

ROP ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO EXPENSE OF RETURNING THE ROP OUTDOOR POWER EQUIPMENT TO AN AUTHORIZED SERVICE DEALER AND EXPENSE OF DELIVERING IT BACK TO THE OWNER, MECHANIC'S TRAVEL TIME, TELEPHONE OR TELEGRAM CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, OR INCONVENIENCE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR 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.

This warranty applies to all ROP Outdoor Power Equipment manufactured by ROP and sold in the United States.

To locate your nearest service dealer dial:  
 1-800-345-8746 outside of Arizona  
 1-602-961-1002 in Arizona.

**DO NOT RETURN THE UNIT TO THE RETAILER**

**RYOBI**

MANUFACTURED BY:  
 RYOBI OUTDOOR PRODUCTS, INC.  
 CHANDLER, ARIZONA 85226