



SAFETY FIRST!

Before operating this equipment, read this Owner's Manual and the separate manual supplied by the engine manufacturer.

Models

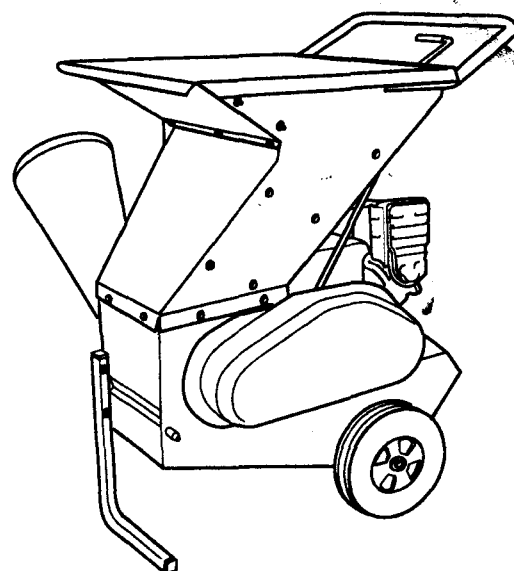
47329

47330

OWNER'S MANUAL

Chipper/Shredder

- **Safety**
- **Assembly**
- **Features/Controls**
- **Operation**
- **Maintenance**
- **Parts List**



Dear Owner:

Thank you for purchasing this Chipper/Shredder. This unit has been designed, engineered and manufactured to give you the best possible dependability and performance.

Please carefully read this Manual. It tells you how to safely and easily assemble, operate and maintain your machine. *Be sure that you and any other operators carefully follow the recommended safety practices at all times. Failure to do so could result in personal injury or property damage.*

Please complete and return the Owner Registration Card that is included in the literature package. Returning this card will register your name at the Factory so that we can provide you with warranty benefits and special informational bulletins.

If you should ever have any problems or questions, please contact your local authorized service dealer or the Factory (see back cover).

We want to be sure that you are completely satisfied at all times.

See Back Cover for Customer Service information

Safety Alert Symbol

This is a safety alert symbol. It is used in this manual and on the unit to alert you to potential hazards. When you see this symbol, read and obey the message that follows it. Failure to obey safety messages could result in personal injury or property damage.

This machine has met the rigid safety standards of the Outdoor Power Equipment Institute and an independent testing laboratory.

⚠ DANGER

Contact with rotating cutting blades inside discharge opening will cause serious personal injury! Cutting blades are rotating while unit is running, and continue to rotate until the cylinder assembly comes to a complete stop.

Keep hands, feet, face and clothing out of shredder hopper inlet and chipper chute inlet, and away from discharge area and moving parts at all times to avoid serious personal injury. Before doing maintenance or service, shut off engine, allow all moving parts to come to a complete stop, disconnect spark plug wire and keep it away from spark plug.

Table of Contents

SECTION 1: SAFETY	3
Safety Decals	5
SECTION 2: ASSEMBLY	6
Introduction	6
Step 1: Unpacking Instructions	6
Step 2: Check Carton Contents	6
Step 3: Attach Chipper Chute	6
Step 4: Attach Handle	7
Step 5: Install Clutch Lever	7
Step 6: Add Motor Oil to Engine	7
Step 7: Check Hardware for Tightness	7
SECTION 3: FEATURES & CONTROLS	8
Introduction	8
Chipper/Shredder Features and Controls	8
Shredder Hopper (Inlet)	8
Chipper Chute (Inlet)	9
Chipper/Shredder Chamber	9
Discharge Opening and Discharge Screen	9
Bar Grate Attachment	9
Clutch Lever	9
Leaf Tamper	10
Engine Controls	10
Engine ON/OFF Rocker Switch	10
Fuel Shut-Off Valve	10
Choke Control	10
Rope Starter	10
SECTION 4: OPERATION	11
Moving the Unit	11
Pre-Start Checklist	11
Motor Oil and Gasoline	11
Starting and Stopping the Unit	11
Using the Chipper/Shredder	12
Materials	12
Using the Chipper	13
Using the Shredder	14
Shredding Wet, Soggy, or Green Materials	14
Removing/Installing Discharge Screen or Bar Grate	15
Optional Discharge Screens	16
SECTION 5: MAINTENANCE	17
Maintenance Schedule	17
Lubrication	17
Drive Belt Service	17
Cylinder Assembly Service and Repair	18
Chipper Blade Removal/Installation	20
Hopper Flap Replacement	21
Engine Maintenance	22
Off-Season Storage	22
Troubleshooting	23
Parts List	24
Customer Service Information	Back Cover

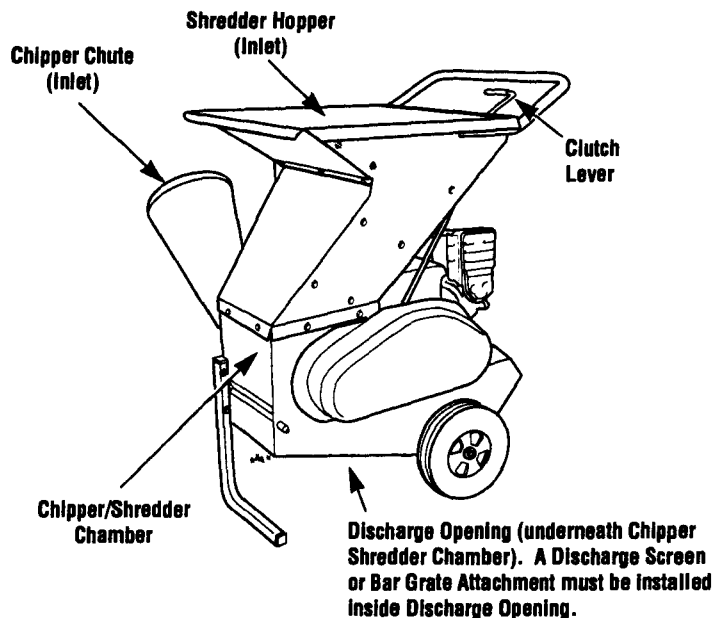
⚠ WARNING

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

SPARK ARRESTER WARNING TO RESIDENTS OF CALIFORNIA AND SEVERAL OTHER STATES

Under California law, and under the laws of several other states, you are not permitted to operate an internal combustion engine using hydrocarbon fuels on any forest, brush, hay, grain, or grass covered land; or land covered by any flammable agricultural crop without an engine spark arrester in continuous effective working order.

The engine on the unit is an internal combustion engine which burns gasoline, a hydrocarbon fuel, and must be equipped with a spark arrester muffler in continuous effective working order. The spark arrester must be attached to the engine exhaust system in such a manner that flames or heat from the system will not ignite flammable material. Failure of the owner/operator of the unit to comply with this regulation is a misdemeanor under California law (and other states) and may also be a violation of other state and/or federal regulations, laws, ordinances or codes. Contact your local fire marshal or forest service for specific information about which regulations apply in your area.



Training



1. Read this Owner's 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 your authorized dealer or the Factory.
2. Know where the engine shut-off control is and know how to use it (refer to Section 3 in this Manual).
3. Never allow children or untrained adults to use this equipment. Allow adults to operate the equipment only if instructed properly.
4. 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.
5. Keep in mind that the operator or user is responsible for accidents or hazards occurring to other people, their property and themselves.

6. Familiarize yourself with all safety and operating decals on this equipment and on any of its attachments or accessories.
7. 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.
8. Do not put hands, feet, face, or any other part of your body or clothing near the chipper chute, shredder hopper, or discharge area. The cutting blades begin to rotate and build up speed once the engine is running and continue to rotate for some time after the engine is stopped. Serious personal injury will occur if contact with the blades is made while they are rotating. Wait for all moving parts to stop completely.
9. 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.

Preparation

1. The operation of the unit can result in foreign objects being thrown by high speed rotating parts. Wear safety approved eye protection (with side shields) when using the unit.
2. Do not wear loose-fitting clothing, such as scarves, which could be caught by moving parts. Tie up or restrain long hair.
3. Make sure the unit is level and stable before starting the engine. Operate unit only on level ground.
4. Do not operate unit on a paved, hard, or gravel surface. Discharged material may bounce from a hard surface and cause injury. Always operate unit on a level, earthen surface.
5. Each time before starting the unit, make a visual check to see that all screws, nuts, bolts and other fasteners are properly secured. **The discharge screen (or the optional bar grate), chipper chute and all safety covers must be correctly and securely installed. Disconnect spark plug wire and move it away from spark plug before performing this check.** Replace any damaged or unreadable warning and operating decals.

6. 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 engine. Never remove fuel tank cap or add fuel while engine is running or when 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 engine, but move machine away from area of spillage and avoid creating any source of ignition until fuel vapors have dissipated.
7. Never make adjustments to your equipment when the engine is running or spark plug wire is connected (unless specifically recommended in Owner's Manual).

Operation

1. Secure the spark plug wire away from the spark plug and remove any unprocessed material from inside the unit before starting the unit.
2. Do not feed metal, rocks, bottles, nails, cans, or any other foreign objects into the chipper chute or shredder hopper. Process organic materials only!
3. Keep your face and body away from shredder hopper and chipper chute.
4. **Keep hands, feet, face and clothing away from shredder hopper inlet, chipper chute inlet, and discharge area to avoid serious personal injury.**
5. **Keep hands and feet out of discharge opening when machine is running. Rotating cutting blades inside opening will cause serious personal injury.**
6. Do not put hands, feet, face or any other part of your body or clothing near chipper chute, shredder hopper or discharge area. The cutting blades begin to rotate and build up speed once the engine is running and continue to rotate for some time after engine is stopped. Serious personal injury will occur if contact with

blades is made while they are rotating. Wait for all moving parts to stop completely.

7. Do not use hands or feet to clear material from discharge area or discharge opening.
8. Do not stand in front of discharge area when operating unit. Material exits quickly from discharge screen and discharge opening and can cause serious personal injury.
9. Do not allow chipped or shredded material to build up in, or clog the discharge area — clogging prevents proper discharge of materials and can result in kickback of material up through the shredder hopper or chipper chute. To remove material from discharge area, first shut off engine, allow all moving parts to stop completely, and disconnect spark plug wire and keep it from touching the plug. **Then use a long-handled shovel or a long stick. NEVER USE HANDS OR FEET TO CLEAR MATERIAL FROM DISCHARGE AREA OR DISCHARGE OPENING! ROTATING BLADES CUT 1/4-INCH FROM DISCHARGE SCREEN (OR BAR GRATE). KEEP AWAY! NEVER PUT HANDS OR FEET IN DISCHARGE AREA OR DISCHARGE OPENING!**
10. Shut engine off immediately if unit strikes a foreign object or develops an unusual noise or vibration. When engine is off and all moving parts have come to a complete stop, disconnect spark plug wire and keep it away from plug. Then proceed as follows:
 - a. Inspect for damage.
 - b. Remove all foreign objects.
 - c. Check for loose parts or hardware and tighten if loose.
 - d. Replace or repair damaged parts before starting engine.

11. Keep engine surfaces clean and free of leaves, grass, oil, grease, or any other combustible material to avoid fires and/or engine damage.

12. If the unit jams or becomes clogged, shut the engine off. **Wait until all moving parts have come to a complete stop. (The bearing collar on the chipper chute side of the unit has a white line painted on it. When this white line is stationary, the cylinder assembly has stopped rotating.)** Disconnect spark plug wire and

prevent it from touching spark plug before inspecting shredder hopper inlet, chipper chute inlet, internal cutting chamber, discharge screen (or the optional bar grate) and discharge area. **Use a long wooden stick (or a long-handled shovel) to clear jammed material.**

13. Keep all safety shields, guards, screens, and deflectors properly secured and in good condition. **Do not operate unit unless shredder hopper and chipper chute are securely bolted in place and a discharge screen (or optional bar grate) is correctly installed in unit.**

14. Processed material exits at high speed from discharge opening. **Keep away from discharge opening and discharge area while operating unit.**

15. Do not over-reach when feeding material into shredder hopper or chipper chute. **Always keep arms parallel to ground while feeding material into shredder hopper. Use the leaf tamper (supplied) to push leaves down into shredder hopper. When chipping, keep arms perpendicular (at a 90° angle) to chipper chute.** Keep proper footing and good balance at all times.

16. Do not tamper with engine governor settings on machine. The governor controls the maximum safe operating speed and protects engine and all moving parts from damage caused by overspeed. Contact your nearest authorized dealer if an engine governor problem exists.

17. Do not transport or move unit while engine is running.

18. **Rotating cutting blades do not stop for 20 – 30 seconds after engine has been shut off. You can tell when the rotating cylinder stops by watching the white line on the cylinder bearing collar. When this white line is stationary, the cylinder has stopped rotating.**

19. Take all possible precautions when leaving machine unattended. Always stop the engine. Disconnect the spark plug wire and prevent it from touching the plug.

20. Never operate unit if you are tired or under the influence of alcohol, drugs or medication.

21. Do not touch hot muffler, cylinder, fins or other engine parts which can cause burns.

Maintenance and Storage

1. Before performing any maintenance or adjustments, shut the engine off, wait for all moving parts to come to a complete stop, and disconnect and secure the spark plug wire away from the spark plug. Allow unit to cool before working near it or placing a storage cover over it.
2. Store unit where children will not have access to it. Always disconnect the spark

plug wire and prevent it from touching the spark plug before storing unit.

3. Be sure unit is stored in an area where gasoline vapors (fumes) from unit cannot reach an open flame or spark.
4. Keep the chipper blade sharp.
5. For seasonal storage: Disconnect spark plug wire and move wire away from spark plug. Let engine cool before storing.

Refer to the Engine Owner's Manual for proper engine storage information.

6. Check all nuts, bolts and screws at frequent intervals for proper tightness to be sure equipment is in safe working condition.

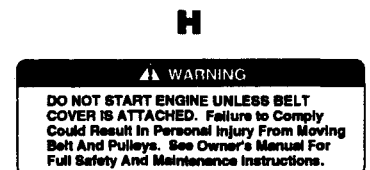
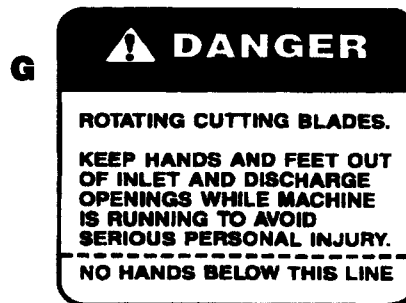
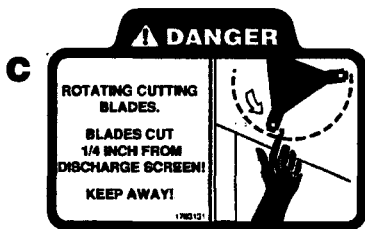
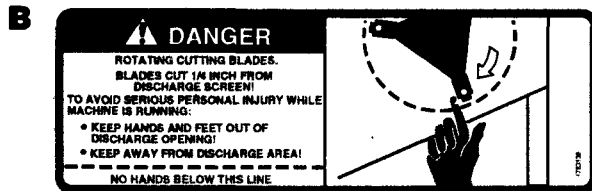
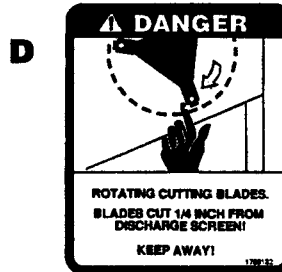
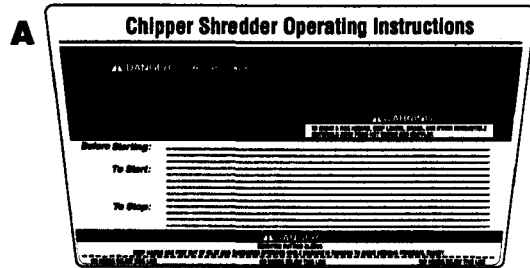
Safety Decals

For your safety and the safety of others, various safety and operational decals are located on your unit (see below).

Keep the decals clean and legible at all times. Contact your local service dealer or the factory for replacements if any decals are damaged or missing.

Refer to the Parts List in this Manual for decal locations, part numbers and ordering instructions.

NOTE: All decals are shown at a reduced size.



Ref. Description and Location

- | Ref. | Description and Location |
|------|--|
| A | Operating Instructions Decal — Located on forward portion of hopper |
| B | Danger Decal — Located on forward portion of machine, above discharge area |
| C | Danger Decal — Located on left side of mainframe, in front of belt cover |
| D | Danger Decal — Located on right side of mainframe |
| E | Danger Decal — Located on right side of mainframe, at bottom of chute |
| F | Fire Hazard Decal — Located on the handlebars |
| G | Danger Decal — Located on the inside of the chipper chute |
| H | Warning Decal — Located under belt cover |

⚠ WARNING

To prevent personal injury or property damage, do not start the engine until all assembly steps are complete and you have read and understand the safety and operating instructions in this Manual.

INTRODUCTION

For best results, read these instructions in their entirety before you attempt to assemble your new equipment.

STEP 1: UNPACKING INSTRUCTIONS

1. Inspect the unit immediately. If you find or suspect damage, contact the carrier (trucking company) right away and tell the carrier you wish to file a claim.

2. Remove any packing material from around the unit. Remove the chipper chute (item 2, Figure 2-1) and clutch lever (item 7, Figure 2-1) from the top of the machine. Remove the package containing loose parts. Be sure to check thoroughly for any parts before disposing of the carton or any of the packing materials.

3. Use a pry bar to remove any wooden blocks from the front stand assembly. Have an assistant help you move the unit off the wood pallet.

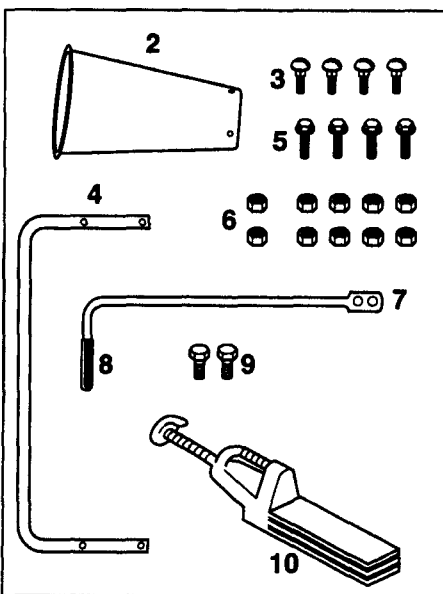


Figure 2-1: Contents of shipping carton (shown at reduced sizes).

STEP 2: CHECK CARTON CONTENTS

Check that you have the items listed below and shown in Figure 2-1. Contact your authorized dealer or the factory if any items are missing or damaged.

- (1) Engine/mainframe assembly (not illustrated).
- (1) Chipper chute (No. 2, Figure 2-1).
- (4) 1/4"-20 x 5/8" round hd. carriage bolts (No. 3, Figure 2-1).
- (1) Handle (No. 4, Figure 2-1) - shipped upside down on shredder hopper.
- (4) 1/4"-20 x 1-1/4" flange hd. cap screws (No. 5, Figure 2-1).
- (10) 1/4"-20 toplock nuts (No. 6, Figure 2-1).
- (1) Top section of clutch lever (No. 7, Figure 2-1).
- (1) Vinyl grip for clutch lever (No. 8, Figure 2-1).
- (2) 1/4"-20 x 3/4" hex hd. cap screws (No. 9, Figure 2-1).
- (1) Leaf tamper (No. 10, Figure 2-1).

Tools needed for assembly:

- (2) 7/16" wrenches*
- (1) 3/8" wrench*
- (1) 1/2" wrench*
- (1) Flat blade screwdriver

* You may substitute an adjustable wrench.

⚠ DANGER

The chipper blade is extremely sharp — do not touch the blade while installing the chipper chute. When the engine is running, the chipper blade revolves at high speed. The chipper chute must be securely attached before operating the unit.

STEP 3: ATTACH CHIPPER CHUTE

1. Find the safety message decal (C, Figure 2-2) located inside the large opening of the chipper chute (B).

IMPORTANT: The chute must be installed so that the safety message decal (C) can be read when the operator looks down into the chute.

2. Insert the small end of the chipper chute (B, Figure 2-2) into the chipper chute mounting base (A) and align the four square holes in the chipper chute with the four round holes in the mounting base. Check that the safety message decal (C) is positioned as shown in Figure 2-2.

3. Reach inside the chipper chute and insert four 1/4"-20 x 5/8" round head carriage bolts (D, Figure 2-2) out through the four holes. Add 1/4"-20 toplock nuts (E) and tighten securely.

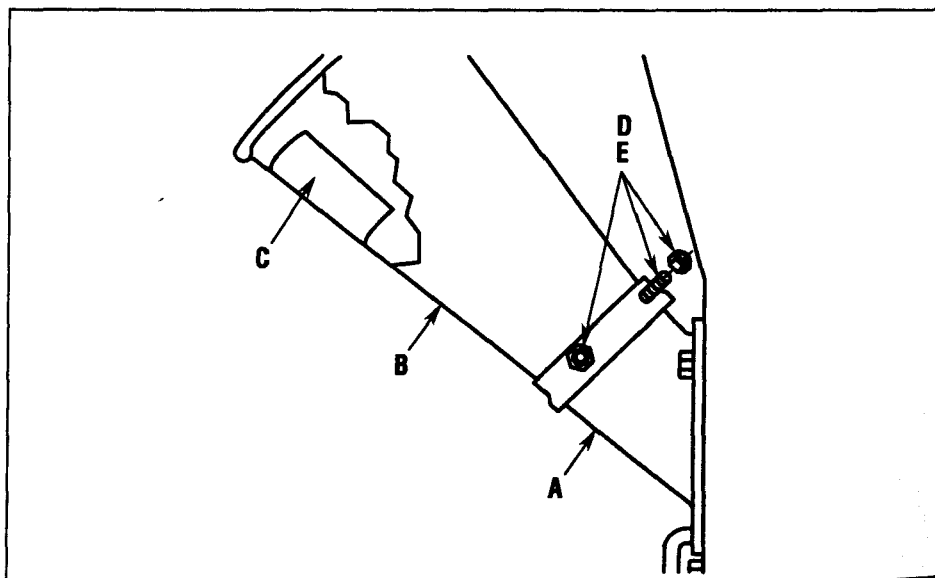


Figure 2-2: Install chipper chute.

STEP 4: ATTACH HANDLE

1. Using two 7/16" wrenches, remove the handle (F, Figure 2-3) and discard the screws and nuts. Turn the handle over and position it as shown in Figure 2-3. The bend in the handle must face upward as shown.
2. Insert one 1/4"-20 x 1-1/4" flange head screw (G, Figure 2-3) down through the forward holes in the shredder hopper and handlebar. Loosely add one 1/4"-20 toplock nut (H). Repeat on the other side.
3. Install the remaining two screws (I) and nuts (H). Tighten all four screws and nuts with 3/8" and 7/16" wrenches.

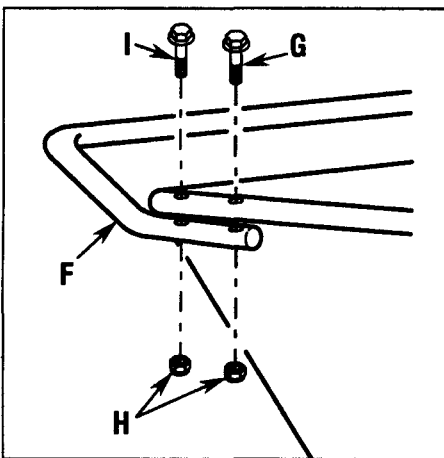


Figure 2-3: Attach the handle.

STEP 5: INSTALL CLUTCH LEVER

1. Insert the angled end of the upper clutch lever section (J, Figure 2-4) up through the hole in the lip of the shredder hopper. Slide the vinyl grip (K) onto the handle.
2. Turn the lever so that the handle faces inward, as shown in Figure 2-4. Attach the lever top section (J) to the lever bottom section (L) using two 1/4"-20 x 3/4" screws (M) and 1/4"-20 toplock nuts (N). Tighten securely.

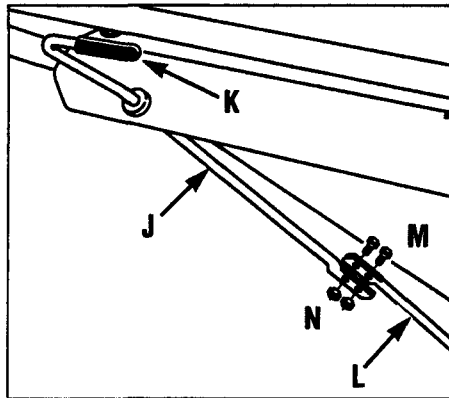


Figure 2-4: Connect top section (J) of clutch lever to bottom section (L).

STEP 6: ADD MOTOR OIL TO ENGINE

Refer to the separate Engine Owner's Manual (included in the unit's literature package) for correct oil specifications and capacities.

IMPORTANT: The unit is shipped without oil in the engine crankcase. Do not start the unit without first adding oil to the engine. Severe damage will result if the engine is run without oil.

1. Make sure the engine is level.
2. Add motor oil according to the instructions provided in the engine manufacturer's Engine Owner's Manual.

STEP 7: CHECK HARDWARE FOR TIGHTNESS

Inspect the screws, nuts and bolts on the unit and tighten any loose hardware.

IMPORTANT: This completes the assembly steps. Be sure to read the rest of this Manual, and the separate Engine Owner's Manual, before you attempt to operate your chipper/shredder.

Features and Controls

⚠ WARNING

Before operating your machine, carefully read and understand all safety, controls, and operating instructions in this Manual, in the separate Engine Owner's Manual, and on the decals on the machine.

Failure to follow these instructions can result in serious personal injury.

INTRODUCTION

This Section describes the location and function of the main features and controls on your chipper/shredder. Refer to Section 4: *Operation* for detailed operating instructions.

IMPORTANT: Refer to the separate Engine Owner's Manual for detailed information about the controls on the engine.

⚠ DANGER

The cutting blades inside the chipper/shredder chamber rotate when the engine is started. Contact with rotating blades will cause severe personal injury.

Keep hands, face, feet and clothing away from chipper chute inlet, shredder hopper inlet, discharge opening and discharge area at all times.

CHIPPER/SHREDDER FEATURES AND CONTROLS

SHREDDER HOPPER (INLET)

The shredder hopper (see Figures 3-1 and 3-1A) is the opening at the top of the unit for material to be shredded. Material up to 1/2" in diameter can be processed through the shredder hopper. In the shredder chamber, rotating cutting blades shred the material.

A rubber retainer flap (Figure 3-1A) is installed at the shredder hopper opening. Material is pushed past this retainer flap (using only the leaf tamper supplied with unit) and enters the shredder chamber. **The retainer flap prevents kickback of materials! Do not use the unit unless the retainer flap is securely fastened and is hanging freely inside the hopper opening. Immediately replace the retainer flap if it is torn or damaged.**

⚠ DANGER

Shredded particles can kick back up through the shredder hopper inlet. The retainer flap is designed to reduce kickback of particles and must be in place and securely fastened.

Before using the chipper/shredder, be sure the retainer flap is securely fastened. Failure to do so can result in serious personal injury. Also make sure you are wearing protective and approved safety goggles or glasses.

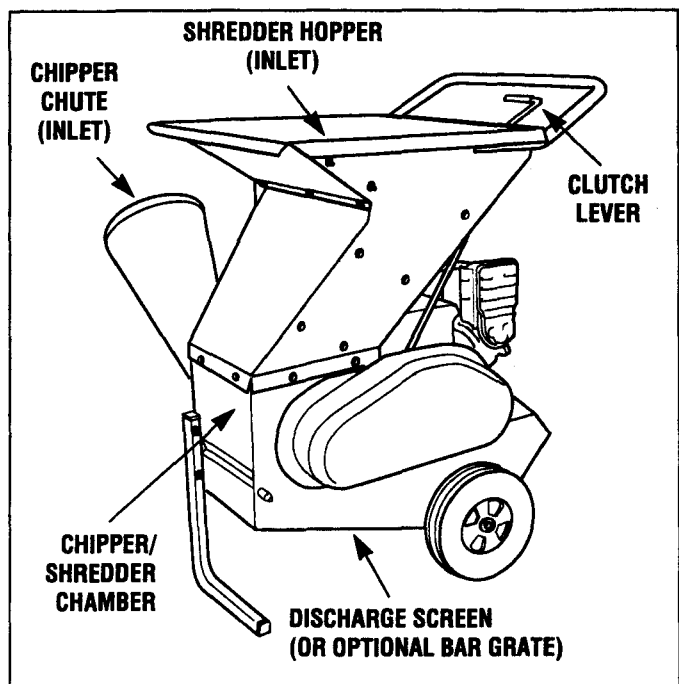


Figure 3-1

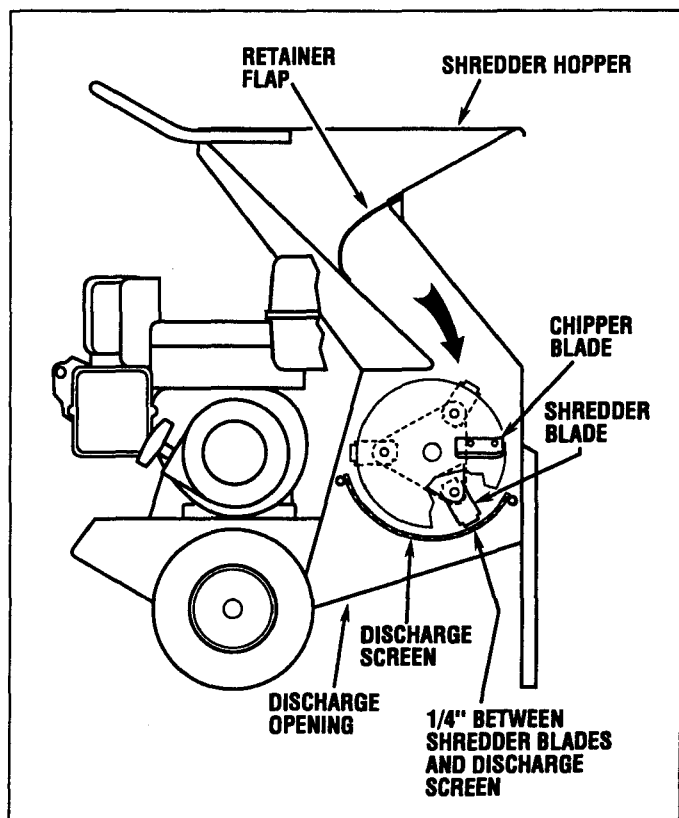


Figure 3-1A: Rotating shredder cutting blades cut 1/4" away from discharge screen — KEEP HANDS AND FEET AWAY from discharge area at all times to avoid serious personal injury.

⚠ DANGER

Contact with rotating cutting blades will cause serious personal injury. Do not put hands, face, feet or clothing into the shredder hopper inlet, chipper chute inlet, discharge opening, or near the discharge area at any time.

Perform maintenance and service only after the engine is off, the spark plug wire is disconnected and moved away from the spark plug, and all moving parts have come to a complete stop. Then use only a long wooden stick or a long handled shovel to clear away discharged materials or blockages.

CHIPPER CHUTE (INLET)

Material up to 3" in diameter (such as small branches and vines) can be processed through the side-mounted chipper chute (Figure 3-1). Material fed into the chipper chute is turned into chips by a chipper blade mounted on a revolving fly-wheel (Figure 3-1A).

⚠ WARNING

Do not operate unit unless chipper chute is properly bolted to side of unit. Serious personal injury can result if chipper chute is not securely attached.

CHIPPER/SHREDDER CHAMBER

Inside the chipper/shredder chamber is a flywheel/cylinder assembly that is belt-driven by the engine drive shaft.

The flywheel has a chipper blade (A, Figure 3-2) attached to one side. The cylinder assembly holds 12 shredder cutting blades (B). During operation, the chipper blade and shredder blades revolve at the same time, allowing you to either chip or shred.

Material fed into the shredder hopper is shredded and ground when the shredder cutting blades force material against the chamber baffles and the discharge discharge screen. When shredded finely enough, the material is forced out through the holes in the discharge screen (or between the bars of the optional bar grate).

The chipper cutting blade is separated from a stationary anvil by a gap of 1/16" to 1/8". Material fed into the chipper chute is

directed between the blade and anvil, where it is sheared off by the blade. The chips are processed inside the chamber and then discharged through the discharge screen or the optional bar grate.

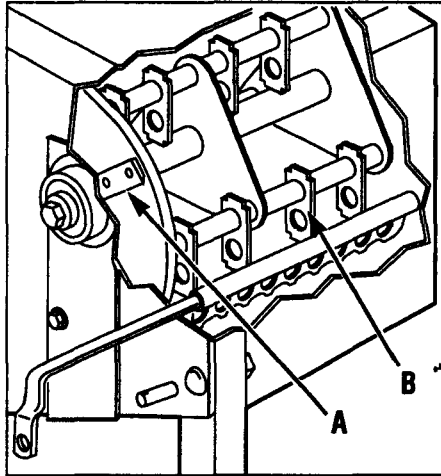


Figure 3-2: View inside chipper/shredder chamber shows chipper blade "A" and a shredder cutting blade "B".

DISCHARGE OPENING AND DISCHARGE SCREEN

At the bottom of the unit, under the chipper/shredder chamber, is a discharge screen (Figure 3-3) through which processed materials must pass before being discharged from the unit. The diameter of the holes in the screen determines how finely the materials are shredded.

The unit comes equipped with a screen that has 3/4" holes. Optional screens having 3/8", 1" or 1-3/4" holes are available. The smaller holes produce more finely shredded particles. The larger holes produce more coarsely processed material and may not clog as readily when wet, soggy or green materials are processed. (A bar grate for processing very wet, heavy materials is also available). To remove and install a discharge screen, refer to *Removal/Installation Discharge Screen or Bar Grate* in Section 4.

IMPORTANT: Rotating shredder cutting blades pass within 1/4" of the discharge screen or bar grate. **Keep hands and feet away at all times! Never operate machine unless a discharge screen or bar grate is securely installed.**

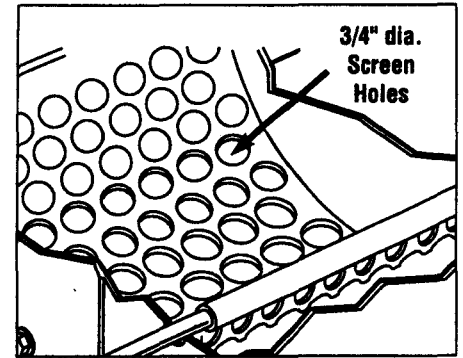


Figure 3-3: Standard discharge screen has 3/4" diameter holes.

BAR GRATE ATTACHMENT (OPTION)

The bar grate attachment (Figure 3-4) has slotted openings that are wide enough to efficiently process wet or soggy materials such as matted leaves, spoiled or leftover vegetables, manure, etc. If desired, this coarsely shredded material can then be dried and later run through the shredder when a discharge screen is installed. To remove and install a bar grate, refer to *Removal/Installation Discharge Screen or Bar Grate* in Section 4.

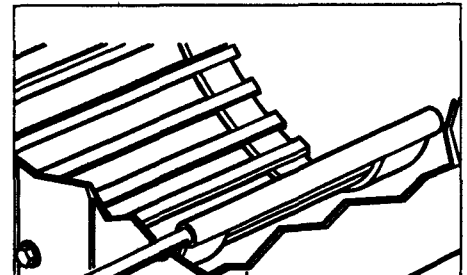


Figure 3-4: Optional bar grate.

CLUTCH LEVER

Use the clutch lever (Figure 3-5) when starting the engine. Engaging the lever releases tension on the cylinder assembly drive belt (Figure 3-6) to make engine starting easier.

When starting the engine, squeeze the clutch lever against the handlebar while pulling the recoil rope starter. Release the clutch lever slowly when the engine starts and is running smoothly. This action puts tension on the drive belt to rotate the shredder cylinder assembly.

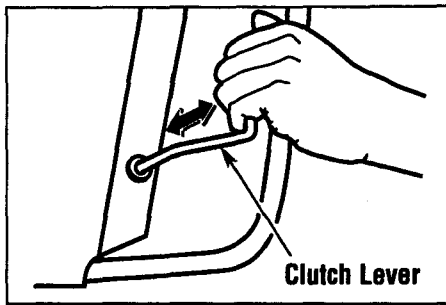


Figure 3-5: Squeeze clutch lever against handlebar when starting engine. Release clutch lever slowly after engine starts.

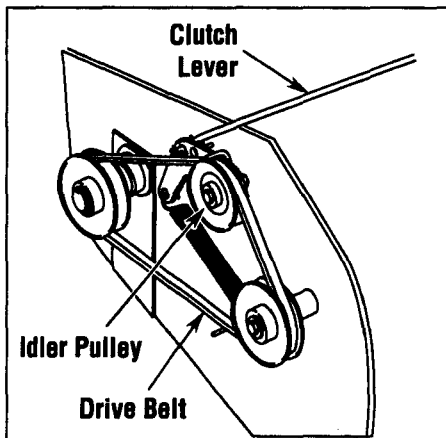


Figure 3-6: Squeezing the clutch lever against the handlebar causes the idler pulley to move away from the belt, taking tension off the belt while starting the engine.

LEAF TAMPER

Use the supplied leaf tamper (Figure 3-7) to push light, loose, bulky materials (dry leaves, straw, and twigs) down past the retainer flap and into the shredder hopper inlet.

The leaf tamper has a "stop" that prevents the tamper end from being struck by the rotating cutting blades. Do not force the tamper beyond this point. *Always hold it by the handles with the "stop" facing up.*

When using the leaf tamper, use either one hand or both hands positioned on the built-in handle grips and be sure that the "stop" is facing up. **Always position your arms so they do not point down into the shredder hopper opening.**

Use the hook on the end of the leaf tamper to hang the tamper on the side of the unit.

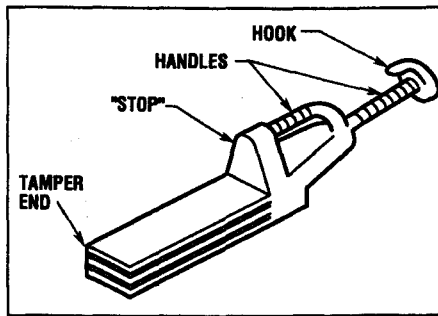


Figure 3-7: The leaf tamper (protected by U.S. Patents #D 329,787 and #5,062,329).

ENGINE CONTROLS

IMPORTANT:

- The following information describing controls on the engine should NOT be used as engine starting instructions. Complete engine starting and stopping instructions are given in Section 4.
- Additional information on operating and caring for the engine is given in the separate Engine Owner's Manual. Please read the Engine Owner's Manual carefully and save it for future reference.
- The engine does not have a throttle speed control as the engine operating speed has been pre-set at the factory. Do not attempt to alter the pre-set engine speed. Engine speed adjustments should be performed only by an authorized engine dealer.

ENGINE ON/OFF ROCKER SWITCH

Before starting the engine, push the ON/OFF rocker switch (Figure 3-8) to the

ON position. To stop the engine, push the switch to the OFF position.

FUEL SHUT-OFF VALVE (IF EQUIPPED)

Before starting the engine, turn the fuel shut-off valve (Figure 3-8) 1/4 turn from the OFF position to the OPEN position. After stopping engine, return valve to OFF position.

⚠ DANGER

Close fuel shut-off valve, when transporting engine, to prevent fuel leakage.

CHOKE CONTROL

Before starting the engine, move the engine choke control (Figure 3-8) to the CHOKE position. A warm engine requires less choking than a cold engine.

When engine starts, first open choke (toward RUN) until engine just begins to run smoothly. Then open choke in small steps, allowing engine to accept small changes in speed and load, until choke is fully open (in RUN).

ROPE STARTER

The engine is started by pulling out the recoil starter handle (Figure 3-8). Detailed instructions for operating the recoil starter are given in Section 4.

Do not attempt to start the engine until you have carefully read and followed all of the instructions in this Manual and in the separate Engine Owner's Manual.

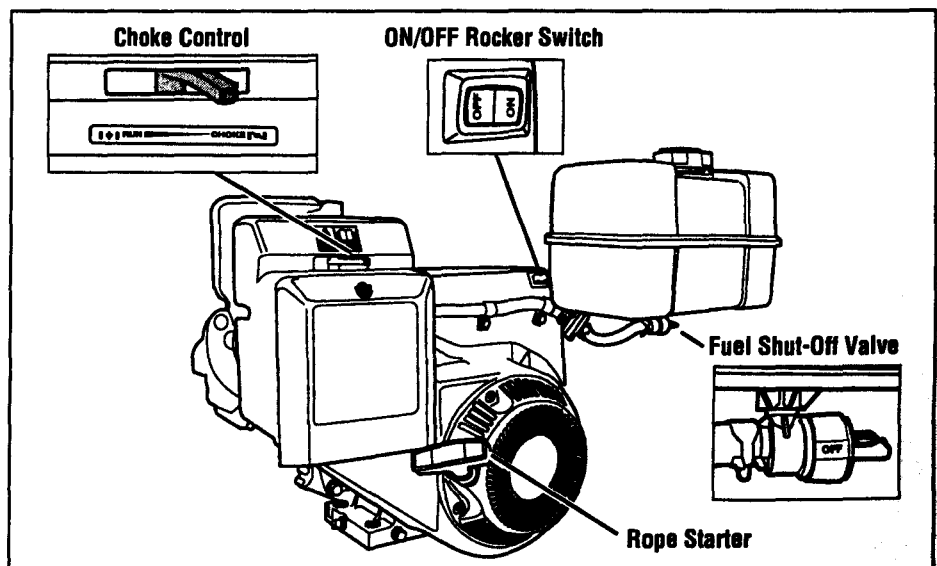


Figure 3-8: Engine controls.

⚠ WARNING

Before operating the unit, carefully read and understand all safety, controls and operating instructions in this Manual, in the separate Engine Owner's Manual, and the decals on the machine.

Failure to follow these instructions can result in serious personal injury.

⚠ DANGER

Contact with rotating cutting blades inside the discharge opening will cause serious personal injury.

The cutting blades inside the discharge opening cut 1/4-inch from the discharge screen or optional bar grate. Keep hands and feet out of discharge opening and away from discharge area while machine is running, and while blades are coming to a stop.

MOVING THE UNIT

The unit can be pushed or pulled by the handlebar. Before moving the unit, the engine and all moving parts must be completely stopped.

The unit weighs over 250 lbs. Use caution when rolling the unit and carefully balance the weight of the unit over the wheel axle. Improper handling can lead to injury! Follow the instructions below.

1. STOP THE ENGINE and wait for all parts to stop completely. Disconnect spark plug wire from spark plug and prevent it from touching spark plug.
2. Grasp the handlebar with both hands and put one foot on the rear of the engine deck (Figure 4-1). Place the other foot firmly on the ground.
3. Steady the unit with your foot and slowly pull the handlebar backward until you find the balance point (center of gravity). Use caution when tilting the unit to make sure it doesn't fall on you. Maintain the balance point as you carefully remove your foot from the engine deck.
4. Watch for obstacles. Keep a firm grip on the handlebar and slowly pull or push the unit. On smooth, level ground it is

easier to push the unit. Pulling is easier if the wheels must go over ruts or obstacles.

5. When you reach your destination, put your foot back on the engine deck and let the unit tilt forward slowly until the front stand is on the ground. The unit must be level and stable. Operate the unit only on a level, earthen surface.

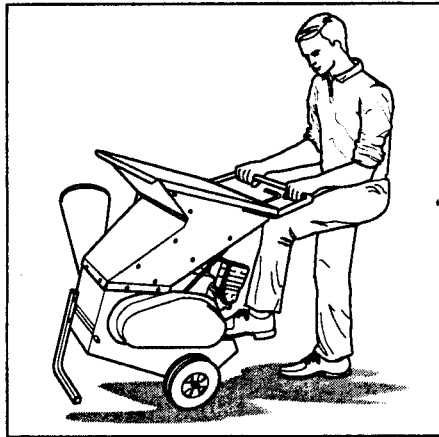


Figure 4-1: Moving the unit.

PRE-START CHECKLIST

Before starting the engine, perform this Pre-Start Checklist and read this Section completely.

- Check engine oil level (see *Motor Oil and Gasoline* in this Section).
- Fill the fuel tank (see *Motor Oil and Gasoline* in this Section).
- Make sure all bystanders and pets are at least 25 feet away from the area of operation.
- Put on safety goggles, hearing protection, sturdy work gloves and sturdy footwear. Do not wear loose-fitting clothing that can get caught in moving parts.
- Check for foreign objects in the chipper chute and the shredder hopper.
- Check that the chipper chute is correctly and securely attached.
- Check that the discharge screen (or the optional bar grate, if installed) is correctly and securely installed. (See *Removing/Installing Discharge Screen or Bar Grate* in this Section.) Check for clogged holes in the discharge screen and clean them, if needed, with a stick.

- Be sure that all hardware is securely fastened.
- Reconnect spark plug wire to spark plug.

IMPORTANT: Use unit only on an earthen, level surface. Do not use unit on hard surfaces like concrete, asphalt, brick, gravel or rocks, where discharged materials can rebound off a hard surface and cause serious personal injury or property damage.

MOTOR OIL AND GASOLINE

Before starting the engine, check the motor oil level and the gasoline level.

1. Check motor oil level before starting engine and after every 8 hours of operation. Refer to Engine Owner's Manual for how to check, add and change oil.

⚠ DANGER

GASOLINE IS HIGHLY FLAMMABLE AND ITS VAPORS ARE EXPLOSIVE.

Follow the gasoline safety rules in this Manual (Section 1) and in the separate Engine Owner's Manual.

Failure to follow gasoline safety instructions can result in serious personal injury and property damage.

2. Add Gasoline. Refer to the Engine Owner's Manual for correct gasoline specifications. Fill the gasoline tank slowly and carefully. Allow space inside the gasoline tank to allow for fuel expansion. Clean up all fuel spills before starting the engine.

STARTING AND STOPPING THE UNIT**TO START**

1. Follow the *Pre-Start Checklist* (at left) and read this Section of the Manual completely. Make sure you are wearing safety glasses, hearing protection and sturdy footwear.
2. Turn fuel shut-off valve (if equipped) 1/4 turn to OPEN position. See Figure 3-8.
3. Move the engine choke control (Figure 3-8) to the CHOKE position. A warm engine requires less choking than a cold engine.

4. Push the rocker ON/OFF switch (Figure 3-8) to the ON position.

5. Squeeze the clutch lever (Figure 3-5) up against the handle. Grasp the engine starter rope handle and pull slowly until resistance is felt. Then pull cord rapidly to overcome compression, prevent kickback and start engine. Let the rope rewind gradually. Repeat if necessary with choke off.

6. After the engine starts, first open the choke (toward RUN position) until the engine just begins to run smoothly. Then, open the choke in small steps, allowing the engine to accept small changes in speed and load, until the choke is fully open (in RUN).

NOTE: The cutting blades may begin to turn slowly even if the clutch lever is held in the up position.

7. SLOWLY release the clutch lever. If the engine stalls, restart it and allow it to warm up for a longer period before releasing the clutch lever.

8. When the engine is running, the cutting blades inside the unit will rotate at a fast speed. As the blades begin to rotate, you will hear the blades "clattering" until they build up speed.

⚠ DANGER

Rotating cutting blades inside chipper/shredder chamber are in motion once engine is started. Contact with cutting blades will cause severe personal injury.

Keep hands, feet, face and clothing out of chipper chute inlet, shredder hopper inlet and discharge opening. Also keep a safe distance away from discharge area and all moving parts when unit is running.

TO STOP

1. Push rocker ON/OFF switch (Figure 3-8) to OFF position.

LISTEN — Remove any hearing protection and listen to the sound of the unit as it slows down. There is a definite audible tone that changes as the cylinder assembly slows down—the shredder blades will begin "clattering" as they slow, then will become silent. Wait for all parts to come

to a complete stop. Allow 20-to-30 seconds after the engine is shut off for the parts to stop moving.

LOOK — The bearing collar on the chipper chute side of the unit has a white line painted on it (Figure 4-2). When this white line is stationary, the cylinder assembly has stopped rotating.

2. Turn fuel shut-off valve (if equipped) to OFF position.

EMERGENCY ENGINE STOPPING

If the engine rocker ON/OFF switch does not stop the engine, move the engine choke lever to the CHOKE position.

After stopping the engine with the choke control lever, be sure that the shut-off problem is diagnosed and repaired before starting the engine. Regularly using the choke control lever to shut the engine off could damage the engine.

⚠ DANGER

Rotating cutting blades slow down gradually after engine is shut off. Blades normally require 20-30 seconds to stop. Contact with rotating cutting blades will cause serious personal injury.

Keep hands, feet, face, and clothing out of chipper chute inlet, shredder hopper inlet and discharge opening. Also keep a safe distance away from discharge area and all moving parts when unit is running.

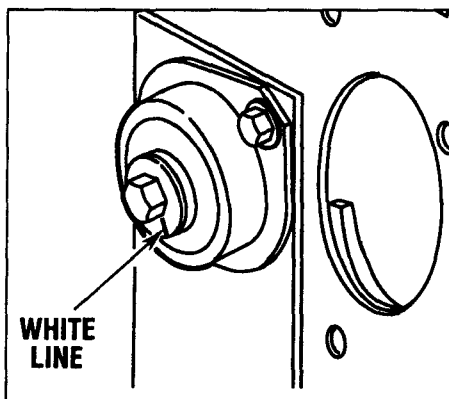


Figure 4-2: Check white line on bearing collar (Chipper Chute removed for clarity).

USING THE CHIPPER/SHREDDER

SOME MATERIALS SHOULD BE SHREDDED, OTHERS SHOULD BE CHIPPED. HERE'S HOW TO DECIDE WHICH METHOD TO USE:

To enjoy the greatest benefits from the unit, it is important to know which materials are best fed into the shredder hopper and which ones are best fed into the chipper chute. Use the following information as a guide. **IMPORTANT:** Refer to *Using the Shredder* and *Using the Chipper* in this Section of the Manual for detailed operating instructions.

Materials to Avoid When Shredding or Chipping

Do not feed the following materials into the shredder hopper or the chipper chute:

- Metal
- Glass
- Bottles
- Plastic
- Cans
- Rocks/Stones
- Other Non-organic Foreign Objects

IMPORTANT: Do not allow processed material to build up beneath or beside the unit to the point where it contacts the discharge screen. If material cannot freely exit the discharge screen, it will continue to circulate within the processing chamber. This leads to clogs and the possibility of some of the material being "blown" back up through the hopper.

If shredded material builds up beneath the unit, do not attempt to remove it until the engine is stopped, the spark plug wire is disconnected and moved away from the spark plug, and all moving parts have come to a complete stop. Use a long stick or long-handled shovel to remove the material. Never use your hands or feet to remove material!

**Materials Suitable for Shredding
(Placed in Shredder Hopper)**

Listed below are materials suitable for shredding, along with any special processing conditions. NOTE: If the material is wet or green, refer to the special processing instructions *Shredding Wet, Soggy, or Green Materials* in this Section.

Material	Conditions
Branches, Twigs	Up to 1/2" in diameter. Several may be shredded at once if diameter of bundle is less than 1/2". Cut to 3-5 foot lengths.
Leaves, Grass Clippings, Brush, Hay, Straw and other light, loose Organic Material	No special conditions.
Vines, Stalks	Up to 1/2" in diameter and 2-3 feet long.
Paper, Cardboard (corrugated)	No special conditions.
Newspaper	Feed one or two sections at a time.
Organic Waste Materials and Organic Garbage	Remove all metal, bottles, cans, rocks, plastic, etc. before processing.
Wood Chips	Use chips previously processed by chipper, if finer chips are desired.
Manure	Use of Bar Grate Attachment recommended.

⚠ DANGER

Rotating cutting blades cut within 1/4-inch from the discharge screen. Never put hands or feet near discharge opening or discharge area while unit is operating! Contact with cutting blades will cause serious personal injury.

If shredded material builds up under the unit during operation, do not attempt to remove it until the engine is stopped, the spark plug wire is disconnected and moved away from the plug, and all moving parts have come to a complete stop. Then use a long stick or long-handled shovel to move the material out of the way. Never use your hands or feet to remove discharged material.

**Materials Suitable for Chipping
(Placed in Chipper Chute)**

Listed below are materials suitable for chipping, along with any special processing conditions.

Material	Conditions
Branches	Up to 3" in diameter, depending on hardness. Wood with extremely hard knots will not process well.
Short, thick Branches (left over when a long branch is processed)	Short, thick branches up to 3" in diameter can be chipped by pushing them into chute using another long branch.
Lumber	Up to 3" in diameter. Remove nails, metal parts before chipping.
Stalks, Vines	From 1" to 3" in diameter. Cut to 2-3 foot lengths before chipping.

USING THE CHIPPER

IMPORTANT: Always wear safety goggles (with side shields), appropriate gloves, and hearing protection. Review and follow the safety rules in this Manual.

⚠ DANGER

Do not put hands inside chipper chute. The rotating cutting blade inside chute will cause serious personal injury.

- After the engine is started and has built up speed, the unit is ready to use.
- Position yourself on either side of the chipper chute. Grip one end of a branch (maximum 3" diameter) with both hands and feed the other end of the branch into the chipper chute. Do not feed the branch into the chipper chute with your arms pointing into the chipper chute — keep your arms perpendicular (at a 90° angle) to the chute. See Figure 4-3. Keep the branch away from your body to avoid any bounce-back and do not over-reach. Hold the branch firmly to control the rate of feed at all times.

- Evenly rotate the branch to help prevent the bark from turning into long strips that can get tangled around the internal cylinder shaft. Rotating the branch also improves the cutting action of the chipper blade.

- Feed the branch slowly into the chipper chute until just a few inches of the branch stick out from the top of the chipper chute. **NEVER put your hands inside the chipper chute — serious personal injury can result! Short stubs of branches may be pushed through the chipper with the next branch.**

- If the engine slows down under load, reduce feed pressure and allow the engine to regain full speed before continuing. Overloading the chipper could result in damage to the belt or engine.

NOTE: If the chipper is not cutting branches efficiently, the chipper blade could be dull, or the wood could be particularly hard. Try processing another type of wood to see if it cuts more easily. If not, check the condition of the chipper blade. Refer to *Chipper Blade Removal and Installation* in Section 5.

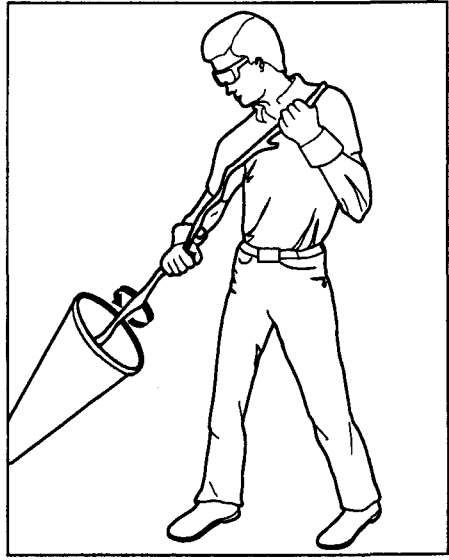


Figure 4-3: Feeding a branch into the chipper chute. Always position your body and arms so your arms are holding the material at a 90° angle to the chipper chute.

USING THE SHREDDER

IMPORTANT: Always wear safety goggles (with side shields), appropriate gloves, and hearing protection. Read and follow the safety rules in this Manual.

⚠ DANGER

Contact with rotating cutting blades will cause serious personal injury. The blades rotate when engine is on and slow gradually after engine is shut off.

Keep hands, feet and clothing out of chipper inlet, shredder feed inlet and discharge opening when unit is running.

- When the engine starts, the cutting blades inside the chipper/shredder chamber will begin to revolve at a high rate of speed. The shredder is then ready to use.
- Do not feed material into the shredder hopper from the engine side of the unit. Always avoid the hot muffler on the engine.
- When feeding material into the shredder, stand a foot or two away from the hopper opening and keep your arms and hands parallel to and several inches above the top edge of the hopper. See Figure 4-4. Do not point hands or arms downward toward the hopper opening or put hands or arms inside the hopper.
- Feed materials into the shredder slowly, and in limited quantities, until you become familiar with its operation. Bulk and lengths can be increased gradually if the material is being processed easily. Do not overload the shredder as doing so will cause the engine speed to decrease significantly.
- A steady flow of materials into the shredder hopper provides the most effective results. The rate of feed for small branches, vines (2-3 foot lengths only), and brush can be controlled by lightly pushing and guiding the free end of the material until it extends **above the top of the hopper**. At this point, **LET GO OF THE MATERIAL**. The cutting blades can tug suddenly at material being fed into the hopper. Do not hold onto the material! Always hold material loosely and be ready to let go of it quickly.

⚠ DANGER

The rotating shredder blades can tug suddenly at material being fed into the shredder hopper. Contact with cutting blades will cause severe personal injury.

Do not hold on too tightly to branches and vines. Do not feed material straight down into the hopper with your arm pointing downward toward the opening. Instead, keep your arms parallel to the ground and several inches above the top edge of the hopper.

NOTE: It is best to cut long branches into 3-5 foot lengths and vines to 2-3 foot lengths before feeding them into the shredder hopper. When shredding wet material, mix dry material in with it. Alternating wet and dry material helps prevent material from sticking inside the shredder chamber. Very wet materials should be processed using the optional Bar Grate attachment. Refer to *Shredding Wet, Soggy, or Green Materials* in this Section for other methods of processing wet or green materials.

Also:

- Do not put any part of your body or clothing inside the shredder hopper or near the discharge area.
- Stand clear of the discharge area.
- Keep face and body away from the discharge area.
- Use the leaf tamper (Figure 4-4) supplied with the unit to push bulky material into the shredder hopper. **DO NOT USE YOUR HANDS!**
- When feeding loose material, such as leaves, straw or grass clippings, just drop the material into the shredder opening and push it into the shredder hopper using the leaf tamper (supplied). Do not allow combustible materials to contact the hot engine.
- If the engine slows down under load, stop feeding material and allow the engine to regain full speed before continuing. Overloading the shredder could result in damage to the belt or engine.
- All shredded material will be forced through the discharge screen at the bottom of the unit. Always keep clear of the discharge to avoid injury from materials exiting the unit at high speed. The

standard discharge screen supplied with the unit has 3/4-inch holes. This screen is best for processing most dry materials such as brush and dry leaves. To install a different size screen, refer to *Removing/Installing Discharge Screen or Bar Grate* in this Section.



Figure 4-4: Using the leaf tamper to process material into the shredder hopper.

⚠ DANGER

To avoid a fire hazard, keep leaves, grass and other combustible materials away from the engine and muffler!

⚠ DANGER

The discharge opening and discharge area are dangerous. Rotating cutting blades inside the discharge opening cut 1/4-inch from the discharge screen.

To avoid serious personal injury, keep hands, feet, and clothing out of the discharge opening and away from the discharge area. Follow all safety rules.

SHREDDING WET, SOGGY, OR GREEN MATERIALS

Wet or "green" materials (such as wet, matted leaves, vegetables, "green" vegetation like squash vines, etc.) can clog the 3/4" holes in the standard discharge screen, depending on the moisture content of the material.

To help avoid clogging, try shredding this material with the optional 1-3/4" discharge screen. If clogging persists, install the optional Bar Grate attachment. See *Removing/Installing Discharge Screen or Bar Grate* in this Section for detailed instructions.

Wet, soggy, or "green" materials will be shredded to a medium consistency when using the Bar Grate. However, to shred these materials to an even finer consistency, you may wish to process the material a second time.

If you do not have the optional Bar Grate attachment, try alternating small wet and small dry batches of material to help prevent clogging the discharge screen.

⚠ DANGER

Do not shred brush, branches, or other dry materials when the Bar Grate is installed. Materials will exit the discharge opening at high speed and will not be properly processed.

⚠ DANGER

Before removing jammed or clogged material, shut the engine off, wait for all moving parts to come to a stop and disconnect the spark plug wire and move it away from the spark plug.

Use only a long wooden stick or a long-handled shovel to clear away discharged materials or blockages.

REMOVING/INSTALLING DISCHARGE SCREEN OR BAR GRATE

It may be necessary to remove the standard discharge screen for any of these reasons:

1. *The screen may need cleaning.* The holes in the screen may be clogged, preventing materials from being properly discharged.
2. *To process wet or green materials.* This is best accomplished by removing the screen and installing the optional bar grate attachment.
3. *To change the size of the discharged material.* Remove the standard screen and replace it with one of the optional screens (with different size holes).

⚠ DANGER

Rotating cutting blades inside discharge opening will cause serious personal injury. Blades cut 1/4-inch from discharge screen or bar grate attachment.

Before removing or installing the discharge screen or bar grate, be certain the engine is off, all moving parts have stopped completely, and the spark plug wire is disconnected and kept away from the spark plug.

Discharge Screen or Bar Grate Removal

1. Stop the engine and wait for all moving parts to come to a complete stop. Disconnect the spark plug wire and secure it away from the spark plug.
2. Move the unit away from any discharged material that could block access to the screen or bar grate.
3. Remove two hair pin cotters (A, Figure 4-5) from two small studs (C) securing ends of the two discharge screen rods (B).
4. Pull out the two discharge screen rods (B). Support the screen or bar grate so that it doesn't fall on you.
5. If the screen doesn't drop out, hook the end of a discharge screen rod into a hole in the screen (Figure 4-6). Pry the screen downward until it drops free.
NOTE: The holes in the 3/8" screen are too small for the screen retainer rod — use a screwdriver to pry that screen loose.
6. **Make certain that you install either a discharge screen or optional bar grate attachment before using the unit again.**

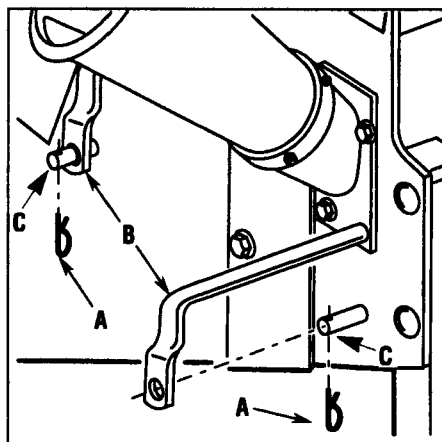


Figure 4-5: Remove both hair pin cotters (A) and slide out two discharge screen rods (B).

⚠ DANGER

Do not operate the unit unless a discharge screen or bar grate is securely installed.

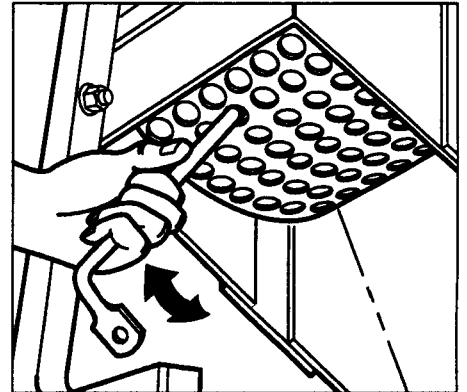


Figure 4-6: If screen is stuck, pry it loose using one of the screen retainer rods.

Discharge Screen or Bar Grate Installation

1. Stop the engine and wait for all moving parts to come to a complete stop. Disconnect the spark plug wire and secure it away from the spark plug.
2. Move the unit away from any discharged material that could block access to the screen.
3. Remove the discharge screen or bar grate (see *Discharge Screen or Bar Grate Removal* on this page).
4. Position the discharge screen or bar grate up into the bottom of the unit. Make sure that the tube holes at each end of the screen align with the holes in the wall of the unit (see Figures 4-7 or 4-8).
5. Hold the discharge screen or bar grate in position and slide the two screen rods (B, Figure 4-5) all the way through the screen tubes and out the other side of unit. Insert the rear rod first, followed by the front rod. NOTE: The holes in the ends of the screen rods (B, Figure 4-5) must go over the two stud pins (C) on the machine wall.
6. Replace the two hair pin cotters (A, Figure 4-5) through the stud pins (C). The discharge screen or bar grate is now securely installed. If the hair pin cotters become lost, call for replacements immediately. **DO NOT OPERATE UNIT WITHOUT ORIGINAL EQUIPMENT PINS INSTALLED PROPERLY.**

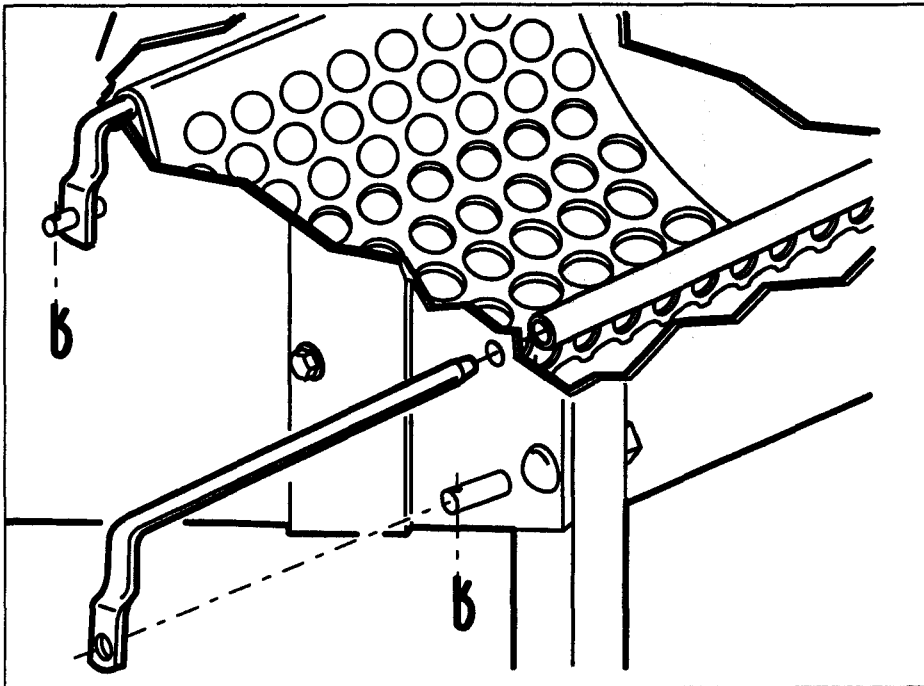


Figure 4-7: The discharge screen must be positioned as shown above. The holes in the tubes at the screen ends must align with the holes in the machine wall. Reinstall discharge screen rods and then hair pin cotters.

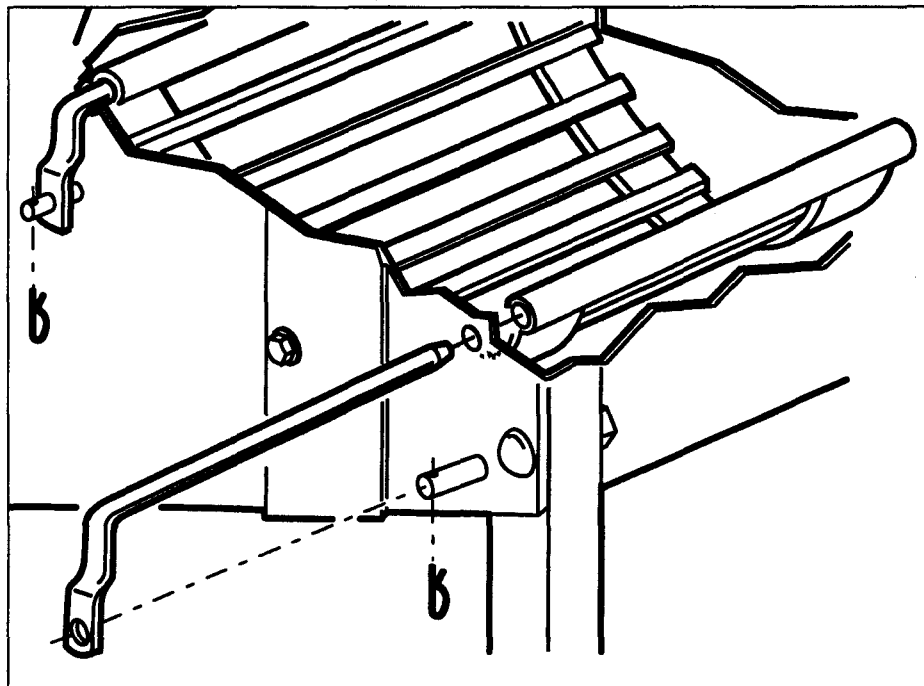


Figure 4-8: The bar grate must be positioned as shown above. The holes in the tubes at the grate ends must align with the holes in the machine wall. Reinstall discharge screen rods and then hair pin cotters.

⚠ DANGER

Do not shred brush, branches or other material when bar grate is installed. Materials will exit discharge opening at high speeds and will not be properly processed.

OPTIONAL DISCHARGE SCREENS

In addition to the standard discharge screen with 3/4" diameter holes and the bar grate attachment, there are three other screens to choose from with 3/8", 1", and 1-3/4" diameter holes.

The smaller the hole size in the screen, the more finely shredded materials can be processed. Consider the screens with the large hole sizes if you are working with coarser materials or wish to minimize clogging. See the Parts List in this Manual for part numbers.

⚠ WARNING

Moving parts on the unit can cause serious personal injury.

Shut off the engine, let all moving parts stop completely, disconnect the spark plug wire and prevent it from touching the spark plug before performing any maintenance or service procedures.

Maintenance Schedule	Before Each Use	Every 25 Hrs. of Operation	Annually	At End of Season	Prior to Storing	Comments
Check engine oil level	✓					Every 8 hrs.
Check hardware for tightness	✓			✓		
Check that engine is free of flammable debris	✓			✓		(4)
Change engine oil		✓ (1)			✓	(4)
Service engine air cleaner		✓ (2)				(4)
Replace spark plug						(4)
Clean unit		✓	✓	✓		
Inspect engine spark arrester						(3) (4)
Check belt condition.		✓			✓	
Clean engine cooling system				✓ (5)		(4)
Clean engine fuel filter						(3) (4)

(1) Change after the first 5 hours of operation.

(2) Service more often under dusty conditions or when airborne debris is present.

(3) Every 50 hours of operation if engine is equipped with this item.

(4) See Engine Owner's Manual for instructions.

(5) Every 100 hours or every season.

EQUIPMENT MAINTENANCE

Follow the Maintenance Schedule above to keep your equipment properly maintained. See the separate Engine Owner's Manual for specific engine maintenance information and instructions.

LUBRICATION

There are no parts or assemblies on the unit (other than the engine) that require periodic lubrication.

DRIVE BELT SERVICE

After every 25 operating hours, examine the drive belt for cuts, cracks, fraying or other damage. See Figure 5-1. Examine the clutch lever operation to see that it moves the idler pulley properly. The idler pulley is spring-loaded and maintains tension on the belt until the clutch lever is squeezed to take tension off the belt for easier engine starting.

BELT INSPECTION

1. Stop engine and wait for all parts to come to a complete stop. Disconnect spark plug wire and secure it away from spark plug.
2. Remove the four screws securing the

belt cover. Remove the belt cover.

3. Replace the belt if it is worn or damaged (refer to *Belt Removal/Installation* below). Replace belt cover and reconnect spark plug wire.

BELT REMOVAL/INSTALLATION**Belt Removal**

1. Stop engine and wait for all parts to come to a complete stop. Disconnect spark plug wire and secure it away from spark plug.
2. Remove the four screws securing the belt cover. Remove the belt cover.
3. Loosen (do not remove) nut securing wire belt guide (A, Figure 5-2). Move belt guide away from idler pulley (B).
4. Push idler pulley (B, Figure 5-2) downward and remove belt from pulleys.

Belt Installation

1. Place the belt in the grooves of the two main pulleys.
2. Push idler pulley (B, Figure 5-2) down and route belt into groove of idler pulley.
3. Position the wire belt guide 1/16"-1/8" away from the belt. Tighten the nut to secure the belt guide in place.

4. Reinstall belt cover and reconnect spark plug wire.

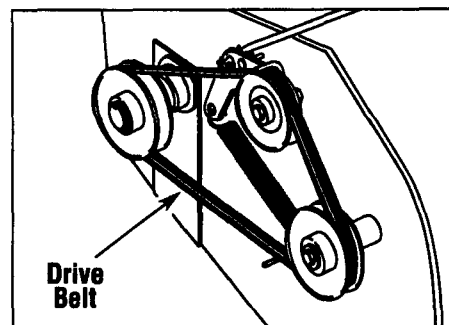


Figure 5-1: Inspect drive belt.

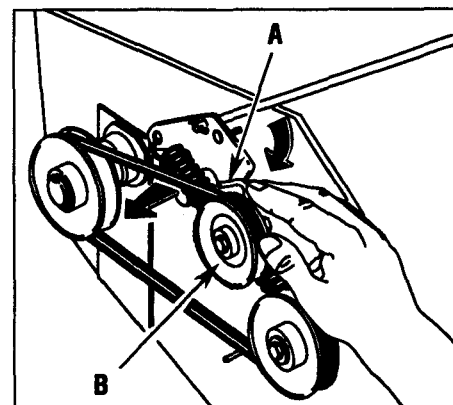
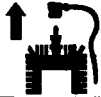


Figure 5-2: To remove belt, loosen belt guide (A) and push idler pulley (B) down.

⚠ WARNING

Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

CYLINDER ASSEMBLY SERVICE AND REPAIR

⚠ WARNING

Before performing any maintenance on the unit, stop the engine, wait for all moving parts to stop and disconnect spark plug wire. Wear gloves when working with the cylinder assembly to protect against cuts.

Cylinder Assembly Removal

1. Remove the upper clutch lever section from the lower section by removing the two screws and nuts.
2. Remove the eight flange screws securing the shredder hopper to the unit. Remove the hopper.
3. Remove the discharge screen or bar grate (see *Removing/Installing Discharge Screen or Bar Grate* in Section 4). Remove the belt cover as described in *Belt Removal/Installation* in this Section.

⚠ WARNING

Wear sturdy work gloves and be careful handling the cylinder assembly. Many cutting edges on the assembly can cause severe cuts. Be especially careful near the chipper blade.

4. Remove the snap ring that secures the cylinder pulley to the cylinder assembly. Carefully note (for later reassembly) the location of all hardware securing cylinder pulley to cylinder. Remove the cylinder pulley.
5. Loosen set screw that secures bearing locking collar on cylinder shaft (located under cylinder pulley). Remove the locking collar from the cylinder shaft by turning the collar against the direction of the shaft rotation. Use a hammer and a punch to loosen the collar (Figure 5-3).
6. Place a long wooden stick down the shredder hopper to prevent the cylinder assembly from rotating. Remove the cap-screw securing the other end of the cylinder shaft. Remove the remaining washers

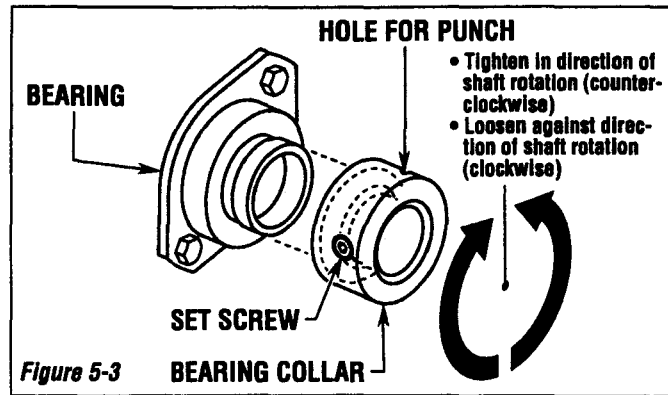


Figure 5-3

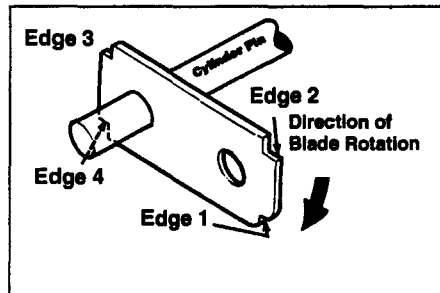


Figure 5-4

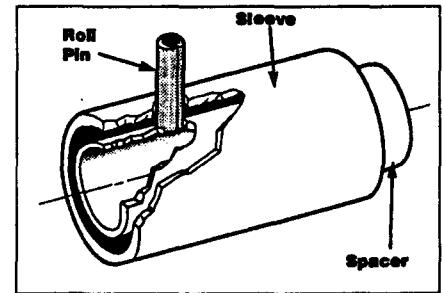


Figure 5-5

and spacers from the cylinder shaft. Note that there is a felt washer at each end of the shaft to protect the bearings. Also note the location of all hardware for reassembly. Remove the stick from the hopper.

⚠ WARNING

Take special care to note the exact order and placement of all parts on the cylinder assembly for reassembly. It is recommended that the cylinder pins and all components be marked before disassembly to aid in correct reassembly. If there are any questions about correct placement and order of cylinder assembly parts, refer to the cylinder assembly parts breakdown (located in the parts list). Failure to follow these instructions could result in severe personal injury or property damage.

NOTE: An assistant will be needed for the next step.

7. Put on sturdy work gloves and safety glasses. Hold the cylinder assembly through the hopper opening. Remove the six flange screws (keep any washers with screws) retaining the cylinder shaft bearings and the closure plate to the main frame. The cylinder assembly can now be lowered out of the unit.

The shredder blades (flails) on the cylinder assembly can be rotated or flipped if dull (Figure 5-4). The shredder blades use only one cutting edge at a time.

Cylinder Assembly Disassembly

NOTE: Roll pins (see Figures 5-5 and 5-5A) secure the three cylinder pins in the cylinder assembly. The roll pins must be driven from the assembly with a 5/32" punch and hammer. The pins will come out in only one direction through the outer sleeves (Figure 5-5).

1. Securely clamp the cylinder assembly by the chipper flywheel in a vise. Position

⚠ WARNING

Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

the assembly so one of the roll pins can be driven out with a punch and a hammer.

- Carefully inspect the holes in the outer sleeve. One hole is larger than the other. Position the sleeve so the roll pin will be pushed out of the cylinder assembly through the LARGER hole (it will not pass through smaller hole). Use penetrating oil to loosen sleeve if it does not spin easily.
- Tap the roll pin out of the cylinder pin, the spacer, and the LARGER hole in the sleeve with a 5/32" punch and a hammer.
- Discard the used roll pin. Disassemble the cylinder pin, spacers and shredder blades located on the cylinder pin.
- Rotate the cylinder assembly to access the remaining cylinder pin assemblies and repeat the disassembly procedure.

Cylinder Assembly Component Repair

NOTE: Refer to the Parts List pages for part numbers when ordering cylinder assembly components.

⚠ WARNING

Before performing any maintenance on the unit, stop the engine, wait for all moving parts to stop and disconnect spark plug wire. Wear gloves when working with the cylinder assembly to protect against cuts.

- Flip or rotate the shredder blades as needed to expose fresh cutting surfaces (Figure 5-4). Replace the blade if all cutting surfaces are dull.
- Replace any spacers or sleeves that are worn or damaged. Use original equipment replacements only! See the Parts List for part numbers when ordering.
- Thoroughly clean and inspect all parts. Remove any burrs that could prevent the parts from fitting properly.

Cylinder Assembly Reassembly

- Securely clamp the cylinder assembly by the chipper flywheel in a vise. Position the assembly to allow reassembly of the cylinder pins.

- Slide the correct locking spacer inside the correct sleeve (refer to the Parts List, if necessary). Line up the roll pin hole in the sleeve and the spacer.

- Carefully inspect the holes in the sleeve and note that one hole is larger. Use a pliers to hold a new roll pin (never reuse a roll pin) and tap it through the LARGE hole in the sleeve, and into the top hole in the spacer (Figure 5-5). Tap the roll pin into the spacer only until it is flush with the bottom surface of the top hole.

⚠ WARNING

The cylinder pin rows must be properly assembled and then secured with new roll pins before unit is operated.

Failure to follow these instructions could result in severe injury or property damage.

- Feed one cylinder pin into the cylinder assembly with the correct spacers and shredder blades in the proper order and placement. Refer to the Parts List, or to Figure 5-5A, if you are unsure about the proper order and placement of the cylinder assembly parts. Slide the pre-assembled spacer/sleeve/roll pin assembly onto the end of the cylinder pin.

- Rotate the pre-assembled spacer/sleeve/roll pin assembly until the hole in the cylinder pin is aligned with the holes in a spacer and sleeve.
- Coat the exposed surface of the roll pin with Loctite® 242 (or equivalent) removable thread sealant. Allow the sealant to cure for 24 hours before using the unit.
- Use a hammer and 5/32" punch to tap the roll pin into the holes in the cylinder pin and spacer. Stop when the ends of the roll pin are flush with the outside edges of the spacer.
- The sleeve must spin freely. If it doesn't spin, check to make sure the roll pin is not protruding beyond the outside edges of the spacer.
- Rotate the cylinder assembly as needed to reassemble the other cylinder pins and their component parts.

Cylinder Assembly Installation

- Insert ends of cylinder shaft through closure plates on unit. Slide the bearings onto ends of the cylinder shaft.
- Lift the cylinder assembly/closure plate/bearing assembly up into the unit. Secure the cylinder assembly/closure plate/bearing assembly to the mainframe with the six flange screws removed in Step 7 of *Cylinder Assembly Removal*. The four longer (Grade 8) flange screws and the 5/16" lock washers are installed through the bearings and closure plates; the two shorter screws are used with the closure plates alone. Tighten the screws securely (if you have a torque wrench, tighten to 30 ft./lbs).
- Secure the end of the cylinder shaft opposite the pulley with the hardware removed in Step 6 of *Cylinder Assembly Removal*. Tighten the capscrew securely.
- Install the locking collar removed in Step 5 of *Cylinder Assembly Removal*, onto the pulley end bearing on the cylinder shaft. Lock the collar down by turning the bearing flange counter-clockwise with a hammer and punch (Figure 5-3). Apply Loctite® 242 (or equivalent) removable thread sealant to the collar set screw. Tighten the set screw to lock the collar down against the bearing flange. Allow the sealant to cure for 24 hours before using the unit.
- Assemble the pulley on the cylinder shaft, using the hex key and all other hardware removed in Step 4 of *Cylinder Assembly Removal*. Secure the pulley (sheave) with the snap ring removed in that step.
- Install the drive belt. Make sure the belt is properly routed under any belt guides (if equipped). Reinstall the belt cover using the four screws removed in Step 3 of *Cylinder Assembly Removal*.

⚠ WARNING

Do not operate unit without belt cover in place. Failure to follow these instructions could result in severe personal injury.

WARNING



Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

CYLINDER ASSEMBLY COMPONENTS

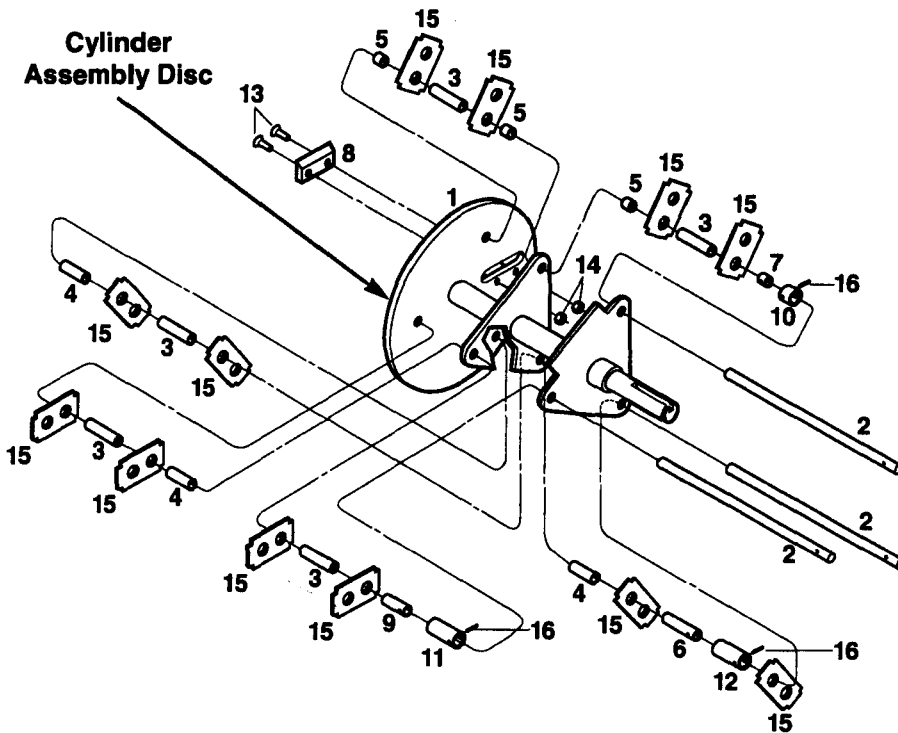


Figure 5-5A

Ref. No.	Description
1	Cylinder Weldment
2	Pin, Cylinder
3	Spacer, Long, 2"
4	Spacer, Medium, 1-5/16"
5	Spacer, Short, 11/16"
6	Spacer, Long, locking, 2"
7	Spacer, Short, locking, 11/16"
8	Blade, Chipper
9	Spacer, Medium, locking, 1-5/16"
10	Sleeve, Short, outer, 1/2"
11	Sleeve, Medium outer, 1-1/8"
12	Sleeve, Long, outer, 1-3/4"
13	Screw, Fl. Csk. Socket Hd., 1/4"-20 x 1"
14	Nut, Hex Locking, 1/4"-20
15	Blade, Shredder
16	Pin, Roll, 3/16" x 3/4"

7. Reinstall the hopper assembly using the eight flange screws removed in Step 2 of *Cylinder Assembly Removal*.

8. Reinstall the upper section of the clutch lever using the two screws and nuts removed in Step 1 of *Cylinder Assembly Removal*.

CHIPPER BLADE REMOVAL/INSTALLATION

WARNING

The chipper blade is extremely sharp. To avoid personal injury, handle the blade with extreme care during service or maintenance. Shut engine off, let all moving parts stop completely, disconnect spark plug wire and prevent it from touching spark plug before performing any maintenance on the unit.

The chipper blade should be sharpened or replaced when the unit no longer cuts as efficiently as when new.

Chipper Blade Removal

1. Stop engine and wait for all parts to come to a complete stop. Disconnect spark plug wire and secure it away from spark plug.
2. Lower the front end of the discharge screen (or remove screen for more working room). Refer to *Removing/Installing Discharge Screen or Bar Grate* in Section 4 for instructions.
3. Remove and save the three flange screws (A, Figure 5-6) from the base of the chipper chute and remove the chute.
4. The chipper blade is extremely sharp – wear heavy leather gloves when working near it.
5. Wearing gloves, rotate the large round flywheel carefully until the chipper blade is exposed in the chipper chute opening.

6. Prevent the flywheel from turning by wedging the cylinder assembly against the internal walls of the machine with a sturdy block of wood.

7. Using a 5/32" hex key wrench and a 7/16" open-end wrench, reach up inside the shredder chamber and remove the two nuts and socket head screws from the chipper blade (see Figure 5-7). Remove the chipper blade.

8. If a blade is dull or nicked, sharpen it at a 45° angle. See inset, Figure 5-7. If you don't have sharpening experience and the proper equipment, take the blade to a professional sharpening service.

If the blade is cracked or damaged, throw it away! Never use a cracked blade since pieces of the blade could break off and cause personal injury.

⚠ WARNING

Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

Chipper Blade Installation

1. Clean the blade seat and adjacent area on the flywheel.
2. Position the chipper blade in the blade seat with the countersunk holes in the blade seat facing outward (toward you).
3. Secure the chipper blade using two **new** 1/4"-20 lock nuts and two **new** socket head screws. Do not reuse the old hardware. Tighten the screws and nuts very securely. (After two operating hours, recheck the hardware for tightness).
4. Remove the wedge holding the flywheel in place. Reinstall the discharge screen and chipper chute securely, and then reconnect the spark plug wire.

HOPPER FLAP REPLACEMENT

If any of the "fingers" on the hopper flap (A, Figure 5-8) in the shredder hopper are torn or missing, or if the fingers don't prevent "blow back" of the material being shredded, inspect the flap for damage or deterioration. Do not use the unit if the flap is damaged.

To Replace Hopper Flap**⚠ DANGER**

Shredded particles can kick back up through the shredder hopper inlet. The retainer flap is designed to reduce the kickback of particles and must be in place and securely fastened.

Before using unit, be sure retainer flap is securely fastened. Also make sure you are wearing protective safety goggles or glasses.

1. Stop the engine and wait for all parts to come to a complete stop. Disconnect spark plug wire and secure it away from spark plug.
2. Using a 3/8" wrench, remove the three 1/4"-20 x 3/4" flange head screws and flange nuts (B, Figure 5-8) that secure the flap. Remove the flap.
3. Position the new hopper flap in place and securely reinstall the attaching screws and nuts (screw heads on top).

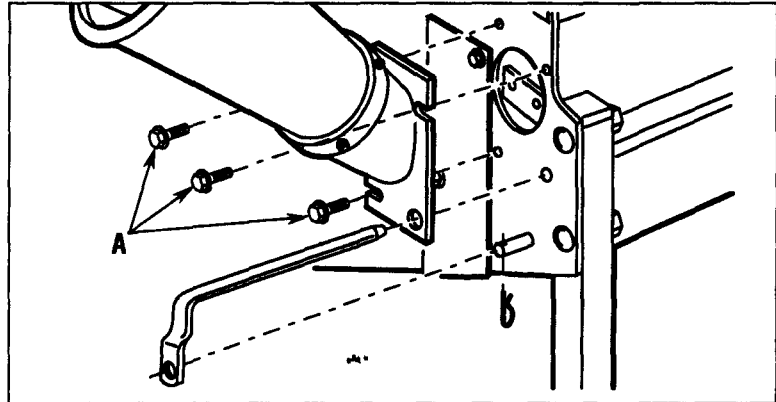


Figure 5-6: Take off chipper chute by removing rod and three screws.

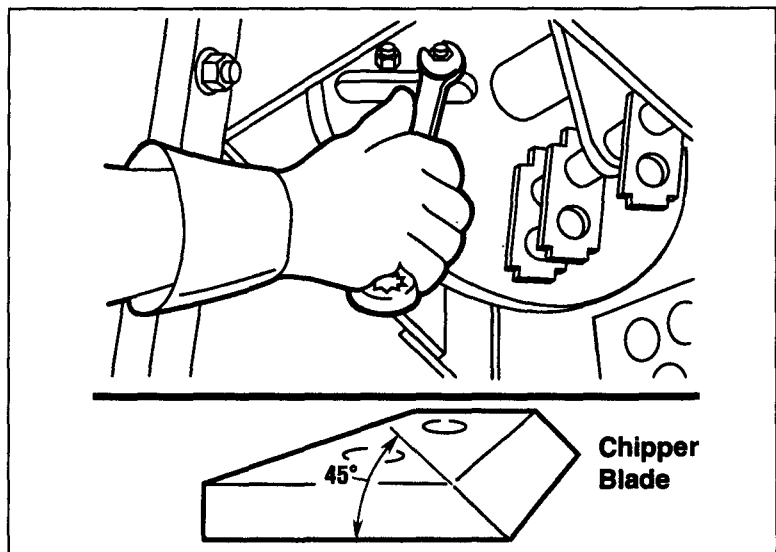


Figure 5-7: Removing the chipper blade.

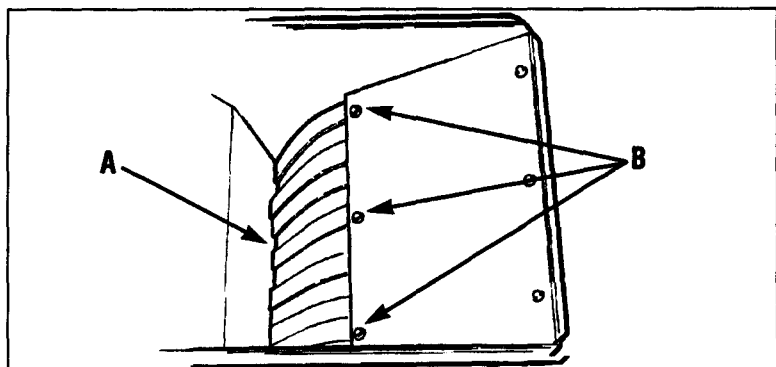
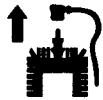


Figure 5-8: Removing the shredder hopper flap.

⚠ WARNING

Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

ENGINE MAINTENANCE

IMPORTANT: Refer to the separate Engine Owner's Manual for complete engine maintenance guidelines and instructions.

ENGINE OIL

- Check the oil level before each use and after every 8 operating hours (whichever comes first). Refer to the Engine Owner's Manual for how to check the oil level.
- Change the engine oil after the first 5 hours of operation, then every 25 hours thereafter (change more often if operating in extremely dusty, dirty conditions). See oil changing instructions in the separate Engine Owner's Manual. **TIP:** When changing oil, fold a piece of cardboard or aluminum foil into a "V" and position below the oil drain plug as shown in Figure 5-9.

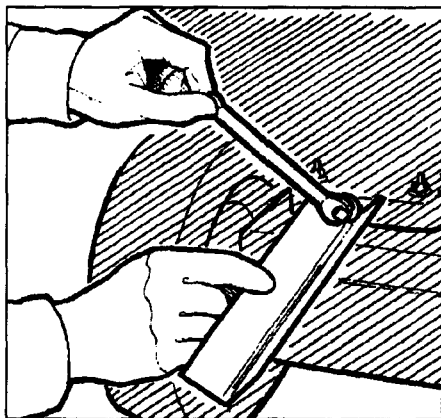


Figure 5-9: Draining the engine oil.

AIR CLEANER MAINTENANCE

The engine air cleaner system filters the air before it is drawn into the carburetor for combustion. This air cleaner system requires regular maintenance for maximum engine life and performance. Refer to the Engine Owner's Manual for engine air cleaner service information.

IMPORTANT: Service the air cleaner system more often if used in extremely dusty conditions.

ENGINE SPARK PLUG

To maintain peak engine efficiency, service the spark plug every 100 hours, or annually, as instructed in the Engine Owner's Manual.

KEEP ENGINE CLEAN

Check the engine recoil housing, cooling fins and muffler frequently for debris and clean daily before running the engine. Grass, dirt, or wood chips can clog the rotating screen and the engine air cooling system and cause overheating. Clean the muffler area to remove combustible debris. Use a cloth or brush when cleaning. Do not clean with a forceful spray of water because water could contaminate the fuel system.

If the engine is equipped with a spark arrester screen, remove it for cleaning and inspection. Replace if damaged or plugged.

⚠ WARNING

to avoid a fire hazard, keep leaves, grass, and other combustible materials away from hot engine and muffler.

CARBURETOR ADJUSTMENT

- The carburetor has been adjusted at the factory. It should not need to be reset. If a black exhaust is noted, check the air cleaner first. An over-rich mixture is usually caused by a poorly serviced or clogged air cleaner element, not an improperly adjusted carburetor. If readjustment is necessary, refer to the Engine Owner's Manual or contact your local authorized dealer.

FUEL FILTER

If engine is equipped with a fuel filter, clean it every 50 hours of operation (see Engine Owner's Manual for instructions).

OFF-SEASON STORAGE

When storing the unit for more than 30 days, follow the storage guidelines below to help ensure that the unit will be in good condition for future use.

Before storing the unit, stop the engine, allow the engine to cool and disconnect the spark plug wire from the spark plug.

- Thoroughly clean the unit.
- Tighten or replace any loose or missing hardware.
- Sand and touch-up any rusted or chipped painted surfaces.
- Inspect for missing or damaged parts. Repair or replace parts as necessary.
- Refer to the Engine Owner's Manual for proper engine storage information and service the engine as instructed. Be sure to protect the fuel system and carburetor from fuel gum deposits that can develop during extended storage.
- Cover the unit with a suitable protective cover that does not retain moisture. **NOTE:** Do not use a plastic cover. A plastic cover will retain moisture and promote corrosion.

⚠ CAUTION

Never store unit in an area where gasoline vapors may reach an open flame or spark.

Failure to follow this instruction can result in personal injury or property damage.

WARNING

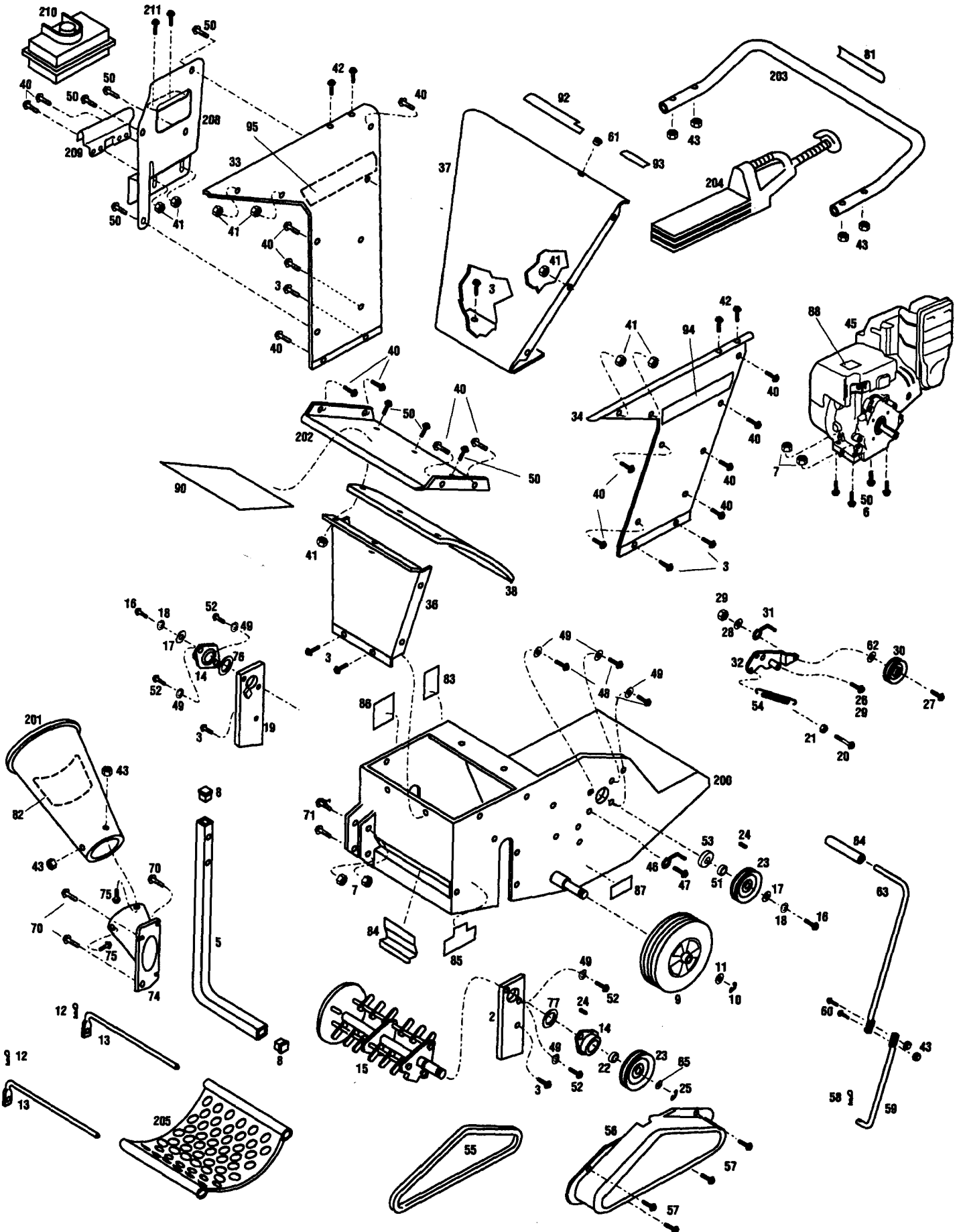
Before inspecting, cleaning or servicing the machine, shut off engine, wait for all moving parts to come to a complete stop, disconnect spark plug wire and move wire away from spark plug. Failure to follow these instructions can result in serious personal injury or property damage.

TROUBLESHOOTING CHART

Before performing any of the corrections in this troubleshooting chart, refer to the appropriate information contained in this manual for the correct safety precautions and operating or maintenance procedures.

PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine does not start.	<ol style="list-style-type: none"> 1. Spark plug wire disconnected. 2. Fuel valve (if equipped) not open. 3. Out of gasoline. 4. Stale gasoline. 5. Incorrect choke setting. 6. Dirty air filter. 7. Bad spark plug. 	<ol style="list-style-type: none"> 1. Reconnect wire to spark plug. 2. Turn fuel valve to open position. 3. Check gasoline tank. Add gasoline if needed. 4. Drain old gasoline. Add fresh gasoline. 5. Move choke lever to correct setting. 6. Clean or replace air filter. 7. Replace spark plug.
Engine runs poorly.	<ol style="list-style-type: none"> 1. Fouled spark plug. 2. Incorrect choke setting. 3. Dirty air filter. 4. Carburetor out of adjustment. 5. Stale gasoline. 	<ol style="list-style-type: none"> 1. Remove, clean, and reinstall spark plug. 2. Move choke lever to correct setting. 3. Replace air filter. 4. Contact dealer. 5. Drain old gasoline. Add fresh gasoline.
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 and remove debris. 2. Adjust it or have authorized Dealer adjust it.
Shredder or chipper does not work.	<ol style="list-style-type: none"> 1. Belt is broken or excessively worn. 2. Chipper blade/shredder blade(s) broken. 3. Sheared key between pulley and cylinder shaft. 4. Solid object jammed in unit. 5. Locked cylinder shaft bearing. 6. Loose engine mounting bolts or support nuts. 	<ol style="list-style-type: none"> 1. Replace belt. 2. Replace shredder/chipper blade(s). 3. Replace key. 4. Check for and remove obstruction. 5. Have authorized dealer repair unit. 6. Tighten bolts/nuts.
Shredder or chipper shreds or chips poorly.	<ol style="list-style-type: none"> 1. Dull chipper blade or shredder blade(s). 2. Engine not reaching full RPM. 3. Excessively worn cylinder shaft bearing(s). 4. Loose locking collar(s) on cylinder shaft. 5. Screen not installed in unit. 6. Screen that is installed has holes that are too large. 7. Loose engine mounting bolts/loose engine support nuts. 8. Material tangled in blades. 9. Clogged chipper chute. 10. Chipper blade clearance not between 1/16"-to-1/8". 	<ol style="list-style-type: none"> 1. Sharpen or replace chipper blade/have authorized Dealer replace shredder blade(s). 2. Have authorized dealer adjust or repair engine. 3. Replace bearing(s). 4. Tighten collar(s). 5. Install screen. 6. Remove screen and replace with screen that has smaller holes. 7. Tighten bolts/nuts. 8. Remove tangled material. 9. Clear chipper chute. 10. Have authorized dealer repair unit.
Heavy vibration/Unusual noise.	<ol style="list-style-type: none"> 1. Solid object jammed in chipper or shredder. 2. Blade(s) damaged and cylinder out of balance. 3. Chipper flywheel damaged. 4. Chipper blade/shredder blades hit inside unit. 5. Cylinder shaft bearing(s) damaged. 6. Blades strike bent discharge screen. 	<ol style="list-style-type: none"> 1. Check for and remove any obstruction. 2. Have authorized dealer repair unit. 3. Have authorized dealer repair unit. 4. Have authorized dealer repair unit. 5. Have authorized dealer replace bearings. 6. Replace discharge screen.
Belt slips.	<ol style="list-style-type: none"> 1. Stretched or worn belt. 2. Oil or grease on belt. 3. Cylinder shaft bearings are binding. 4. Loose engine mounting bolts/support nuts. 5. Object jammed in chipper or shredder. 	<ol style="list-style-type: none"> 1. Replace belt. 2. Clean pulleys and replace belt. 3. Check cylinder shaft for smooth rotation. If there is binding, have authorized dealer replace bearings. 4. Tighten bolts and nuts. 5. Remove jammed object.

Drawing No. 1



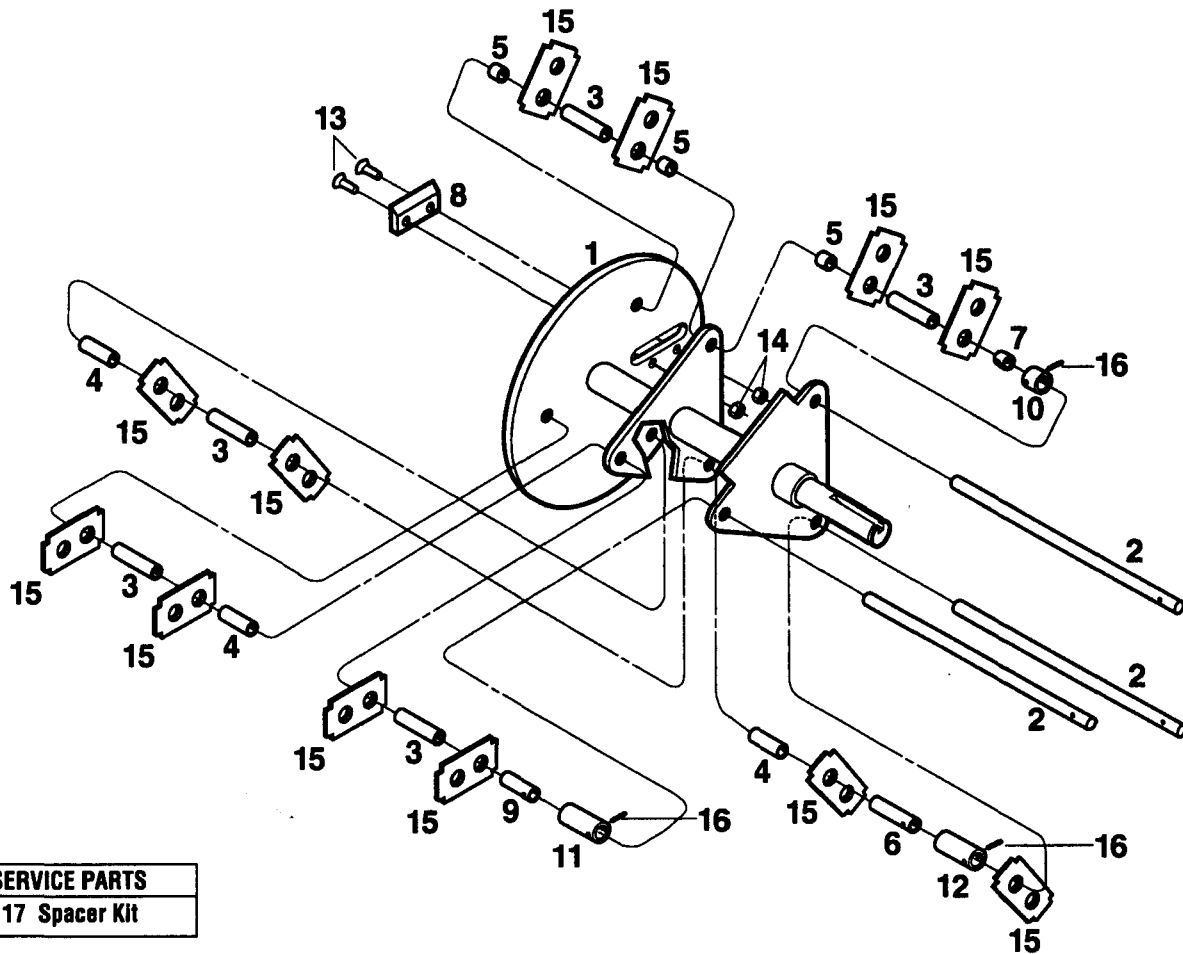
Models 47329 and 47330

Ref.	Part No.	Description	Qty.	Ref.	Part No.	Description	Qty.
2	1773249010	Closure Assembly, Left Hand	1	54	1766972	Extension Spring	1
3	1186327	Flange Screw, 5/16-18 x 1/2	10	55	1762636	V-Belt	1
5	1762619001	Front Stand	1	56	1762663	Belt Cover	1
6	1186333	Flange Screw, 5/16-18 x 1-1/2	4	57	1724492	Thread-Form Flange Screw, 1/4-20 x 1/2 ...	4
7	1186391	Flange Nut, 5/16-18	6	58	1100359	Cotter Pin, 1/8 x 1/2	1
8	1762690	Plug Cap	2	59	1763105	Lower Clutch Rod	1
9	1762684	Wheel	2	60	1100805	Hex Head Screw, 1/4-20 x 3/4	2
10	1762642	Retaining Ring	2	61	1762688	Snap Bushing	1
11	1107386	Flat Washer, 5/8	2	62	1909311	Flat Washer	1
12	1756986	Hairpin Clip	2	63	1763104	Upper Clutch Rod	1
13	1762618	Retainer Rod	2	64	1715685	Plastic Grip	1
14	1762650	Bearing	2	65	1703073	Thrust Washer	2
15	1762606	Cylinder Assembly (See exploded view, next page)	1	70	1100078	Flange Screw, 5/16-18 x 7/8, GR 5	3
16	1770932	Hex Head Screw, 3/8-24 x 1-1/4	2	71	1186334	Flange Screw, 5/16-18 x 1-3/4	2
17	1701055	Flat Washer, 3/8	2	74	1770363010	Chipper Chute Base	1
18	1100243	Lock Washer, 3/8	2	75	1186069	Carriage Screw, 1/4-20 x 3/4	4
19	1772912010	Closure Assembly, Right Hand	1	76	1772910	** Dust Seal	1
20	1100808	Hex Head Screw, 5/16-18 x 1-1/4	1	77	1773254	Dust Seal	1
21	1186230	Hex Nut, 5/16-18	1	81	1759797	Decal - Combustible Material	1
22	1185788	Locking Collar	1	82	1816037	Decal - Danger	1
23	1762644	Pulley	2	83	1816039	Decal - Danger	1
24	1108844	Square Key, 1/4 x 1-1/4	2	84	1763130	Decal - Front, Hand Hazard	1
25	1185689	External Retaining Ring	1	85	1763131	Decal - Belt Side	1
26	1736221	Shoulder Bolt, 3/8-16	1	86	1763132	Decal - Chipper Side	1
27	1100086	Hex Head Screw, 3/8-16 x 1-3/4	1	87	1816172	Decal - Warning	1
28	1107383	Flat Washer, 3/8	1	88	1904565	Decal - Warning, Hot Surface	1
29	1733398	Toplock Nut, 3/8-16	2	90	1918651	Decal - Instructions	1
30	1710567	Idler Pulley	1	92	1772674	Decal - Panel	1
31	1762683	Belt Guide	1	93	1774325	Decal - Horse Power	1
32	1762637	Idler Arm Assembly	1	94	1763944	Decal - Left Side Logo	1
33	1762629010	Right Panel	1	95	1763945	Decal - Right Side Logo	1
34	1762630010	Left Panel	1	200	1918680	Mainframe Assembly (Incl. Refs. 83, 84, 85, 86, 87 & 88)	1
36	1762632010	Front Bottom Panel	1	201	1771119	Chipper Chute Assembly (Incl. Ref. 82)	1
37	1762633010	Back Panel	1	202	1774331	Front Top Panel Assembly (Incl. Ref. 90) ...	1
38	1816034	Rubber Flap	1	203	1763455	Handlebar Assembly (Incl. Ref. 81)	1
40	1186308	Flange Screw, 1/4 -20 x 1/2	14	204	1763008	Leaf Tamper Kit	1
41	1186389	Flange Nut, 1/4-20	21	205	1762665	Screen Kit, 3/4"	1
42	1186313	Flange Screw, 1/4-20 x 1-1/2	4		1762666	Screen Kit, 1"	NI
43	1734398	Toplock Nut, 1/4-20	10		1762664	Screen Kit, 3/8"	NI
45	*	Engine	1		1762667	Screen Kit, 1-3/4"	NI
46	1752229	Belt Guide	1		1762668	Bar Grate Kit	NI
47	1100004	Flange Screw, 5/16-24 x 3/4	1	206	1900706	Red Spray Paint, 13 oz.	NI
48	1100029	Hex Head Screw, 5/16-24 x 5/8	3	207	1735222	Black Spray Paint, 13 oz.	NI
49	1100242	Lock Washer, 5/16	8	208	1918644010	Bracket, Upper Mounting	1
50	1186309	Flange Screw, 1/4-20 x 5/8	7	209	1918645	Bracket, Lower Mounting	1
51	9935	Drive Sheave Shim	4	210	1918646	Fuel Tank	1
52	1915769	Flange Screw, 5/16-18 x 3/4, GR8	4	211	1918673	Plastite Screw	2
53	1762635	Spacer, Drive Shaft	1				

NI - Item not included with unit; order separately.

* Order parts from your local authorized engine dealer. Refer to the engine for model, type and serial numbers.

Drawing No. 2



SERVICE PARTS
17 Spacer Kit

CYLINDER ASSEMBLY 1762606

Ref.	Part No.	Description	Qty.	Ref.	Part No.	Description	Qty.
1	1762607	Cylinder Weldment.....	1	10	1763110	Short Outer Sleeve, 1/2.....	1
2	1762611	Cylinder Pin.....	3	11	1763111	Medium Outer Sleeve, 1-1/8.....	1
3	1762612	Long Spacer, 2".....	5	12	1763112	Long Outer Sleeve, 1-3/4.....	1
4	1762613	Medium Spacer, 1-5/16.....	3	13	1763119	Socket Head Screw, 1/4-20 x 1.....	2
5	1762614	Short Spacer, 11/16.....	3	14	1908125	Hex Locknut, 1/4-20.....	2
6	1762615	Long Locking Spacer, 2".....	1	15	1756904	Shredder Blade.....	12
7	1762616	Short Locking Spacer, 11/16.....	1	16	97129	Roll Pin, 3/16 x 3/4.....	3
8	1764810	Chipper Blade Kit (Incl. Refs. 8, 13 & 14).....	1	17	1763449	Spacer Kit (Incl. Refs. 3, 4, 5, 6, 7, 9, 10, 11, 12 & 16).....	NI
9	1762657	Medium Locking Spacer, 1-5/16.....	1				

NI - Item not included with unit; order separately.

CUSTOMER SERVICE INFORMATION

Owner Registration Card

Please fill out and mail the enclosed owner registration card. The purpose of this card is to register each unit at the factory so that we can provide you with warranty benefits and informational bulletins.



Warranty Service

The warranty statement is included in the unit's literature package.

Model/Serial Numbers

A Model/Serial Numbers decal is located on the back of the unit. For ready reference, record these numbers in the spaces below.

Date of Purchase: _____

Model Number: _____

Serial Number: _____

Authorized Dealer Information

If you purchased your unit from an authorized dealer, record the dealer's name, address and phone number below for ready reference:

Dealer Name: _____

Address: _____

Phone: _____

IMPORTANT:

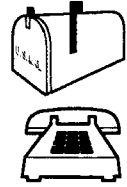
Left and right sides of the unit are determined from the operator's position, facing the hopper inlet.

NOTICE:

We reserve the right to change specifications, add improvements or discontinue the manufacture of any of our equipment without notice or obligation to purchasers of our equipment.

Customer Service and Technical Service

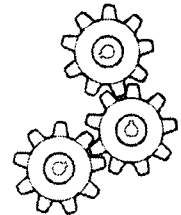
If you have questions or problems with the unit, contact your local dealer or the factory. (When calling or writing, provide the Model/Serial Numbers of the unit.)



Replacement Parts

Factory specified replacement parts are available from your authorized dealer or directly from the factory. When ordering parts, be sure to provide the following:

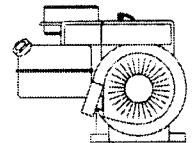
- Model/Serial Numbers of the unit.
- Part number of the part needed.
- Part Description.
- Quantity needed.



NOTE: All replacement parts must conform to our rigid quality specifications. Although some replacement parts we provide may vary slightly in shape, color or texture from the original parts, any variations will not affect the fit or performance of these parts on your unit.

Engine Service and Repair

For engine service or repair, contact your nearest authorized engine dealer (look in the Yellow Pages under "Engines-Gasoline"). The engine is warranted by the engine manufacturer. Any unauthorized work performed on the engine during the warranty period may void this warranty. For complete details on the engine warranty, refer to the engine owner manual.



WARNING

We urge using only genuine replacement parts, which meet all the latest requirements. Replacement parts manufactured by others could present safety hazards, even though they may fit on the unit.

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) 233-4622 • WEBSITE: www.troybilt.com

Outside the United States and Canada:

Customer Service: (518) 233-4807 • Technical Service: (518) 233-4808 • Parts Service: (518) 233-4806 • FAX (518) 233-4622