

LAZYBOY

Owner/Operator Manual



Parmi

Parmi
Tool Co., Inc.

Chipper/Shredder

Model C5099

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

BrentChalmers.com

SAFETY ALERT SYMBOL



This symbol is used to alert you to important safety messages in this Manual and on decals which are on your Chipper/Shredder. When you see this symbol, carefully read and follow its safety message. Failure to do so can result in serious personal injury or property damage!



WARNING TO ALL CALIFORNIA AND OTHER POWER EQUIPMENT OWNER/OPERATORS

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 COVERED, BRUSH COVERED, OR GRASS COVERED LAND, OR ON LAND COVERED WITH GRAIN, HAY, OR OTHER FLAMMABLE AGRICULTURAL CROP, WITHOUT AN ENGINE SPARK ARRESTER IN CONTINUOUS EFFECTIVE WORKING ORDER.

THE ENGINE ON YOUR CHIPPER/SHREDDER, LIKE MOST OUTDOOR POWER EQUIPMENT, IS AN INTERNAL COMBUSTION ENGINE THAT BURNS GASOLINE, A HYDROCARBON FUEL. THEREFORE, YOUR CHIPPER/SHREDDER 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 EQUIPMENT TO COMPLY WITH THIS REGULATION IS A MISDEMEANOR UNDER CALIFORNIA LAW, 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 WHAT REGULATIONS APPLY IN YOUR AREA.



DANGER

CONTACT WITH ROTATING CUTTING BLADES INSIDE DISCHARGE OPENING WILL CAUSE SERIOUS PERSONAL INJURY! CUTTING BLADES ARE ROTATING WHILE MACHINE 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 THE DISCHARGE AREA AND MOVING PARTS AT ALL TIMES TO AVOID SERIOUS PERSONAL INJURY. BEFORE DOING MAINTENANCE OR SERVICE, SHUT OFF THE ENGINE, ALLOW ALL MOVING PARTS TO COME TO A COMPLETE STOP, AND DISCONNECT THE SPARK PLUG WIRE AND KEEP IT AWAY FROM THE SPARK PLUG.

Dear LAZY BOY Chipper/Shredder Owner:

Thank you for purchasing the LAZY BOY Model C5099 Chipper/Shredder. Your chipper/shredder is designed and manufactured to give you superior results and dependable service, if properly operated and maintained.

Please read this Owner/Operator Manual thoroughly before attempting to operate your machine. It covers safety, assembly, features and controls, operation, and maintenance. The Safety Instructions in Section 1 **MUST** always be carefully followed by all operators to protect you and others who may use this equipment.

If you have any questions or problems with operation or maintenance, please contact your Parmi Tool Co., Inc. authorized Servicing Dealer right away. Your local Dealer has the service facilities and parts required to help you. Of course, If you should have any questions or problems which you feel only the Factory can solve, please write or phone our Service Department for prompt, helpful attention.

PARMI TOOL CO., INC.
P.O. Box 326
East Price Street
Lynn, Indiana 47355

Telephone: 317-874-2575



This Chipper/Shredder meets voluntary safety standard B71.6-1982, which is published by the American National Standards Institute, Inc.

MODEL NUMBER AND SERIAL NUMBER INFORMATION

For prompt service when repairs or adjustments are required, your Parmi Tool Co., Inc. authorized Dealer must have the Model Number and Serial Number of your machine. The Model Number has been entered into the appropriate space below. The Serial Number will be found on a decal located on top of the engine mounting base. Please fill in the spaces below for future reference.

MODEL NUMBER: **C5099** _____

SERIAL NUMBER: _____

DATE OF PURCHASE: _____

FOR ENGINE SERVICE AND REPAIRS

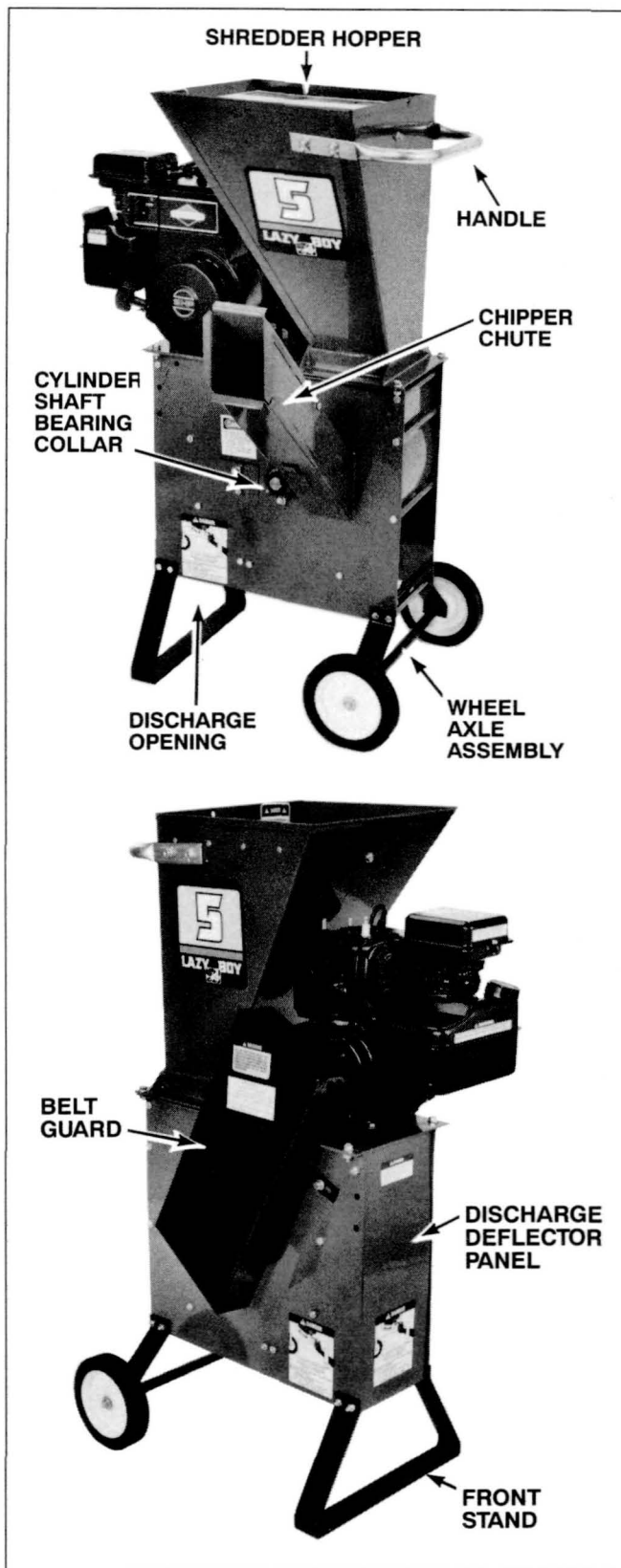
Please contact your nearest authorized engine service dealer if engine service or repair is needed. Look in the Yellow Pages of your telephone directory under "Engines-Gasoline" for the name of your nearest service dealer. The service dealer can handle all parts, repairs and warranty service concerning the engine alone.

It is important to remember that your engine is covered by the engine manufacturer's Limited Warranty and any unauthorized work done on the engine during the warranty period may void your engine warranty. For full details on the engine's Limited Warranty, please see the enclosed engine manufacturer's literature.

TABLE OF CONTENTS

SECTION 1: SAFETY	5
Safety Before Starting the Engine.....	5
Safety During Operation.....	5
Safety Instructions For Maintenance and Storage	6
Safety Decals	7
SECTION 2: ASSEMBLY AND PREPARATION	8
SECTION 3: FEATURES AND CONTROLS	9
Know your Chipper/Shredder.....	9
Shredder Hopper (Inlet)	9
Chipper Chute (Inlet).....	10
Chipper Shredder Chamber.....	10
Discharge Area and Discharge Screen	10
Power Transmission.....	11
Engine Controls	11
Engine Off/On Lever	12
Engine Choke Control	12
Rewind Starter.....	12
SECTION 4: OPERATING INSTRUCTIONS	13
Selecting a Work Site.....	13
Moving the Chipper/Shredder	13
Pre-Starting Checklist.....	14
Before Starting the Engine.....	14
To Start the Engine	14
To Stop the Engine	15
Materials Suitable for Shredding	15
Materials Suitable for the Chipper	16
Using the Chipper	16
Using the Shredder	17
Shredding Wet, Soggy, or Green Materials	18
SECTION 5: MAINTENANCE	19
Removing and Installing the Discharge Screen.....	19
Lubrication.....	20
V-Belt Adjustment or Replacement.....	21
Chipper Blade Replacement.....	22
Cylinder Maintenance and Shredder Blades	
Replacement	23
Removing and Replacing the Centrifugal Clutch.....	23
Cylinder Shaft Belt Pulley Inspection.....	24
Shredder Hopper Retainer Flap Replacement.....	25
Engine Service.....	25
Checking the Engine Oil Level.....	25
Changing the Engine Oil.....	25
Engine Air Filter Service	25
Engine Spark Plug Service.....	26
Engine Spark Arrester Service	26
Engine Carburetor and Choke Adjustment	26
Engine Cooling System Service	26
Chipper/Shredder Storage	26
Engine Storage.....	27
TROUBLESHOOTING CHART	27
PARTS LIST	29
WARRANTY	Back Cover

REFERENCE TO KEY FEATURES



SECTION 1: SAFETY

Before assembling, operating, or servicing the Chipper/Shredder or its engine, carefully read and follow all of the safety instructions in this Manual.

As with any other piece of power equipment, it is necessary for any operator to follow these safe operating practices at all times. Failure to follow these safe operating practices could result in serious personal injury or damage to equipment or to property.

If you ever lend your Chipper/Shredder to another person, make sure that he or she first reads, understands and always follows these safety instructions. Do not allow children or untrained adults to operate the unit.



This symbol is used to alert you to important safety messages in this Manual and on decals which are on your Chipper/Shredder.

When you see this symbol, carefully read and follow its safety message. Failure to do so can result in serious personal injury or property damage!

SAFETY BEFORE STARTING THE ENGINE

1. Become familiar with this Manual before attempting to operate the Chipper/Shredder. Only allow persons who know the safety rules and who have read this Manual to use your Chipper/Shredder.
2. Know where the engine shut-off control is and know how to use it (refer to Section 3 in this Manual).
3. The operation of any powered machine can result in foreign objects being thrown by high speed rotating parts. Always wear approved safety glasses or other eye protection when using the Chipper/Shredder.
4. Always wear appropriate work gloves, sturdy footwear, and hearing protection while using the Chipper/Shredder. Do not wear loose-fitting clothing, jewelry, scarves, ties, etc. that can get caught in moving parts.
5. The engine must be OFF and allowed to cool for several minutes before filling the fuel tank with gasoline. Use only an approved gas storage container. Gasoline and its vapors are highly flammable and explosive. Keep matches, flame, and smokers' materials far away from fueling area. Fill fuel tank outdoors. Wipe up fuel spills right away, before starting engine.
6. Before starting the engine, make a visual check to see that all screws, nuts, bolts, and other fasteners are properly secured. **The Discharge Screen, Chipper Chute Extension, Discharge Deflector Panel, and all safety covers must be correctly and securely installed. Disconnect the spark plug wire before performing this check. This check is recommended before each usage.**
7. Before starting the engine, be sure that the Chipper Chute, Shredder Hopper, and the internal cutting chamber are empty. The engine must be off, all parts completely stopped, and the spark plug wire disconnected before you check or remove any material.
8. Make sure the Chipper/Shredder is level and stable before starting the engine.

SAFETY DURING OPERATION

1. Keep your face and body away from the Shredder Hopper Inlet and the Chipper Chute Inlet.
2. **Keep hands, feet, face, and clothing out of Shredder Hopper Inlet and Chipper Chute Inlet and away from Discharge Area and moving parts to avoid serious personal injury.**
3. **Keep hands and feet out of discharge opening when machine is running. Rotating cutting blades inside opening will cause serious personal injury.**
4. If the Chipper/Shredder 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 Chipper/Shredder has a white line painted on it. When this white line is stationary, the cylinder assembly has stopped rotating.)** Disconnect the spark plug wire and prevent it from touching the spark plug. Only then inspect the Shredder Hopper Inlet, Chipper Chute Inlet, internal cutting chamber, Discharge Screen and discharge area. **Use only a long wooden stick (or a long-handled shovel) to clear away discharged material or blockages.**
5. Do not use hands or feet to clear material from the discharge area or discharge opening.
6. Do not run the engine in an enclosed area. The exhaust fumes from the engine contain extremely dangerous carbon monoxide gas. Carbon monoxide gas is colorless, odorless, tasteless and deadly poisonous.
7. Do not operate the Chipper/Shredder on a paved, hard, or gravel surface. Discharged material may bounce from a hard surface and cause personal injury. Select a level, earthen surface. Always operate the Chipper/Shredder on a level surface.
8. Do not stand in front of the discharge area when operating the Chipper/Shredder. Material exits quickly from the discharge screen and discharge opening and can cause serious personal injury.
9. Do not put hands, feet, face, or any other part of your body or clothing near the Chipper Chute, Shredder Hopper, or Discharge Area. Cutting blades begin to rotate and build up speed once the engine is running. **Serious personal injury can occur while cutting blades are rotating, and when winding down after engine is turned off. Wait for all moving parts to stop completely.**

SECTION 1: SAFETY

10. Do not allow children or untrained adults to operate the Chipper/Shredder.
11. When feeding appropriate material into the Chipper Chute Inlet or Shredder Hopper Inlet, be extremely careful that pieces of metal, rocks, bottles, nails, cans, and any other foreign objects are not included. Use organic materials only!
12. Shut off the engine immediately if the Chipper/Shredder strikes any foreign object or develops any unusual noises or vibrations. When engine is off and all moving parts have come to a complete stop, disconnect the spark plug wire and keep it away from the plug. Then proceed as follows: a.) Inspect for damage; b.) If a foreign object is present, remove it; c.) Check for loose parts or hardware, and tighten if loose; d.) Replace or repair damaged parts before starting the engine.
13. Do not allow engine surfaces, especially around the cooling fins and muffler, to become clogged with leaves, grass, oil, grease, or any other combustible material. Keep these areas clean and free of debris to avoid a potential fire hazard.
14. 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 kick back of material up through the Shredder Hopper or Chipper Chute. To remove material from the Discharge Area, first shut off the engine, allow all moving parts to stop completely, and disconnect the spark plug wire and keep it from touching the plug. **Then use a long-handled shovel or long stick. NEVER USE YOUR HANDS OR FEET TO CLEAR MATERIAL FROM THE DISCHARGE AREA OR DISCHARGE OPENING! Rotating blades cut 1/4 inch from the Discharge Screen. Keep Away! NEVER PUT YOUR HANDS OR FEET IN THE DISCHARGE AREA OR DISCHARGE OPENING!**
15. Keep all safety shields, guards, screens, and deflectors securely in place, properly secured, and in good condition. **Do not operate the Chipper/Shredder unless the Shredder Hopper, Chipper Chute Extension and Discharge Deflector Panel are securely bolted in place, and a discharge screen is correctly installed in the Chipper/Shredder.** Keep your face and body away from the Shredder and Chipper inlet openings.
16. Do not overreach when feeding material into the Shredder Hopper or Chipper Chute. **Always keep arms parallel to the ground while feeding material into Shredder Hopper. When chipping, keep arms perpendicular (at a 90° angle) to the Chipper Chute.** Keep proper footing and good balance at all times.
17. Do not transport or move your Chipper/Shredder while the engine is running.
18. Do not tamper with the governor setting on the engine. The governor controls the maximum safe operating

speed and protects the engine and other moving parts from damage that can be caused by over speeding.

19. **Rotating cutting blades do not stop for 10 — 45 seconds after the engine has been shut off. You can tell when the rotating cylinder stops by watching the white line on the bearing collar. When this white line is stationary, the cylinder has stopped rotating.**
20. Do not operate the Chipper/Shredder when bystanders or pets are nearby. Keep all bystanders, especially children, at least 25 feet away from the Chipper/Shredder.
21. Processed material exits at high speed from the Discharge Opening. **Keep away from the Discharge Opening and the Discharge Area while operating the Chipper/Shredder.**

SAFETY INSTRUCTIONS FOR MAINTENANCE AND STORAGE

1. Before service, maintenance, cleaning, inspection, changing the Discharge Screen, or work of any other kind is to be done on the Chipper/Shredder, be sure the engine is stopped, all moving parts have come to a complete stop, and the spark plug wire is disconnected and moved away from the plug. If the engine has been running, allow the hot muffler to cool before working near it or placing a storage cover over the Chipper/Shredder.
2. Keep the chipper blades sharp.
3. Store the Chipper/Shredder where children will not have access to it. Always disconnect the spark plug wire and prevent it from touching the spark plug before storing the Chipper/Shredder.
4. Be sure the Chipper/Shredder is stored in an area where any gasoline vapors (fumes) from the engine cannot reach an open flame, sparks, or flame-producing equipment such as a hot water heater pilot light, a wood stove, or a furnace.
5. For seasonal storage, remove all gasoline from the fuel tank and dispose of it in a safe manner. Then run the engine until the small amount of gasoline left in the carburetor and fuel line has been used up. Disconnect the spark plug wire and keep it away from the plug. Let the engine cool before storing.

SAFETY DECALS

Make sure that the safety decals (shown on Page 7) on the Chipper/Shredder are kept clean and in good condition so that you can follow the instructions on them. If you need replacement decals, refer to the Parts Listing in this Manual for part ordering information or contact your local Authorized Service Dealer.

SECTION: 1 SAFETY

NOTE: All decals are shown at a reduced size.

A. OPERATING INSTRUCTIONS

⚠ DANGER TO AVOID SERIOUS INJURY:

Before Starting: _____

To Start: _____

To Stop: _____

⚠ WARNING
TO AVOID A FIRE HAZARD, KEEP LEAVES, GRASS, AND OTHER COMBUSTIBLE MATERIALS AWAY FROM HOT ENGINE AND MUFFLER.

PT/70087/00

B. ⚠ DANGER

ROTATING CUTTING BLADES. BLADES CUT 1/4 INCH FROM DISCHARGE SCREEN!

TO AVOID SERIOUS PERSONAL INJURY WHILE MACHINE IS RUNNING:

- KEEP HANDS AND FEET OUT OF DISCHARGE OPENING!
- KEEP AWAY FROM DISCHARGE AREA!

NO HANDS BELOW THIS LINE

PT/70088/00

C. ⚠ WARNING

HOT SURFACES CAN CAUSE SEVERE BURNS. DO NOT TOUCH MUFFLER OR ADJACENT AREAS.

D. ⚠ WARNING

DO NOT START ENGINE UNLESS BELT COVER IS ATTACHED. KEEP HANDS, FEET AND CLOTHING AWAY FROM MOVING BELTS AND PULLEYS. FAILURE TO COMPLY COULD RESULT IN PERSONAL INJURY. SEE OWNER/OPERATOR MANUAL FOR FULL SAFETY INSTRUCTIONS.

E. — OPERATOR —

TO AVOID CLUTCH DAMAGE:

- ① FEED MATERIAL AT A STEADY RATE.
- ② DO NOT OVERLOAD OR CAUSE THE ENGINE TO "BOG" DOWN CONTINUALLY.
- ③ "STOP" ENGINE AND CLEAR GRINDER WHEN OVERLOADED.

1816038

F. ⚠ WARNING

TO AVOID A FIRE HAZARD, KEEP LEAVES, GRASS AND OTHER COMBUSTIBLE MATERIALS AWAY FROM HOT ENGINE AND MUFFLER!

I. DANGER

MACHINE MUST NOT BE OPERATED WITH DOOR OPEN. BEFORE OPENING, SHUT OFF MACHINE, PULL SPARK WIRE AND BE SURE CYLINDER HAS STOPPED.

G. ⚠ DANGER ⚠

ROTATING CUTTING BLADES. KEEP HANDS AND FEET OUT OF INLET AND DISCHARGE OPENINGS WHILE MACHINE IS RUNNING TO AVOID SERIOUS PERSONAL INJURY.

NO HANDS BELOW THIS LINE

H. ⚠ DANGER

ROTATING CHIPPER BLADES WILL CAUSE SERIOUS PERSONAL INJURY. DO NOT OPERATE UNLESS CHIPPER CHUTE EXTENSION IS BOLTED IN PLACE.

PT/70089/00

J. ⚠ DANGER

ROTATING CUTTING BLADES! DO NOT OPERATE UNLESS DISCHARGE DEFLECTOR PANEL IS BOLTED IN PLACE.

PT/70090/00

Ref. Letter	Part No.	Description and Location	Qty.
A	PT/70087/00	Operating Instructions Decal — Located on top of shredder hopper (Inlet)	1
B	PT/70088/00	Danger Decal — Located on discharge deflector panel and on left and right sides of machine, above discharge area	3
C	PT/11982-1/00	Warning Decal — Located on top of engine air cleaner cover	1
D	PT/11982/00	Warning Decal — Located on belt guard and on mainframe behind belt guard.....	2
E	1816038	Avoid Clutch Damage Decal — Located on belt guard	1
F	1900066	Fire Hazard Decal — Located on engine fuel tank	1
G	PT/70083/00	Danger Decal — One located on chipper chute extension and two located on shredder hopper	3
H	PT/70089/00	Danger Decal — Located on chipper chute base.....	1
I	2045116	Danger Decal — Located on chipper chute side of machine, near chipper access door.....	1
J	PT/70090/00	Danger Decal — Located on front and back of discharge deflector panel	2

SECTION 2: ASSEMBLY AND PREPARATION

Your new chipper/shredder is shipped completely assembled with the exception of the chipper chute extension which has been left unassembled for shipping purposes. You must also add motor oil to the engine as it has been shipped WITHOUT oil. Follow the procedures below to attach the chipper chute extension and to add motor oil to the engine.

1. Unpacking Instructions

- Inspect your chipper/shredder immediately after it has been delivered. Make sure that neither the carton nor the contents have been damaged. If you find or suspect damage, contact the carrier (trucking company) right away. Inform them of the specific damage and that you wish to file a claim. To protect your rights, be sure to put this in writing to the carrier within 15 days after your unit arrived. The carrier will let you know how to proceed with your claim. Please contact us if you need any assistance with this matter.

- Remove any packing material from around the chipper/shredder. Before disposing of the carton or any of the packing materials, be sure to check them thoroughly for any loose parts.

- Have an assistant help you move the machine off the cardboard pallet.

2. Check Contents of Shipping Carton

Check the contents of your chipper/shredder's shipping carton. If you are missing any parts, please contact your local servicing dealer or call the Factory for replacements. You should have received:

1. The engine/mainframe assembly.
2. A Chipper Chute Extension.
3. One pair of safety goggles.

3. Attach the Chipper Chute Extension

The chipper chute extension must be attached to the chipper chute base as shown in Photo 2-1. You will need two 7/16-inch wrenches to perform this procedure.

1. For shipping purposes, a 1/4"-20 x 4-1/4" screw and 1/4"-20 locknut (used to attach the chute extension) have been installed in the chute base. Remove and save this screw and nut.

2. Slide the smaller end of the chute extension over the chute base, making sure that the bottom of the chute extension fits between the chute base and the metal clip at the bottom of the chute base.

3. Align the holes in the chute extension and chute base and install the screw and locknut that were removed in Step 1. Tighten the locknut securely.

DANGER

DO NOT OPERATE THE CHIPPER/SHREDDER UNLESS THE CHIPPER CHUTE EXTENSION IS PROPERLY BOLTED TO THE CHIPPER CHUTE BASE. SERIOUS PERSONAL INJURY CAN RESULT IF THE CHIPPER CHUTE EXTENSION IS NOT SECURELY ATTACHED.

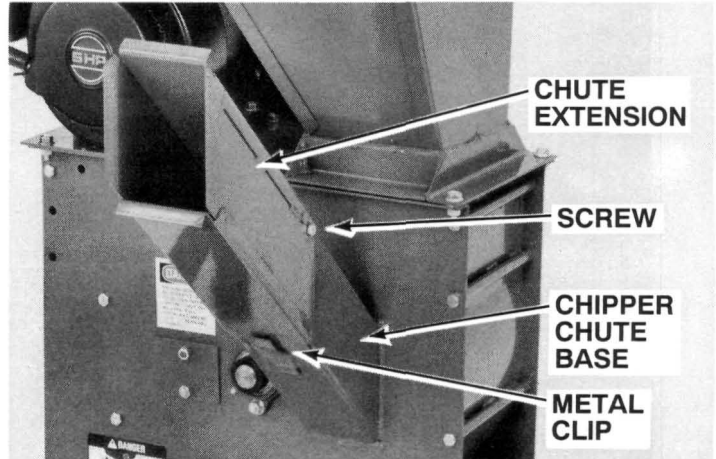


PHOTO 2-1: Attach Chipper Chute Extension as shown above.

4. Add Oil to the Engine

Your 5.0 horsepower Briggs & Stratton Engine was shipped to you "dry" and motor oil must be added before the engine is started. You will be adding approximately 1.25 pints (20 ounces) of oil to the crankcase.

- 1.** Refer to Page 14, "Before Starting the Engine," to determine the viscosity and type of oil to use.
- 2.** Make sure the chipper/shredder is on a level surface.
- 3.** Remove the engine oil fill plug (see Photo 2-2). Using a clean funnel, slowly add oil to the oil fill tube until it reaches the point of overflowing. ALWAYS MAINTAIN THE OIL LEVEL AT THE POINT OF OVERFLOWING.
- 4.** Replace the oil fill plug securely.

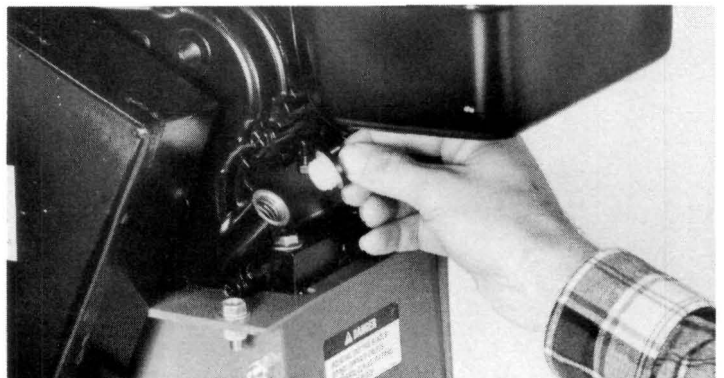


PHOTO 2-2: Remove engine oil fill plug to add oil.

SECTION 3: FEATURES AND CONTROLS

Know Your Chipper/Shredder

Before putting your chipper/shredder to work, please read this Section completely so you'll know the location and function of all features and controls.

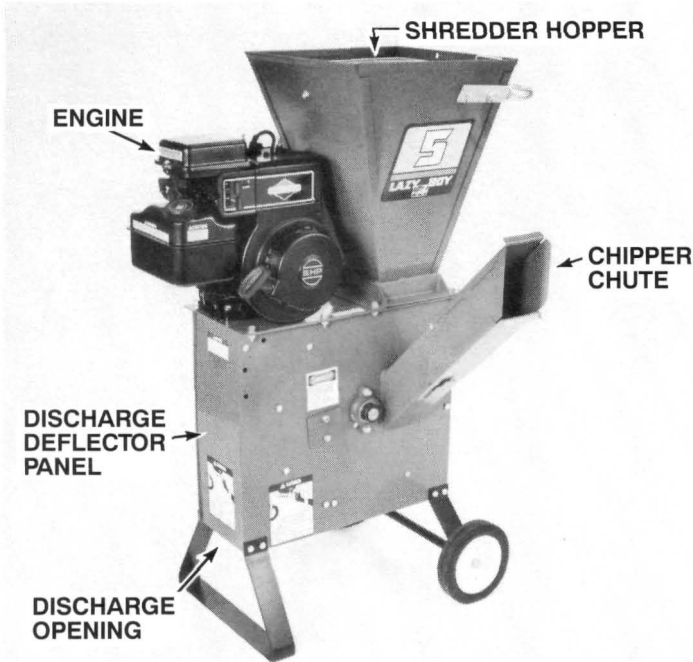


PHOTO 3-1: Key features and controls on the chipper/shredder.

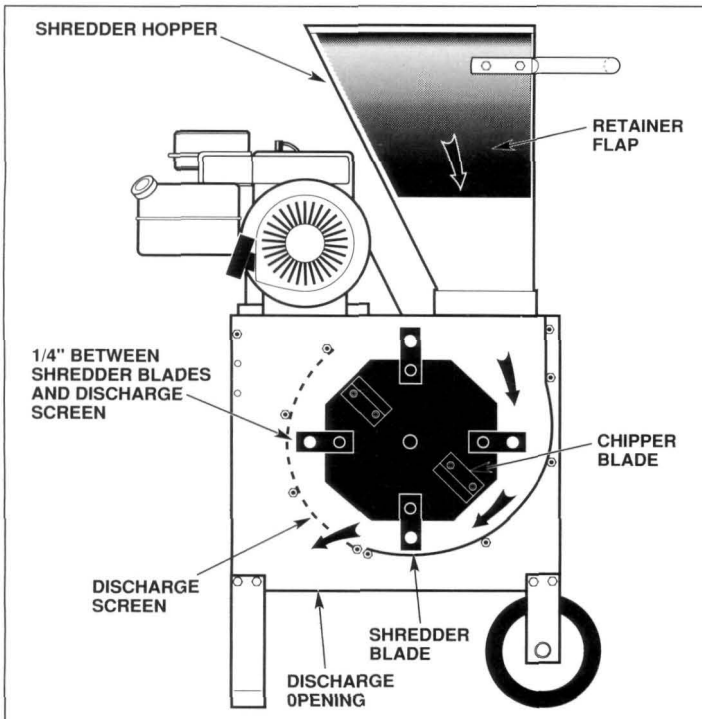


FIGURE 3-2: Cutaway view of the chipper/shredder. Shredder blades cut 1/4-inch away from discharge screen—KEEP HANDS AND FEET AWAY from discharge area during operation!

1. Shredder Hopper (Inlet)

This is the opening (see Photo 3-1) in the top of the chipper/shredder into which all materials to be shredded are fed.

A plastic retainer flap is secured to the hopper opening. Material must be pushed past this retainer flap (using only a wooden stick) to enter the main shredding chamber. The retainer flap is an important safety feature as it prevents kick back of materials! Do not use the chipper/shredder unless the retainer flap is securely fastened in place. REPLACE THE RETAINER FLAP IF IT IS TORN OR DAMAGED.

Inside the chipper/shredder chamber there are 14 carbon steel cutting blades (hammers) that are mounted in rows across the chamber. See Photo 3-3. These cutting blades rotate at speeds up to 2600 RPM. Material that is fed into the Shredder Hopper is shredded and ground when the cutting blades force the material against the chamber baffles and discharge screen. When the material has been shredded finely enough, it is forced out through the perforations in the discharge screen.

Complete details on how and when to use the shredding function can be found in Section 4 of this Manual.

! DANGER

ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER'S CHAMBER ROTATE WHEN THE ENGINE IS STARTED. CONTACT WITH ROTATING CUTTING 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.

! DANGER

SHREDDED PARTICLES CAN KICK BACK UP THROUGH THE SHREDDER HOPPER INLET. THE RETAINER FLAP IS DESIGNED TO REDUCE THE KICK BACK OF PARTICLES AND MUST BE IN PLACE AND SECURELY FASTENED AT ALL TIMES.

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.

SECTION 3: FEATURES AND CONTROLS

2. Chipper Chute (Inlet)

The side mounted Chipper Chute (see Photo 3-1) lets you process larger, heavier material (up to 3-inches in diameter) that the Shredder Hopper is not designed to handle.

Material fed into the Chipper Chute is turned into chips by two revolving chipper blades that are mounted on the cylinder assembly. See Photo 3-3. The Chipper Chute directs the material into the path of the chipper blades, thereby shearing chips from the material.

When the engine is running, the chipper blades and the shredder cutting blades revolve at the same time and at the same engine RPM speed. The chips are discharged through the same discharge screen perforations as in the shredding operation.

Complete details on how and when to use the chipping function are provided in Section 4 of this Manual.

DANGER

CONTACT WITH INTERNAL 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.

MAINTENANCE AND SERVICE SHOULD ONLY BE PERFORMED 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 MATERIAL OR BLOCKAGES.

WARNING

DO NOT OPERATE THE CHIPPER/SHREDDER UNLESS THE CHIPPER CHUTE EXTENSION IS PROPERLY BOLTED TO THE CHIPPER CHUTE BASE. SERIOUS PERSONAL INJURY CAN RESULT IF THE CHIPPER CHUTE EXTENSION IS NOT SECURELY ATTACHED.

3. Chipper/Shredder Chamber

The chipper/shredder chamber contains a cylinder assembly that is bolted to the cylinder drive shaft. The cylinder drive shaft is belt-driven by the engine drive shaft.

The 14 shredder cutting blades and 2 chipper cutting blades mentioned previously are mounted on the cylinder assembly. When the engine is running, the shredder cutting blades and the chipper cutting blades revolve at the same time—thus making either the shredding or chipping functions available to you. See Figure 3-2 and Photo 3-3 for views of the inside of the chamber.

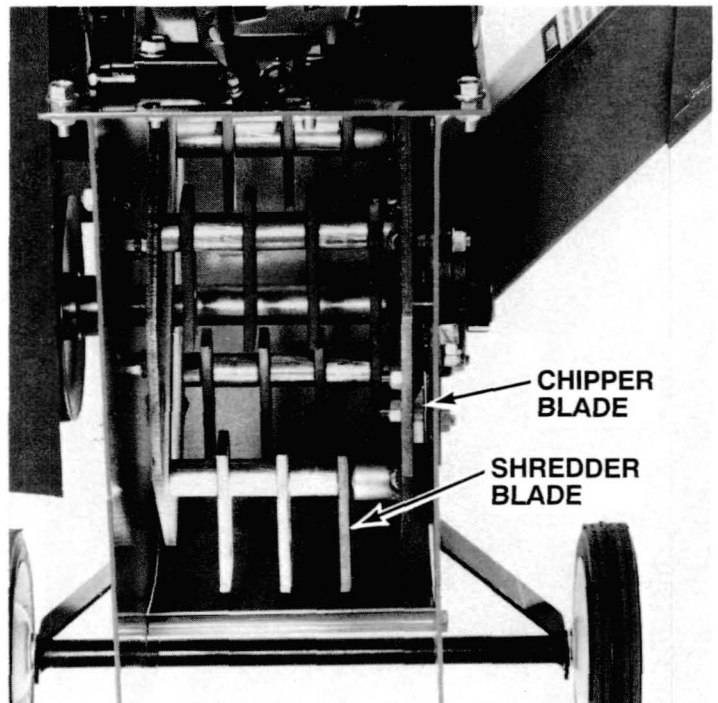


PHOTO 3-3: This view of the inside of the chipper/shredder chamber shows the location of the shredder cutting blades and chipper cutting blades. The discharge deflector panel and the discharge screen have been removed for photo purposes only.

4. Discharge Opening and Discharge Screen

The discharge opening is located at the bottom of the machine—see Photo 3-1. This is where shredded or chipped materials exit once they have been processed.

Inside the discharge opening there is a steel discharge screen (see Photo 3-4). The discharge screen is held in place with four long screws and locknuts. The 3/4-inch diameter holes in the discharge screen not only provide an exit from the chipper/shredder chamber, but the diameter of the holes determines how finely materials are shredded. Materials cannot be discharged until they have been reduced to less than the hole size in the screen.

SECTION 3: FEATURES AND CONTROLS

The discharge screen can be removed for cleaning. The procedure for removing and reinstalling the discharge screen is provided in Section 5 of this Manual.

DANGER

CONTACT WITH INTERNAL 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.

MAINTENANCE AND SERVICE, INCLUDING CLEARING PROCESSED MATERIAL, SHOULD ONLY BE PERFORMED 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 DISCHARGED MATERIALS OR BLOCKAGES.

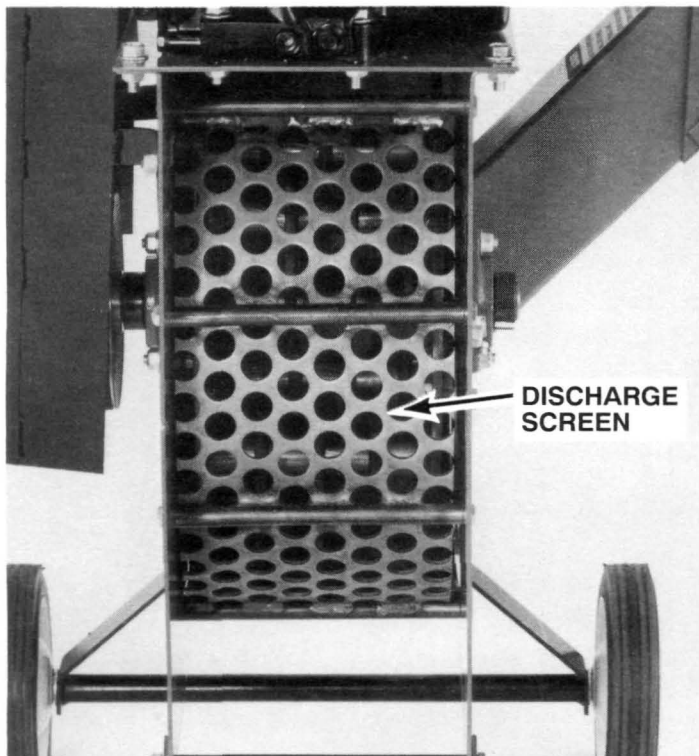


PHOTO 3-4: The discharge screen is shown above. The discharge deflector panel has been removed for photo purposes only. Always replace the discharge deflector panel before operating the unit. Shredder blades cut 1/4-inch away from discharge screen—KEEP HANDS AND FEET AWAY from discharge area during operation!

5. Power Transmission Function

A centrifugal clutch is mounted on the engine shaft as shown in Photo 3-5. This clutch automatically disengages for easy starting of the engine. After the engine starts, the clutch automatically engages at a preset engine speed.

If the engine slows down when you are feeding material into the chipper/shredder, be sure to allow the engine speed to recover before continuing to feed material. If you continue to feed material into the machine while the engine speed is too slow, you risk damage to the centrifugal clutch.

A V-belt, which goes from the centrifugal clutch to the pulley on the end of the cylinder shaft, transfers power from the clutch to the cylinder shaft. This, in turn, makes the cylinder assembly rotate. Proper belt tension must be maintained for optimum performance. Refer to Section 5 for belt adjustment instructions.

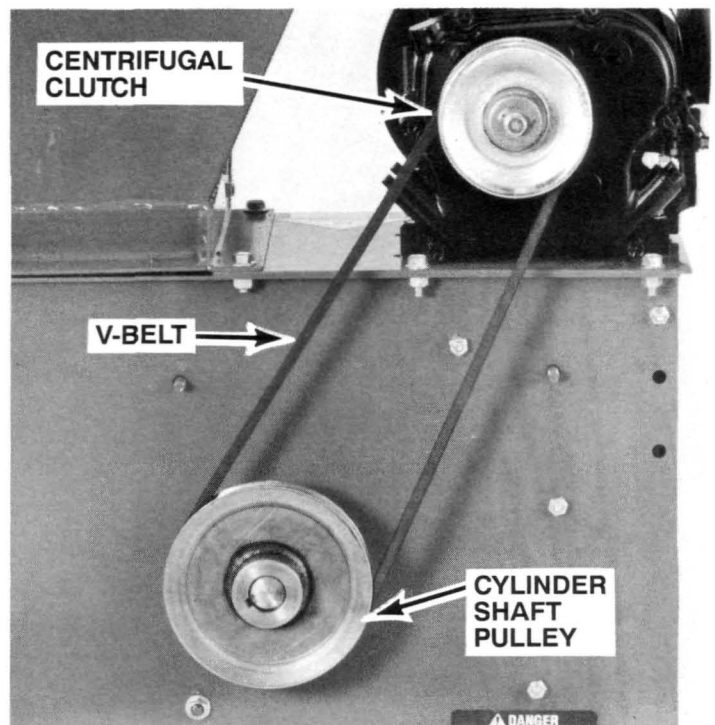


PHOTO 3-5: The centrifugal clutch and V-belt system. The belt guard has been removed for photo purposes only. Always replace the belt guard before operating the unit.

Engine Controls

The following information describes important controls on your engine. Additional information on how to operate and care for your engine is given in the engine manufacturer's owner's manual which was included in your chipper/shredder's literature package. Please read that manual carefully and save it for future reference.

SECTION 3: FEATURES AND CONTROLS

NOTE: The engine on your chipper/shredder does not have a throttle control as the operating speed has been preset at the factory. Do not attempt to alter the preset engine speed. Engine speed adjustments should be performed only by an authorized engine dealer.

1. Engine OFF/ON Lever

The engine is equipped with an OFF/ON lever that must be activated when stopping or starting the engine.

This lever is located above the recoil starter assembly. See Photo 3-6. Before starting the engine, slide the lever to the ON position. To stop the engine, slide the lever to the OFF position.

EMERGENCY ENGINE STOPPING — If the OFF/ON lever does not stop the engine, use the Choke Control lever to stop the engine. Simply move the Choke Control lever to its CHOKE position.

After stopping the engine with the Choke Control lever, be sure that the shut-off problem is diagnosed and repaired before you again start the engine. Regularly using the Choke Control lever to shut the engine off could damage the engine.

2. Engine Choke Control

The carburetor choke allows you to regulate the air-fuel mixture to make starting a cold engine easier.

The choke control lever is located directly above the OFF/ON lever (see Photo 3-6). Before starting the engine, slide the choke lever as far as possible toward the CHOKE position. As soon as the engine starts, slowly return the lever to the RUN position.

Do not operate the engine with the choke lever in a partial "Choke" position. Excessive speeds may occur which could result in personal injury or damage to the engine.

NOTE: It may not be necessary to choke the engine if the engine is still warm from previous operation.

3. Rewind Starter

The engine is started by pulling the rewind starter located at the front of the engine. Detailed instructions for operating the rewind starter are given in Section 4 of this manual.

Do not attempt to start the engine until you have carefully read and followed all of the operating instructions in that Section and the rest of this Manual.



PHOTO 3-6: OFF/ON lever and Choke Control lever.

SECTION 4: OPERATING INSTRUCTIONS

Now that you are familiar with the Chipper/Shredder's controls and how they work, use that knowledge and the following information to learn how to operate your Chipper/Shredder efficiently and safely.

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. KEEP HANDS AND FEET OUT OF DISCHARGE OPENING AND AWAY FROM DISCHARGE AREA WHEN MACHINE IS RUNNING, AND WHILE BLADES ARE COASTING TO A STOP.

READ THE COMPLETE OWNER'S MANUAL, INCLUDING THESE OPERATING INSTRUCTIONS AND SECTION 1, BEFORE USING THE CHIPPER/SHREDDER.

Selecting A Work Site

Use your chipper/shredder only on a level, earthen surface; not on a hard surface such as macadam, pavement, brick, patio block, gravel or rocks where discharged materials can bounce back up from a hard surface and strike you or others, possibly causing personal injury.

Moving the Chipper/Shredder

Your chipper/shredder can be pushed or pulled by its handle. The chipper/shredder is heavy. **Its weight must be properly balanced over the wheel axle and carefully rolled to move the chipper/shredder safely and easily. Improper handling can lead to personal injury.**

Move the chipper/shredder as follows:

- 1. STOP THE ENGINE.** Wait for all moving parts to completely stop. Disconnect the spark plug wire from the spark plug and prevent the wire from touching the spark plug.
- 2. Place both hands on the handle.**
- 3. Place one foot on the wheel axle assembly located below the handle.** Your other foot should be firmly planted on the ground. See Photo 4-1.
- 4. Use the foot that is on the axle assembly to steady the chipper/shredder while you pull slowly backwards (toward yourself) on the handle.** Use caution when pulling the machine backwards to make sure it does not fall on you.

- 5. Stop pulling when you find the balance point (center of gravity).** Keep the chipper/shredder in this position. Then, carefully take your foot off the axle assembly.
- 6. Slowly pull or push the chipper/shredder to the work area.** Be sure the path you're taking is free of obstacles. Keep a firm grip on the handle. On smooth, level ground it is usually easier to *push* the chipper/shredder. *Pulling* the chipper/shredder is usually easier if the wheels must go over ruts or obstacles.
- 7. When you reach the work area, make a complete stop.** Put your foot back on the axle assembly. Let the weight of the chipper/shredder slowly pull the handle forward until the front stand rests on the ground.



PHOTO 4-1: Moving the chipper/shredder. Never move the machine while the engine is running.

SECTION 4: OPERATING INSTRUCTIONS

Pre-Starting Checklist

- The engine must be stopped. Disconnect the spark plug wire and prevent it from touching the spark plug. Move the chipper/shredder to the work area (see "Selecting A Work Site" on Page 13).
- Check the engine oil level (see below).
- Fill the fuel tank if needed (see below).
- Make sure all bystanders and pets are at least 25 feet away from the area of operation.
- Put on your safety goggles, hearing protectors, sturdy work gloves and sturdy shoes. Do not wear jewelry or loose-fitting clothing that can get caught in moving parts.
- Visually check the Chipper Chute and the Shredder Hopper to make sure that they're empty.
- Make sure that the Chipper Chute Extension is correctly and securely installed (refer to Page 8).
- Check that the discharge screen and discharge deflector panel are correctly and securely installed. Check the discharge screen's holes to make sure they're not clogged. If they're clogged, clean them with a stick. (See Page 19, "Removing and Installing the Discharge Screen.")
- Be sure all hardware is securely fastened.
- Reconnect the spark plug wire to the spark plug.

Engine Starting and Stopping

1. Before Starting the Engine

1. CHECK ENGINE OIL LEVEL. Make sure your chipper/shredder is on a level surface. Remove the engine oil fill plug. Make sure the oil level is just to the point of overflowing from the oil fill tube. When adding oil to the engine, pour the oil slowly.

- OIL TYPE — Use a high quality detergent oil classified "For Service SC, SD, SE, SF, or SG." No special additives should be used with recommended oils.

- OIL VISCOSITY — The recommended SAE viscosity grades are: Above 40°F, use 30W or 10W-30. For 0°F and above, use 10W-30. For 20°F and below, use 5W-20 or 5W-30 (if neither of these cold weather weights is available, a synthetic oil having 5W-20, 5W-30, or 5W-40 viscosity may be used).

2. ADD GASOLINE. Fill the gasoline tank with fresh, clean, unleaded gasoline. Regular leaded gasoline can also be used if lead-free is not available. A gasoline having a minimum octane rating of 77 is recommended. DO NOT MIX OIL WITH GASOLINE.

Clean up all fuel spills before starting the engine.

NOTE: The use of gasoline which contains alcohol — such as gasohol — is not recommended. However, if gasoline with alcohol is used, it MUST NOT contain more than 10 percent Ethanol and MUST be removed from the engine during storage. DO NOT USE GASOLINE CONTAINING METHANOL. See "Engine Storage" in Section 5 of this Manual for storage instructions.

WARNING

WHEN FILLING FUEL TANK, ENGINE MUST BE STOPPED AND COOL. GASOLINE AND ITS VAPORS ARE HIGHLY FLAMMABLE AND EXPLOSIVE. USE EXTREME CAUTION WITH GASOLINE TO PREVENT SERIOUS PERSONAL INJURY.

KEEP SPARKS, FLAME AND SMOKERS' MATERIALS AWAY FROM FUELING AREA. LEAVE 1/2" AIR SPACE AT TOP OF FUEL TANK TO ALLOW FOR FUEL EXPANSION. WIPE UP ANY GASOLINE SPILLS BEFORE STARTING THE ENGINE.

DO NOT REMOVE FUEL TANK CAP WHILE ENGINE IS RUNNING.

2. To Start the Engine

1. Perform the Pre-Starting Checklist described on this page and read this Section completely.
2. Move the engine's OFF/ON lever to the ON position.
3. Move the engine's choke lever to its CHOKE position (if the engine is not warm from previous operation).
4. Securely grip the engine's starter rope handle. Slowly pull outward on the rope until you feel some resistance from engine compression. Then rapidly pull outward on the starter rope.
5. After the engine starts, let it warm for a few seconds. Then gradually move the engine choke lever to the RUN position. If the engine stalls, restart it and allow it to warm for a longer period.

NOTE: If the engine does not start after three attempts, move the engine choke lever halfway between its CHOKE and RUN positions. Then, try to start the engine again. When the engine starts, gradually move the engine choke lever to the RUN position.

6. As the engine speed increases, the centrifugal clutch will automatically transfer power through the V-belt to the cylinder shaft. **This means that, within a few seconds after the engine starts, the cutting blades inside the chipper/shredder will begin rotating at a fast speed.**

DANGER

ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER CHAMBER ARE IN OPERATION ONCE THE ENGINE IS STARTED. CONTACT WITH CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY.

KEEP HANDS, FEET, FACE AND CLOTHING OUT OF THE CHIPPER CHUTE INLET, SHREDDER HOPPER INLET AND DISCHARGE OPENING. ALSO KEEP A SAFE DISTANCE AWAY FROM THE DISCHARGE AREA AND ALL MOVING PARTS WHEN THE CHIPPER/SHREDDER IS RUNNING.

3. To Stop the Engine

STOP — Move the OFF/ON lever located on the engine to its OFF position.

LISTEN — Remove any hearing protection you are wearing. Listen to the sound of the chipper/shredder as it slows down. There is a definite audible tone that changes as the cylinder assembly slows down. Wait for all parts to come to a complete stop.

LOOK — The bearing collar on the chipper chute side of the chipper/shredder has a white line painted on it. When this white line is stationary, the cylinder assembly has stopped rotating.

EMERGENCY ENGINE STOPPING — If the OFF/ON lever does not stop the engine, use the choke control lever to stop the engine. Simply move the choke lever to its CHOKE position.

After stopping the engine with the choke control lever, be sure that the shut-off problem is diagnosed and repaired before you again start 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 10 — 45 SECONDS TO STOP. ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY.

KEEP HANDS, FEET, FACE, AND CLOTHING OUT OF THE CHIPPER CHUTE INLET, SHREDDER HOPPER INLET, AND DISCHARGE OPENING. ALSO KEEP A SAFE DISTANCE AWAY FROM THE DISCHARGE AREA AND ALL MOVING PARTS WHEN THE CHIPPER/SHREDDER IS RUNNING.

Materials Selection Guide

To enjoy the greatest benefits from your machine, it is important to know which materials are best fed into the shredder hopper and which ones are best fed into the chipper chute.

Under no circumstances should you feed metal, glass, bottles, plastic, cans, rocks or other such foreign objects into your equipment! Use organic materials only! Please see the examples of appropriate materials for shredding and chipping that follow.

1. Materials Suitable for the Shredder (Placed in Shredder Hopper)

Due to the wide variety of materials that can be shredded, and their unique physical characteristics, we suggest that you feed *limited quantities* of any material to begin with. Bulk and lengths can be increased if you find the material is being processed without any difficulty.

Be sure not to overload the shredder. Overloading will cause the engine speed to decrease significantly and may result in damage to the centrifugal clutch or V-belt.

Materials suitable for shredding include:

- Twigs and branches—up to 1/2-inches in diameter. Several small branches or twigs can be fed into the shredder hopper at the same time, providing their combined diameter is 1/2-inch or less. Long branches should be cut into more manageable 3 to 5-foot lengths before feeding them into the shredder hopper.
- Leaves, grass clippings, and all other light, loose materials. These materials process most easily.
- Organic waste materials and organic garbage (be sure to first remove all metal, bottles, cans, rocks, and plastic).
- Sections of vines that are less than 1/2-inch diameter. Long vines should be cut to manageable lengths (not more than 2 or 3-feet in length).
- Wood chips previously processed by the chipper, if even finer particles are required.
- Paper or corrugated board.
- Stalks and most brush material.
- Hay and straw
- Manure

NOTE: Wet, soggy or "green" (freshly cut) materials require special shredding techniques. See Page 18 for instructions on how to best process these materials.

SECTION 4: OPERATING INSTRUCTIONS

IMPORTANT — Do not allow processed material to build up beneath or beside the chipper/shredder 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 shredder hopper or chipper chute.

If shredded material builds up beneath the machine, 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. Then use a long stick or long-handled shovel to remove the material. Never use your hands or feet to remove material!

DANGER

ROTATING CUTTING BLADES CUT WITHIN 1/4-INCH FROM THE DISCHARGE SCREEN. NEVER PUT YOUR HANDS OR FEET NEAR THE DISCHARGE OPENING OR DISCHARGE AREA WHILE THE MACHINE IS OPERATING! CONTACT WITH CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY.

IF SHREDDED MATERIAL BUILDS UP BENEATH THE MACHINE 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.

2. Materials Suitable for the Chipper (Placed in Chipper Chute)

- Sticks and branches up to 3-inches in diameter, depending upon the hardness of the wood. Wood containing extremely hard knots will not process very well. It is best to chip branches, if possible, while they are still fresh. Green wood chips more easily than dry.
- Vines and tough stalks from 1 to 3-inches in diameter (vines less than 1/2-inch in diameter should not be processed as they can wrap around the chipper shaft and cause sudden jerking). You should trim long vines and stalks to manageable lengths of 2 or 3-feet before chipping them.
- Lumber up to 3-inches in diameter. Be sure to remove nails and metal parts from any lumber before feeding it into the chipper chute.

DANGER

ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER CHAMBER ARE IN OPERATION ONCE THE ENGINE IS STARTED. CONTACT WITH CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY.

KEEP HANDS, FEET, FACE AND CLOTHING OUT OF THE CHIPPER CHUTE INLET, SHREDDER HOPPER INLET AND DISCHARGE OPENING. ALSO KEEP A SAFE DISTANCE AWAY FROM THE DISCHARGE AREA AND ALL MOVING PARTS WHEN THE CHIPPER/SHREDDER IS RUNNING.

Using the Chipper

IMPORTANT — For your safety, be sure to wear safety goggles, gloves, and hearing protection. Review and follow the safety rules in Section 1 and in other Sections of this Manual.

After the engine is started and has built up speed, the chipper will be ready for you to use.

Position yourself on either side of the chipper chute. Grip one end of a branch (maximum diameter of 3-inches) 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 chute — keep your arms perpendicular (at a 90° angle) to the branch. See Photo 4-2. Keep the branch away from your body to avoid any bounce back, and do not overreach. Hold the branch firmly so you can control the rate of feed at all times.

All branches should be *evenly rotated* when fed into the chipper. This helps prevent the bark from turning into long strips or strings that can get tangled around the internal cylinder shaft. It also improves the cutting action of the chipper blades.

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

Pay close attention to engine speed. If the engine slows down, reduce feed pressure and let the engine build up to full speed again before continuing. Avoid overloading the chipper as this could result in damage to the belt or centrifugal clutch.

NOTE: If it is difficult to feed a branch into the chipper, the chipper blades could be dull or that particular piece of wood could be extremely hard. You might try some other

SECTION 4: OPERATING INSTRUCTIONS

wood to see if it feeds more easily. If it doesn't, then it's a good idea to check the condition of the two chipper blades. Shut the engine off, allow all moving parts to stop completely, and disconnect the spark plug wire and prevent it from touching the spark plug. Then refer to "Chipper Blade Replacement" on Page 22 for detailed instructions.

DANGER

DO NOT PUT HANDS INSIDE CHIPPER CHUTE. ROTATING CUTTING BLADES INSIDE CHUTE WILL CAUSE SERIOUS PERSONAL INJURY.



PHOTO 4-2: Feeding a branch into the chipper chute. Keep arms perpendicular (at 90°) to the branch.

Using the Shredder

IMPORTANT — For your safety, be sure to wear safety goggles, gloves, and hearing protection. Review and follow the safety rules in Section 1 and in other Sections of this Manual.

Once the engine has been started, 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.

You can feed material into the shredder hopper from all sides except for the side where the engine is located. At all times be sure to avoid the hot muffler on the engine.

When feeding the shredder, stand a foot or two away from the hopper opening and keep your arms and hands parallel to the ground, and several inches above the top edge of the hopper. See Photo 4-3. Do not point your hands or arms downward into the hopper opening.

A steady flow of materials into the shredder hopper provides the most effective results. The rate of feed for small branches, vines (short 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 the material loosely and be ready to release it quickly.

NOTE: It is best to cut long branches and vines into more manageable lengths before feeding them into the shredder hopper.

DANGER

ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER CHAMBER ARE IN OPERATION ONCE THE ENGINE IS STARTED. CONTACT WITH CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY.

KEEP HANDS, FEET, FACE AND CLOTHING OUT OF THE CHIPPER CHUTE INLET, SHREDDER HOPPER INLET AND DISCHARGE OPENING. ALSO KEEP A SAFE DISTANCE AWAY FROM THE DISCHARGE AREA AND ALL MOVING PARTS WHEN THE CHIPPER/SHREDDER IS RUNNING.

DANGER

THE ROTATING SHREDDER CUTTING 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.

SECTION 4: OPERATING INSTRUCTIONS

Under certain conditions, it may become necessary to push bulky material into the shredder hopper. **DO NOT USE YOUR HANDS!** Instead, use a long stick (up to 1/2-inch in diameter) that will be shredded if it gets into the cutting area.

When you have loose materials to process, such as leaves, straw, or grass clippings, just drop them into the shredder hopper, then push them down past the protective flap with your stick. Do not allow combustible materials to contact the engine.

DANGER

TO AVOID A FIRE HAZARD, KEEP LEAVES, GRASS AND OTHER COMBUSTIBLE MATERIALS AWAY FROM THE ENGINE AND MUFFLER!

IMPORTANT — If the engine slows down while you're feeding materials, stop and allow the engine to come back up to full speed before attempting to feed more material into the shredder hopper.

Feed the shredder slowly until you are very familiar with its operation. MATERIALS AND CONDITIONS VARY CONSIDERABLY. AFTER A LEARNING PERIOD, YOU WILL KNOW HOW TO PROCESS DIFFERENT MATERIALS BEST.

All shredded material will be forced through the discharge screen in the bottom of your chipper/shredder. Always keep clear of the discharge opening and discharge area, since the material exits with considerable velocity.

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.



PHOTO 4-3: Feeding material into the Shredder Hopper. 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.

Shredding Wet, Soggy, or Green Materials

Soft, wet "green" materials are the most difficult to process and may stick to the sides of the shredder hopper or clog the discharge screen. To avoid or reduce sticking and clogging:

1. If possible, let wet or fresh-cut material dry for a few days before shredding it.
2. Keep some dry chips, twigs or other material on hand to run through the shredder either at the same time or in alternate batches. The dry material provides a self-cleaning action. Alternating batches of wet and dry material usually produces the best results.
3. If the discharge screen becomes clogged, shut off the engine, disconnect the spark plug wire and move the wire away from the plug, and wait for all moving parts to stop. Then refer to "Removing and Installing the Discharge Screen" on Page 19 for instructions on how to remove and clean the screen.

SECTION 5: MAINTENANCE

WARNING

MOVING PARTS ON YOUR CHIPPER/SHREDDER 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, AND ALLOW THE ENGINE TO COOL BEFORE PERFORMING ANY MAINTENANCE OR SERVICE PROCEDURES.

Removing and Installing the Discharge Screen

The following procedures describe how to remove and reinstall the discharge screen. You will need two 1/2-inch wrenches to perform these procedures.

To Remove the Discharge Screen:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the two 5/16"-18 locknuts and 5/16" flat washers that hold the belt guard in place. Remove the guard as shown in Photo 5-1.
3. Remove the 5/16"-18 x 7-1/2" screw and 5/16"-18 locknut that secures the top of the discharge deflector panel in place. See "A" in Photo 5-2. Swing the panel down.
4. Remove the four 5/16"-18 x 7-1/2" screws and 5/16"-18 locknuts that secure the discharge screen in place. See "B" in Photo 5-2. Remove the discharge screen as shown in Photo 5-3.

DANGER

ROTATING CUTTING BLADES INSIDE THE DISCHARGE OPENING WILL CAUSE SERIOUS PERSONAL INJURY. BLADES CUT 1/4-INCH FROM THE DISCHARGE SCREEN!

BEFORE REMOVING OR INSTALLING THE DISCHARGE SCREEN, 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.

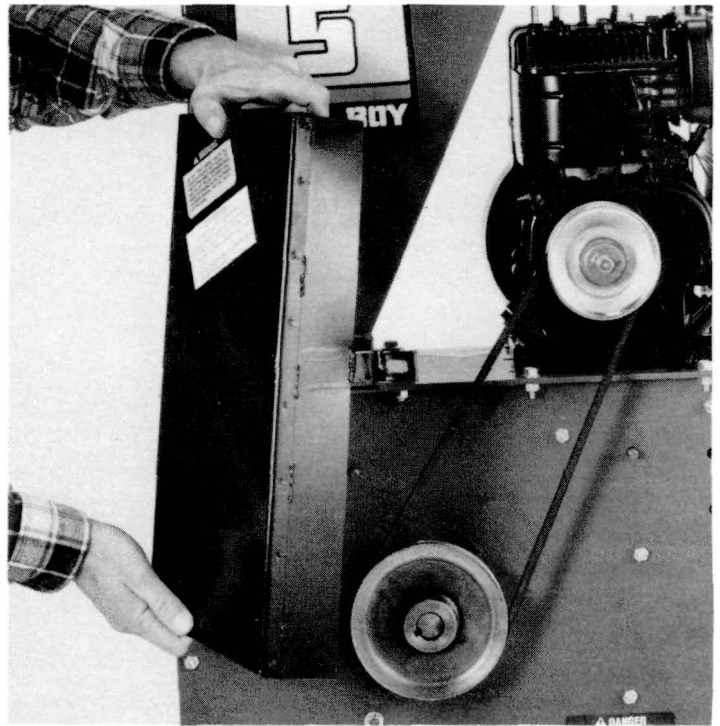


PHOTO 5-1: Remove the belt guard. (Always remember to reinstall the belt guard before operating the machine again.)

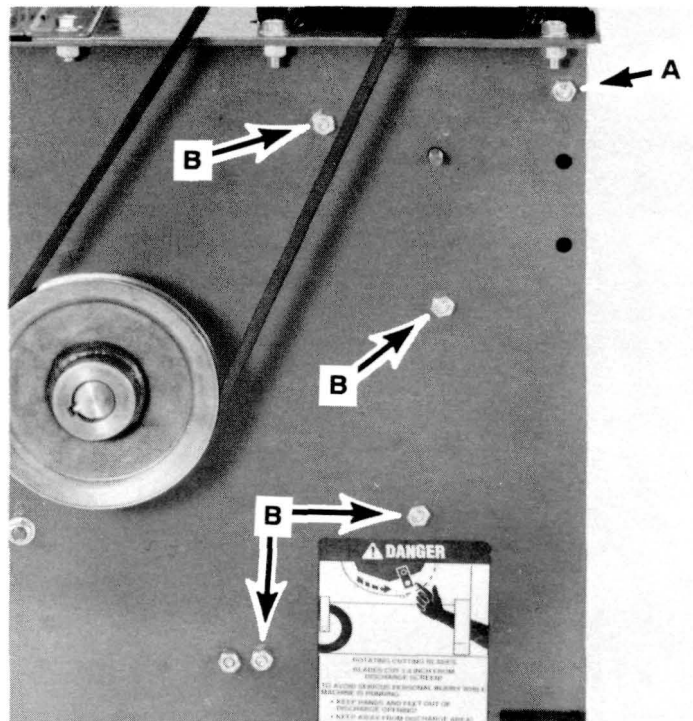


PHOTO 5-2: Remove screws "A" and "B" to unhinge discharge deflector panel and remove discharge screen.

SECTION 5: MAINTENANCE

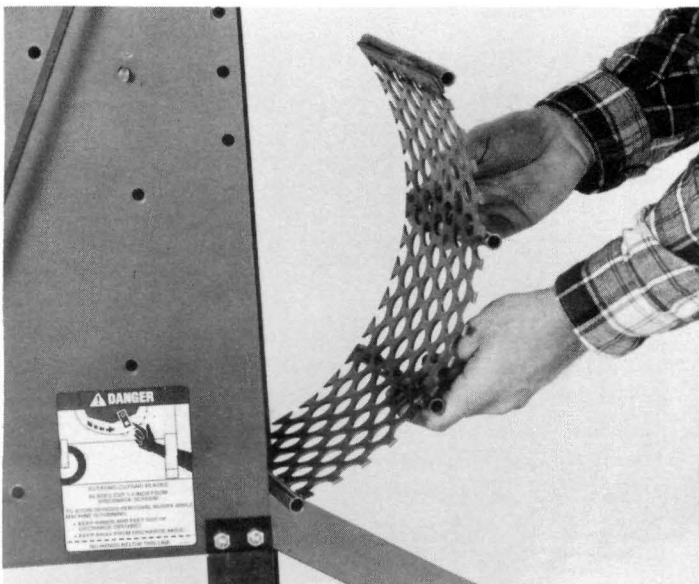


PHOTO 5-3: Remove the discharge screen. Reinstall the screen, deflector panel and belt guard before operating the unit.

To Install the Discharge Screen:

1. Look at the two ends of the screen. The upper end has a tube welded to the outside face of the screen, approximately 1/16-inch below the edge. The lower end has a tube welded to the perforated edge of the screen.
2. Insert the screen inside the chamber, aligning the four tubes on the screen with the four mounting holes in the mainframe. Replace the four 5/16"-18 x 7-1/2" screws and 5/16"-18 locknuts. Tighten the locknuts securely.
3. Swing the discharge deflector panel up and replace the 5/16"-18 x 7-1/2" screw and 5/16"-18 locknut that secure the panel in place. Tighten the locknut securely.
4. Reinstall the belt guard and replace the two 5/16"-18 locknuts and 5/16" flat washers that hold it in place. Tighten the locknuts securely.

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY. DO NOT OPERATE THE CHIPPER/SHREDDER UNLESS THE DISCHARGE SCREEN AND DISCHARGE DEFLECTOR PANEL ARE BOLTED IN PLACE.

WARNING

DO NOT OPERATE THE CHIPPER/SHREDDER WITHOUT THE BELT COVER IN PLACE. ROTATING BELT AND PULLEYS CAN CAUSE SEVERE PERSONAL INJURY.

WARNING

MOVING PARTS ON YOUR CHIPPER/SHREDDER 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, AND ALLOW THE ENGINE TO COOL BEFORE PERFORMING ANY MAINTENANCE OR SERVICE PROCEDURES.

Chipper/Shredder Lubrication

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the belt guard using the procedure described in "To Remove the Discharge Screen" on Page 19. After every 15 hours of operation, apply several drops of SAE 30 weight oil to the area of the rotating ring on the centrifugal clutch. See Photo 5-4. Avoid getting oil on the belt or the V-groove of the pulley. Be sure to securely replace the belt guard after oiling the clutch.
3. The cylinder shaft bearing located next to the chipper chute (see Photo 5-5) is equipped with a grease fitting that should be greased after every 15 hours of operation with #2 multi-purpose lithium grease. Install a grease gun (available at most hardware or automotive stores) onto the fitting and gently apply two or three strokes. Wipe off any excess grease. Do the same with the cylinder shaft bearing that is located on the opposite side of the machine, behind the cylinder shaft belt pulley. You do not need to remove the belt guard to access that bearing.



PHOTO 5-4: Apply oil to rotating ring on centrifugal clutch. Be sure to reinstall the belt guard before operating the unit.

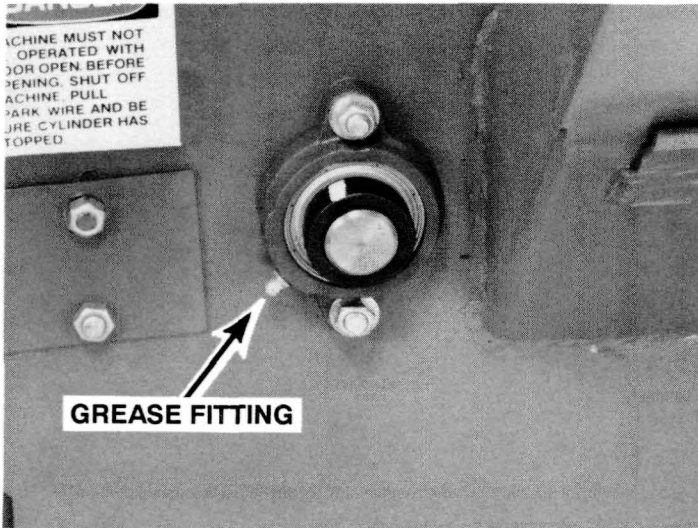


PHOTO 5-5: Apply grease to grease fitting on cylinder shaft bearing shown above and to similar bearing located behind cylinder shaft belt pulley on opposite side of machine.

WARNING

MOVING PARTS ON YOUR CHIPPER/SHREDDER 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, AND ALLOW THE ENGINE TO COOL BEFORE PERFORMING ANY MAINTENANCE OR SERVICE PROCEDURES.

V-Belt Adjustment or Replacement

The following procedures describe how to check for proper tension on the belt, how to adjust the belt tension, and how to replace the belt. You will need a straightedge (18-inches or longer) to check the tension and two 1/2-inch wrenches to adjust the tension or replace the belt.

Check the tension after the first few hours of operation and adjust the tension if necessary. The tension should also be checked whenever power does not seem to be properly transmitted from the engine to the cylinder shaft.

If the belt becomes excessively worn (so that power from the centrifugal clutch is not being transmitted to the cylinder assembly), you should install a new belt.

To Check the Belt Tension:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the belt guard using the procedure described in Step 2 of "To Remove the Discharge Screen" on Page 19.
3. Place a straightedge on top of the pulleys as shown in Photo 5-6. Using moderate finger pressure, press down in the middle of the belt. The tension is correct if the top edge of the belt deflects between 1/4-inch and 1/2-inch below the bottom of the straightedge. If the belt deflection is correct, reinstall the belt guard and secure it in place with the two flat washers and locknuts. If the belt deflection needs to be adjusted (either loosened or tightened), go on to the following procedure.

To Adjust the Belt Tension:

1. Unhinge the top of the discharge deflector panel using the procedure described in Step 3 of "To Remove the Discharge Screen" on Page 19.
2. Using two 1/2-inch wrenches, loosen the four screws and locknuts that secure the base of the engine to the chipper/shredder engine mounting plate. Slide the engine toward the shredder hopper to loosen the belt or away from the shredder hopper to tighten the belt. When the tension is correct, tighten the four engine mounting screws securely.
3. Swing the discharge deflector panel up and replace the screw and locknut that secure the panel in place. Tighten the locknut securely.
4. Reinstall the belt guard and replace the two flat washers and locknuts that hold it in place. Tighten the locknuts securely.

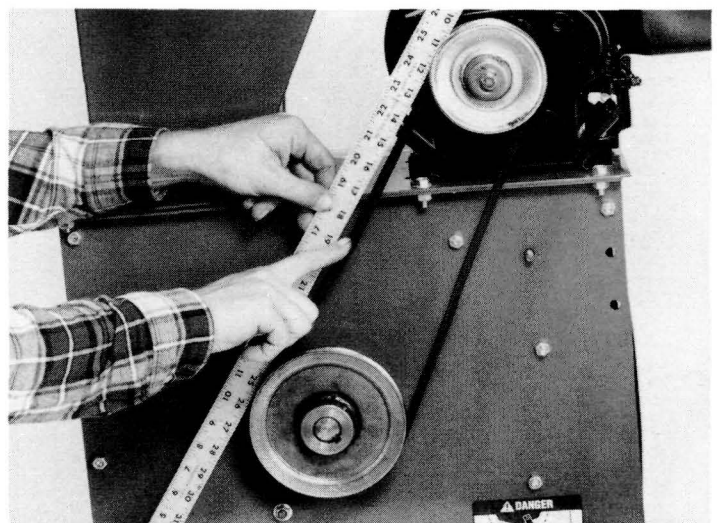


PHOTO 5-6: Checking belt tension. Replace belt guard before operating the chipper/shredder again.

SECTION 5: MAINTENANCE

To Remove and Install a Belt:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the belt guard using the procedure described in Step 2 of "To Remove the Discharge Screen" on Page 19.
3. Try to "ride" the belt off the cylinder shaft belt (lower) pulley with your fingers. If you need more slack in the belt, you will have to loosen the four engine mounting screws by following the procedures described in Steps 1 and 2 of "To Adjust the Belt Tension" on Page 21.
4. Place the belt in the grooves of the two pulleys and adjust the belt tension using the procedures described on Page 21. When the tension is correct, tighten the four engine mounting screws securely.
5. Swing the discharge deflector panel up and replace the screw and locknut that secure the panel in place. Tighten the locknut securely.
6. Reinstall the belt guard and replace the two flat washers and locknuts that hold it in place. Tighten the locknuts securely.

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY. DO NOT OPERATE THE CHIPPER/SHREDDER UNLESS THE DISCHARGE SCREEN AND DISCHARGE DEFLECTOR PANEL ARE BOLTED IN PLACE.

WARNING

DO NOT OPERATE THE CHIPPER/SHREDDER WITHOUT THE BELT COVER IN PLACE. ROTATING BELT AND PULLEYS CAN CAUSE SERIOUS PERSONAL INJURY.

Chipper Blade Replacement

WARNING

THE CHIPPER BLADES ARE EXTREMELY SHARP. TO AVOID SERIOUS PERSONAL INJURY, HANDLE THE BLADES WITH EXTREME CARE DURING SERVICE OR MAINTENANCE.

SHUT THE ENGINE OFF, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE PERFORMING ANY MAINTENANCE ON THE CHIPPER/SHREDDER.

Over a period of time, the chipper blades (mounted on the revolving cylinder assembly) will become dull with hard use. The chipper blades should be sharpened or replaced when the unit no longer cuts as efficiently as when new.

The following procedures describe how to remove and install the chipper blades. You will need a 3/16-inch hex key (Allen) wrench and a 1/2-inch wrench to perform these procedures.

To Remove the Chipper Blades:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. There is a chipper blade access door located on the chipper chute side of the unit. Remove the two 5/16"-18 locknuts that hold the chipper blade access door in place. Remove the door, revealing the cylinder assembly plate to which the blades are mounted. Do not reach inside the opening as the chipper blades are *extremely* sharp! See Photo 5-7.
3. Remove the discharge screen inside the shredder chamber using the procedures described in "To Remove the Discharge Screen" on Page 19.
4. Rotate the cylinder assembly slowly, by hand, until you see one of the chipper blades through the access door opening.
5. Two hex socket flat screws and locknuts secure each chipper blade to the cylinder plate. Place the 1/2-inch wrench on the locknut and use the 3/16-inch hex key wrench to remove the screw. See Photo 5-7.
6. Inspect the blade's cutting edge. If it is dull or nicked, it should be sharpened at a 60° angle. If you do not have the experience and the equipment needed to sharpen a tempered steel blade properly, take the blade to a professional sharpening service. **If the blade is cracked or damaged, discard the blade. Never use a cracked or damaged blade as pieces of the blade could break off and cause personal injury.**

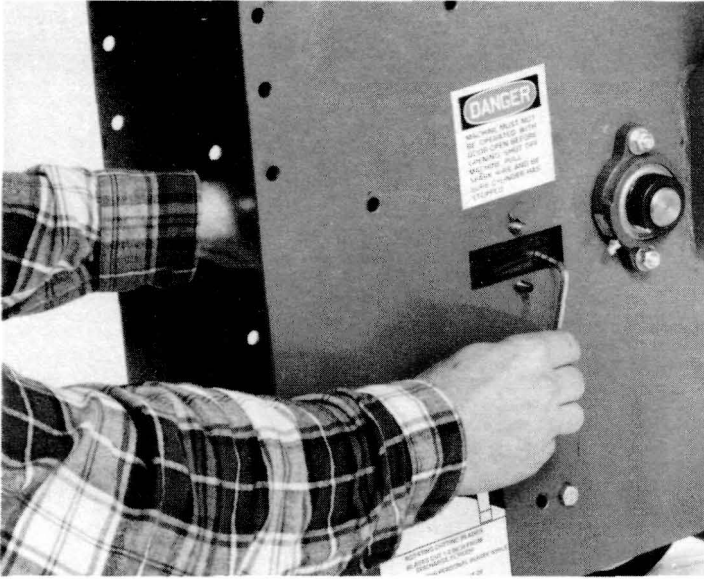


PHOTO 5-7: Removing a chipper blade. Reinstall chipper blade access door, discharge screen, discharge deflector panel and belt guard before operating the unit.

To Install the Chipper Blades:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Clean the surfaces on which the blades will be seated.
3. Position the blade on the cylinder plate. The sharpened edge must be facing away from the cylinder plate and be pointing upward (upward as viewed through the access door opening).
4. Install two NEW hex socket flat screws and two NEW locknuts, tightening them securely. The torque value tightening requirement is 14 to 19 ft./lbs.
5. Reinstall the access door and replace the two locknuts that hold it in place. Tighten the two locknuts securely.
6. Reinstall the discharge screen, the discharge deflector panel and the belt guard, using the procedures described in "To Install the Discharge Screen" on Page 20.
7. After the first hour of operation, recheck the chipper blades to make sure they are securely fastened in place.

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SEVERE PERSONAL INJURY. DO NOT OPERATE THE CHIPPER/SHREDDER UNLESS THE CHIPPER BLADE ACCESS DOOR, DISCHARGE SCREEN AND DISCHARGE DEFLECTOR PANEL ARE BOLTED IN PLACE.

WARNING

DO NOT OPERATE THE CHIPPER/SHREDDER WITHOUT THE BELT GUARD IN PLACE. ROTATING BELT AND PULLEYS CAN CAUSE SEVERE PERSONAL INJURY.

Cylinder Maintenance and Shredder Blades Replacement

Do not disassemble the cylinder assembly or attempt to replace any of the shredder blades on the cylinder. If you believe that either of these items needs service, take your chipper/shredder to your Authorized Service Dealer for repairs.

Removing and Replacing the Centrifugal Clutch

The centrifugal clutch (with attached belt pulley) is located on the engine drive shaft. Allowing the centrifugal clutch to constantly slip and overheat (usually due to overloading the shredder or chipper) can lead to premature clutch failure. If the clutch is damaged, it must be rebuilt or replaced. The clutch can easily be removed and replaced (purchase a new clutch from your Authorized Service Dealer or the factory). However, rebuilding should be done only by your Authorized Service Dealer.

IMPORTANT—Use only an original-equipment centrifugal clutch assembly or clutch repair part(s). A clutch assembly or repair part(s) manufactured by others could present a safety hazard or result in reduced performance even though they may fit on this chipper/shredder.

The following procedures describe how to remove and replace the clutch. You will need a 1/2-inch wrench and a rubber mallet to perform these procedures.

WARNING

MOVING PARTS ON YOUR CHIPPER/SHREDDER 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, AND ALLOW THE ENGINE TO COOL BEFORE PERFORMING ANY MAINTENANCE OR SERVICE PROCEDURES.

SECTION 5: MAINTENANCE

To Remove the Centrifugal Clutch:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the belt guard using the procedure described in Step 2 of "To Remove the Discharge Screen" on Page 19.
3. Remove the V-belt using the procedures described in "To Remove and Install a Belt" on Page 22.
4. Remove the screw, lockwasher and thick flat washer that attach the clutch to the engine shaft. See Photo 5-8. The engine shaft will turn when you loosen the screw. To loosen the screw, place the closed end of the wrench on the screw and give the open end of the wrench a sharp tap with the rubber mallet (do not use a metal hammer as the hammer or the wrench could shatter and cause personal injury).
5. Carefully remove the clutch assembly from the shaft. Avoid using hammers, screwdrivers, or pinch bars which could distort the clutch drum. Save the key from the engine shaft keyway. If, after cleaning and examining the clutch, you determine that it is damaged, take it to your Authorized Service Dealer (or contact the factory) for service or replacement.

To Install the Centrifugal Clutch:

1. Press the key into the engine shaft keyway.
2. Align the keyway in the clutch with the key in the engine shaft and slide the clutch onto the shaft. Make sure that the belt pulley is toward the outside. Firmly push the clutch assembly inward to make certain it is fully seated on the engine shaft.
3. Install the lockwasher on the mounting screw, followed by the thick flat washer. Thread the screw into the engine shaft. As the screw tightens, the engine shaft will start to turn. To fully tighten the screw, place the closed end of the wrench on the screw and give the open end of the wrench a sharp tap with the rubber mallet (do not use a metal hammer as the hammer or the wrench could shatter and cause personal injury). Check to make sure that the clutch pulley is aligned with the lower belt pulley.
4. Replace the V-belt using the procedures described in "To Remove and Install a Belt" on Page 22. Then, check and adjust the belt tension using the procedures described on Page 21.
5. Reinstall the belt guard and replace the two flat washers and locknuts that hold it in place. Tighten the locknuts securely.

WARNING

DO NOT OPERATE THE CHIPPER/SHREDDER WITHOUT THE BELT GUARD IN PLACE. ROTATING BELT AND PULLEYS CAN CAUSE SEVERE PERSONAL INJURY.

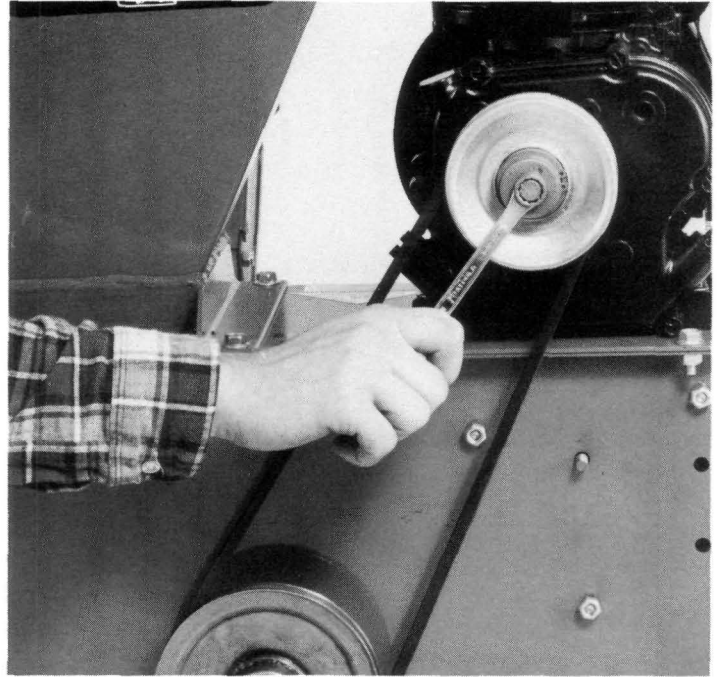


PHOTO 5-8: Removing the centrifugal clutch. Replace belt guard before operating chipper/shredder again.

Cylinder Shaft Belt Pulley Inspection

The cylinder shaft belt pulley is the lower pulley on the drive belt system. This pulley is retained on the cylinder shaft by two setscrews. Periodically inspect the pulley to make sure it is in proper alignment with the upper pulley (use a long straightedge) and that the setscrews are securely tightened. Always keep the pulley area clean to prevent damage to the pulley and the belt.

To Inspect the Cylinder Shaft Belt Pulley:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the belt guard using the procedure described in Step 2 of "To Remove the Discharge Screen" on Page 19.
3. Check the setscrews and the alignment of the pulleys. If the pulleys are not aligned, contact your Authorized Service Dealer for service advice. Reinstall the belt guard and replace the two flat washers and locknuts that hold it in place. Tighten the locknuts securely.

Shredder Hopper Retainer Flap Replacement

A plastic retainer flap is rivetted to the top cover of the shredder hopper, as shown in Photo 5-9. This flap is designed to reduce kick back of materials from the shredder hopper.

Do not operate the chipper/shredder if the flap is damaged or missing. If the flap needs to be replaced, immediately contact your local Authorized Service Dealer.

! DANGER

SHREDDED PARTICLES CAN KICK BACK UP THROUGH THE SHREDDER HOPPER INLET. THE RETAINER FLAP IS DESIGNED TO REDUCE THE KICK BACK OF PARTICLES AND MUST BE IN PLACE AND SECURELY FASTENED AT ALL TIMES.

BEFORE USING THE CHIPPER/SHREDDER, BE SURE THE RETAINER FLAP IS SECURELY FASTENED. ALSO MAKE SURE YOU ARE WEARING PROTECTIVE AND APPROVED SAFETY GOGGLES OR GLASSES.

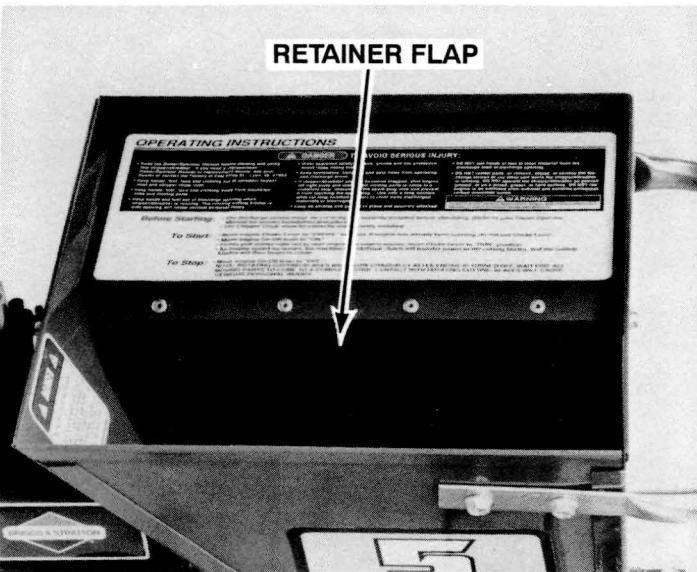


PHOTO 5-9: Do not operate the chipper/shredder if the shredder hopper retainer flap is damaged or missing.

Checking the Engine Oil Level

Check the engine oil level after each eight hours of operation or daily. BE SURE OIL LEVEL IS MAINTAINED AT THE POINT OF OVERFLOWING. Refer to "Add Oil to the Engine" on Page 8 for instructions on how to check the oil level.

Changing the Engine Oil

Change the engine oil after the first five hours of operation. After this initial oil change, change the oil after every 25 hours of operation (and even more frequently if you're operating the chipper/shredder in a very dusty or dirty environment).

The following procedure describes how to change the oil. You will need a 1/4-inch hex key (Allen) wrench, a drain pan, a funnel, and fresh oil.

To Change the Engine Oil:

1. Start the engine and allow it to warm up to operating temperature.
2. Shut the engine off, disconnect the spark plug wire and prevent the wire from touching the spark plug.
3. Remove the oil fill cap to vent the engine crankcase.
4. Have a drain pan ready to catch the old oil. Using a 1/4-inch hex key wrench, remove the oil drain plug located in the center of the engine mounting base on the fuel tank side of the engine (do not mistakenly remove the hex head screw located next to the drain plug).
5. As the oil drains, carefully tilt the chipper/shredder toward the drain hole to remove the last few ounces of oil.
6. Reinstall the drain plug, tightening it securely.
7. Refill the engine with fresh oil by referring to "Add Oil to the Engine" on Page 8.
8. Reinstall the oil fill cap, tightening it securely.

Engine Air Filter Service

The engine is equipped with a paper cartridge-type air filter. To prevent damaging dust or dirt from entering the engine or clogging the air filter, you should clean the paper cartridge yearly or after every 25 hours of operation (whichever comes first). If operating in an excessively dusty or dirty environment, you should clean the filter even more frequently.

The following procedure describes how to clean the air filter. You will need a flat blade screwdriver and some low or non-sudsing detergent.

To Clean the Air Filter:

1. Be sure that the engine is shut off, all moving parts have stopped completely, and the spark plug wire is disconnected and moved away from the spark plug.
2. Remove the two screws from the ends of the air cleaner cover. See Figure 5-10.
3. Carefully remove the cartridge from the air cleaner base, using care not to knock any loose dirt or debris down into the carburetor. Cover the carburetor opening in the air cleaner base with a clean cloth.

SECTION 5: MAINTENANCE

4. Clean the cartridge as follows:

DO NOT USE PETROLEUM SOLVENTS (SUCH AS KEROSENE) TO CLEAN THE CARTRIDGE. DO NOT OIL THE CARTRIDGE. DO NOT USE PRESSURIZED AIR TO CLEAN OR DRY THE CARTRIDGE.

- Tap cartridge gently on a flat surface.
- If cartridge is very dirty, wash it in a low or non-sudsing detergent and warm water solution.
- Rinse cartridge thoroughly (from the inside) with flowing water until the water runs clear.
- Allow the cartridge to stand and air dry thoroughly before reinstalling it on the engine.

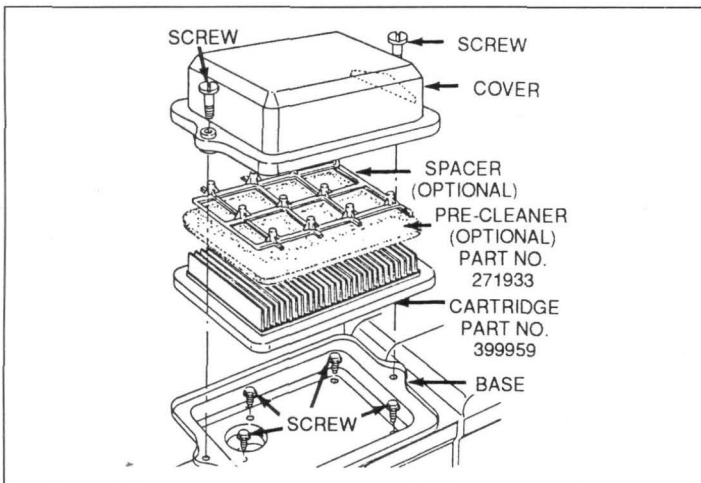


FIGURE 5-10: The air cleaner assembly.

Engine Spark Plug Service

To keep the engine operating at peak efficiency and to make sure the engine starts, you should replace the engine spark plug once a year (or every 100 hours of operation, whichever comes first). Make sure the gap on this new plug is set at 0.030-inch before installing it.

Engine Spark Arrester Service

If the engine muffler is equipped with a spark arrester screen assembly, remove it every 50 hours of operation for cleaning and inspection. Replace it if damaged. Contact your local Authorized Engine Service Dealer.

Engine Carburetor and Choke Adjustment

The carburetor has been set at the factory for best performance. If you think that the carburetor needs to be adjusted, take the chipper/shredder to an authorized engine dealer for adjustment or repairs.

Engine Cooling System Service

Grass, dirt, or wood chips can clog the engine's air cooling system. To prevent overspeeding, overheating, and engine damage, always remove dirt, grass, and other debris from the following areas: the cooling fins, engine covers, and the air intake screen just behind the starter rope. Use a brush for thorough, regular cleaning.

! DANGER

TO AVOID A FIRE HAZARD, KEEP LEAVES, GRASS AND OTHER COMBUSTIBLE MATERIALS AWAY FROM THE ENGINE AND MUFFLER!

Chipper/Shredder Storage

1. Before performing the following procedures, shut off the engine, disconnect the spark plug wire and move the wire away from the plug, and wait for all moving parts to stop.
2. Thoroughly clean the chipper/shredder.
3. Lubricate the chipper/shredder (see "Lubrication" on Page 20).
4. Be sure that all nuts, bolts, and screws are securely fastened. Inspect all visible moving parts for damage, breakage, and wear.
5. Touch up all rusted or chipped paint surfaces — sand lightly before repainting.
6. Follow the "Engine Storage" procedure on Page 27.
7. If possible, store your chipper/shredder indoors. Cover it to protect it from dust and dirt. Use a suitable protective cover (not plastic) that does not retain moisture.

IMPORTANT — Never cover the chipper/shredder while the engine and exhaust areas are still warm.

! WARNING

NEVER STORE YOUR CHIPPER/SHREDDER INDOORS OR IN AN ENCLOSED, POORLY VENTILATED AREA IF GASOLINE REMAINS IN THE GAS TANK. FUMES FROM THE GAS TANK MAY REACH AN OPEN FLAME, SPARK, OR PILOT LIGHT FROM A FURNACE, WATER HEATER, CLOTHES DRYER, CIGARETTE, ETC.

FAILURE TO FOLLOW THIS INSTRUCTION CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

Engine Storage

Gasoline must be removed or treated to prevent gum deposits from forming in the tank, filter, hose, and carburetor during storage. Also during storage, alcohol blended gasoline that uses ethanol or methanol (sometimes called gasohol) attracts water. It acts on the gasoline to form acids which damage the engine.

1. To remove gasoline, run the engine until the tank is empty and the engine stops from lack of fuel.
2. If you do not want to remove the gasoline, a fuel stabilizer (available at your authorized dealer) may be added to any gasoline left in the tank to minimize gum deposits and acids. If the tank is almost empty, mix stabilizer with fresh gasoline in a separate container and add some to the

tank. ALWAYS FOLLOW THE INSTRUCTIONS ON THE STABILIZER CONTAINER. THEN RUN ENGINE AT LEAST 10 MINUTES AFTER THE STABILIZER IS ADDED TO ALLOW THE MIXTURE TO REACH THE CARBURETOR.

You can keep your engine in good condition during storage by:

1. Changing the oil before storage.
2. Lubricating the piston/cylinder area. You can do this by first removing the spark plug. Then squirt approximately 1/2 ounce of clean engine oil into the spark plug hole. Cover the spark plug hole with a rag to absorb oil spray and then pull the starter rope two or three times. Finally, reinstall the spark plug.

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.

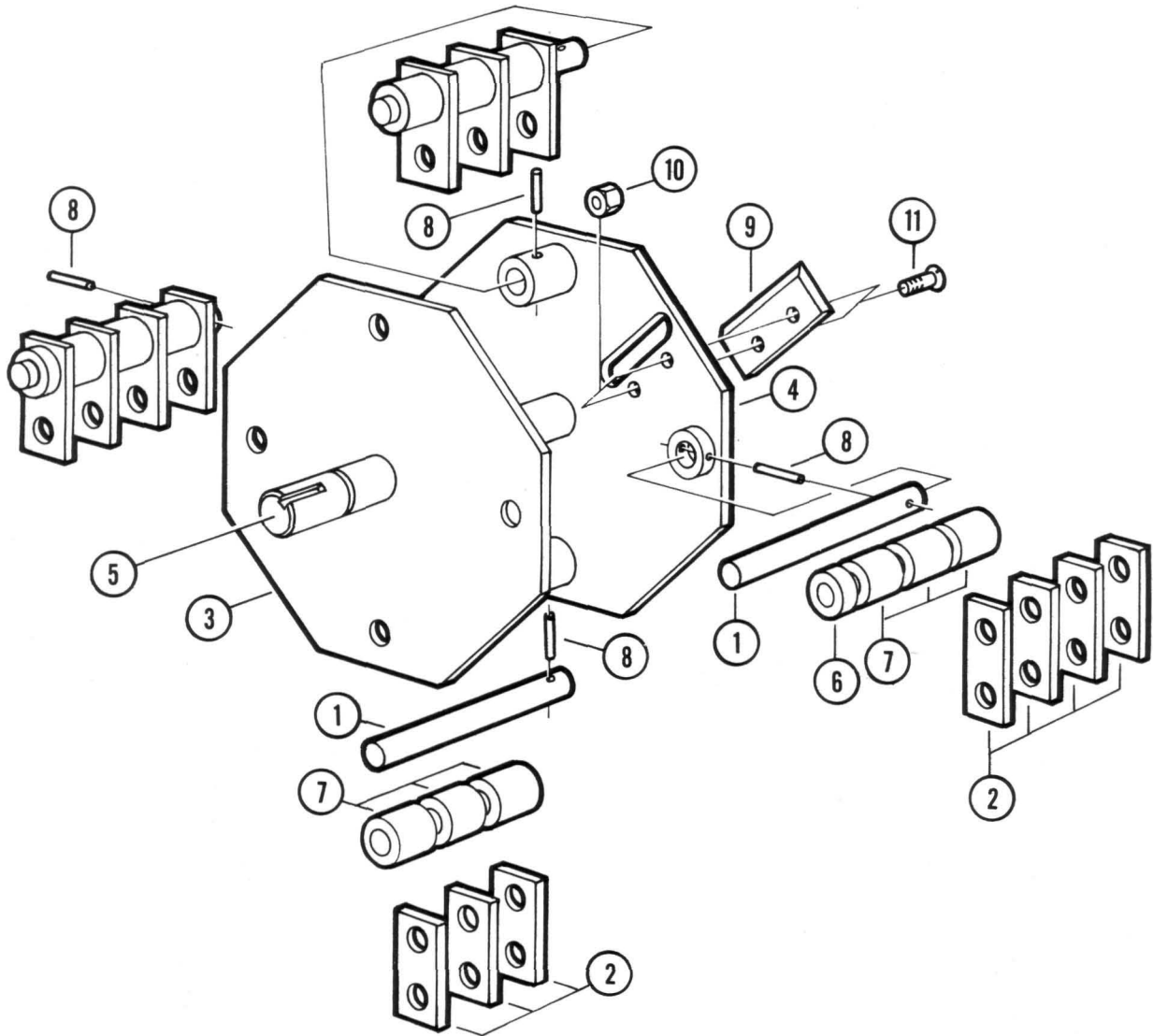
PROBLEM	POSSIBLE CAUSE	CORRECTION
Engine does not start.	<ol style="list-style-type: none"> 1. Spark plug wire disconnected. 2. Out of gas. 3. Stale gasoline. 4. Incorrect Choke setting. 5. Dirty air filter. 6. Bad spark plug. 	<ol style="list-style-type: none"> 1. Reconnect wire to spark plug. 2. Check fuel tank. 3. Drain old gasoline. Add fresh gasoline. 4. Move Choke Lever to correct setting. 5. Clean or replace air filter. 6. 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. Clean or replace air filter. See Page 25. 4. Have authorized Dealer adjust it. 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. Have authorized Dealer adjust it.
Chipper/Shredder does not work.	<ol style="list-style-type: none"> 1. Belt tension is incorrect. 2. Belt is broken or excessively worn. 3. Centrifugal clutch is malfunctioning. 4. Chipper blade(s) and/or shredder blade(s) broken. 5. Key for centrifugal clutch (on engine shaft) is sheared. 6. Key for pulley on cylinder shaft is sheared. 7. Solid object jammed in unit. 8. Locked cylinder shaft bearing. 9. Loose engine mounting screws and nuts. 	<ol style="list-style-type: none"> 1. Adjust belt tension. Refer to Page 21. 2. Replace belt. Refer to Page 21. 3. Refer to Page 23. 4. Replace chipper blade(s). Have authorized Dealer replace shredder blade(s). 5. Replace key. Refer to Page 23. 6. Replace key. 7. Check for and remove obstruction. 8. Have authorized Dealer repair unit. 9. Tighten screws/nuts.

TROUBLESHOOTING CHART (CONTINUED)

PROBLEM	POSSIBLE CAUSE	CORRECTION
Shredder or chipper shreds or chips poorly.	<ol style="list-style-type: none"> 1. Dull chipper blade(s) or shredder blade(s). 2. Incorrect belt tension. 3. Malfunctioning centrifugal clutch. 4. Engine not reaching full RPM. 5. Excessively worn cylinder shaft bearing(s). 6. Loose locking collar(s) on cylinder shaft. 7. Discharge screen not installed in chipper/shredder. 8. Loose engine mounting screws and nuts. 9. Damaged discharged screen. 10. Material tangled in shredder blades. 11. Clogged chipper chute. 12. Chipper blades clearance incorrect. Correct clearance is 1/16" to 1/8". 	<ol style="list-style-type: none"> 1. Sharpen chipper blade(s). Have authorized Dealer replace shredder blade(s). 2. Adjust belt tension. Refer to Page 21. 3. Refer to Page 23. 4. Have authorized Dealer adjust or repair engine. 5. Have authorized Dealer replace bearing(s). 6. Tighten collar(s). 7. Install screen. Refer to Page 19. 8. Tighten screws/nuts. 9. Inspect and replace (if necessary) screen. 10. Remove tangled material. Use chipper chute, not shredder hopper. 11. Clear chipper chute. 12. Have authorized Dealer repair unit.
Heavy vibration or unusual noise.	<ol style="list-style-type: none"> 1. Solid object jammed in chipper or shredder. 2. Shredder blade(s) damaged and cylinder is out of balance. 3. Cylinder (flywheel) assembly damaged. 4. Chipper blade(s) or shredder blades hitting inside of unit. 5. Cylinder shaft bearing(s) damaged. 6. Loose/missing engine mounting screws and nuts 7. Chipper/Shredder has loose or missing bolts. 8. Bent engine shaft. 	<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/tighten screws and nuts. 7. Replace/tighten all hardware. 8. Have authorized Dealer repair unit.
Belt slips.	<ol style="list-style-type: none"> 1. Loose belt. 2. Excessively worn belt. 3. Oil or grease on belt. 4. Cylinder shaft bearings are binding. 5. Loose engine mounting screws and nuts. 	<ol style="list-style-type: none"> 1. Adjust belt tension. Refer to Page 21. 2. Replace belt. Refer to Page 21. 3. Clean pulleys and replace belt. 4. Check cylinder shaft for smooth rotation. Clear any obstruction that prevents smooth rotation. If there is binding, have authorized Dealer replace bearings. 5. Tighten screws and nuts.

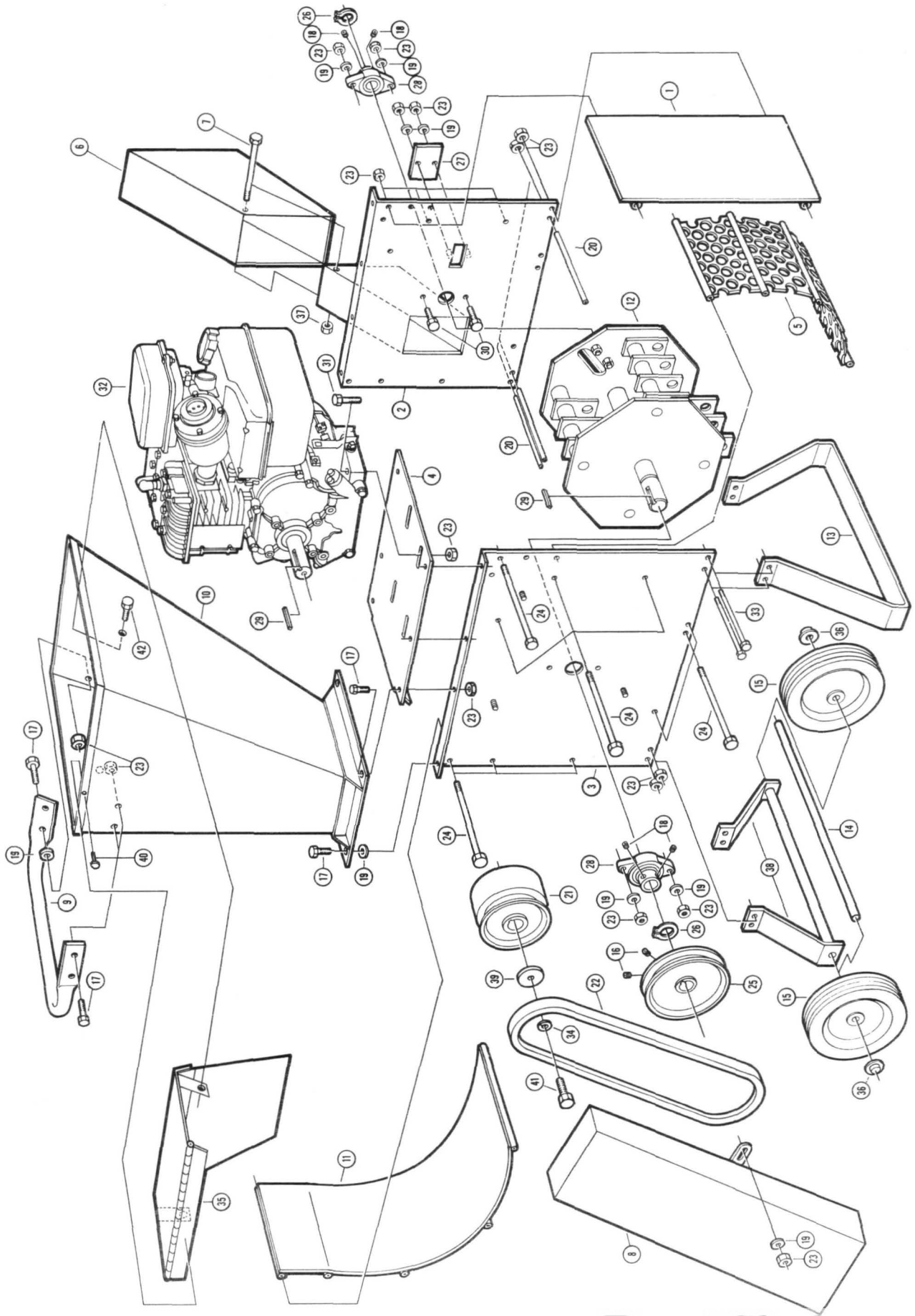
PARTS LIST

CYLINDER ASSEMBLY



REF. NO.	PART NO.	DESCRIPTION	QTY. REQ.
1	AS/70024H/00	Hammer Shaft $\frac{5}{8}$ " O.D.	4
2	AS/70030H/00	Hammer	14
3	AS/70021/00	Plate (Disc) Right Side	1
4	AS/70022A/00	Plate Assembly (Disc) Left Side	1
5	PT/70023/00	1" Center Shaft	1
6	PT/70025/00	Spacer $\frac{7}{8}$ " O.D. $\frac{7}{16}$ " Long	2
7	PT/70026/00	Spacer $\frac{7}{8}$ " O.D. $1\frac{5}{32}$ " Long	12
8	PT/70029/00	Roll Pin $\frac{3}{16}$ " x $1\frac{1}{8}$ " Long	4
9	PT/70031/00	Chipper Blade	2
10	PT/70038/00	Nut $\frac{5}{16}$ -24 Top Lock	4
11	PT/70043/00	Hex Socket Flat Head $\frac{5}{16}$ -24 x 1" Grade 5	4

CHIPPER/SHREDDER ASSEMBLY



PART NUMBER CORRECTION FOR REPLACEMENT ORDERS

REF NO.

26	NOT AVAILABLE
37	PT/03027/00

PARTS LIST C5099

REF. NO.	PART NO.	DESCRIPTION	QTY. REQ.
1	AS/70002/81	Discharge Deflector Assembly	1
2	AS/70003A/81	Chipper Side Panel Assembly	1
3	AS/70004A/81	Drive Side Panel Assembly	1
4	AS/70005/81	Engine Mount Plate	1
5	AS/70006A/00	Discharge Screen Assembly	1
6	AS/70011-1/81	Chute Extension Assembly	1
7	PT/70081/00	1/4-20 x 4 1/2" Hex Head Cap Screw	1
8	AS/70100A/82	Belt Guard Assembly-W/Brackets	1
9	AS/70015A/82	Handle	1
10	AS/70016A/81	Hopper Assembly	1
11	AS/70020A/81	Rear Baffle Assembly	1
12	AS/70032/00	Cylinder Assembly (Hammers)	1
13	AS/70034/82	Front Support Stand	1
14	AS/70062/00	Axle	1
15	PT/00377/00	Wheel 7 x 1.5 Ball Bearing	2
16	PT/01318/00	Set Screw 5/16-18 W/Lockpatch	2
17	PT/03366/00	Flange Head Cap Screw 5/16-18 x 3/4" Grade 2 ZP	12
18	PT/03425/00	Set Screw 1/4-28 W/Lockpatch	4
19	PT/05411/00	Washer 5/16" SAE Plated	12
20	PT/70019/00	Tube Spacer 7"	3
21	PT/70033/00	Clutch	1
22	PT/70036/00	Belt	1
23	PT/70037/00	Top Locknut 5/16-18	40
24	PT/70040/00	Hex Head Cap Screw 5/16-18 x 7 1/2" Grade 5 ZP	10
25	PT/70045/00	Pulley-Flywheel Shaft	1
26	PT/70046/00	Snap Ring 1"	2
27	AS/70048/81	Inspection Plate	1
28	PT/70050/00	Bearing 1" I.D.	2
29	PT/70052/00	Key 1/4 x 1/4 x 1"	2
30	PT/70053/00	Flange Head Cap Screw 5/16-18 x 1" Grade 5 ZP	4
31	PT/70054/00	Flange Head Cap Screw 5/16-18 x 1 1/4" Grade 2 ZP	4
32	PT/91060/00	Engine Briggs & Stratton 5 HP	1
33	PT/70069/00	Hex Head Cap Screw 5/16-18 x 8" Grade 5 ZP	4
34	PT/70064/00	Split Lock Washer 5/16 Plated	1
35	PT/70016-5/81	Hopper Cover-W/Brkts & Flap	1
36	PT/P-1139A/00	1/2" Drive Cap	2
37	PT/01471/00	1/4-20 Locknut	1
38	AS/70035A/82	Wheel Mount Bracket Assembly	1
39	PT/11478/00	Washer 3/8 I.D. 1 3/8 O.D. 3/16" Thk	1
40	PT/70068/00	Pop Rivet 3/16 x 1/2"	4
41	PT/70075/00	Hex Head Cap Screw 5/16-24 x 1" GR5	1
42	PT/90035/00	Self Tap Screw 10-32 ZP	2
		Replacement and extra safety glasses may be ordered by using Part Number PT/70056/00.	

TWO YEAR LIMITED WARRANTY

For two years from the date of purchase, Parmi Tool Co., Inc., will replace for the original purchaser, free of charge, any part or parts (except the engine, which is warranted separately by the engine manufacturer) found upon examination by any Factory Authorized Service Center, or by the Factory at Lynn, Indiana, to be defective in material or workmanship or both. All transportation and labor charges related to parts submitted for replacement and to parts replaced under this warranty must be borne by purchaser.

THIS IS OUR EXCLUSIVE WRITTEN WARRANTY. WE MAKE NO OTHER EXPRESS WARRANTY AND NO ONE IS AUTHORIZED TO MAKE ANY IN OUR BEHALF. ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO THE DURATION OF THIS WARRANTY. LIABILITY FOR SPECIAL, INCIDENTAL, AND CONSEQUENTIAL DAMAGES OF ANY KIND, INCLUDING BUT NOT LIMITED TO LABOR AND TRANSPORTATION COSTS, ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

To obtain warranty service, contact your Factory Authorized Service Center or Parmi Tool Co., Inc.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

NOTE: WARRANTY FOR COMMERCIAL USE IS LIMITED TO 90 DAYS.

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