

TROY-BILT® TOMAHAWK®

Chipper/Shredder
4HP, 5HP and 8HP MODELS



Safety Instructions • Assembly • Controls • Operation • Maintenance & Service

MAY 1989 EDITION

OWNER/OPERATOR MANUAL

INTRODUCTION

Dear Owner,

Your TROY-BILT® TOMAHAWK® Chipper/Shredder is so ruggedly built and of such high quality, we're sure it will meet, even exceed, your expectations. There are so many things it will do to make gardening, landscaping and property improvement projects truly easier and faster. From making mulches... to compost... to decorative wood chip dressings around plantings... and on and on. You'll find it a pleasure to use too, like all equipment from TROY-BILT.

We've prepared this Owner/Operator Manual to guide you in the proper use of your Chipper/Shredder and we've included a special section on Safety Instructions which we urge you to read completely. Your safety, and the safety of others around you, make the Safety Instructions and the entire Manual "must reading" before you put this equipment to work. There's a section on Maintenance and Service too, so you'll be able to keep your Chipper/Shredder running at peak performance all the time.

Of course, if you have any questions or problems with operation or service, please contact our Technical Service Department right away (see the phone number on the next page). Don't hesitate to ask us for help. We want to do everything we can to make the time you spend using your equipment as productive and as enjoyable as possible.

WE'RE HERE TO SERVE YOU...

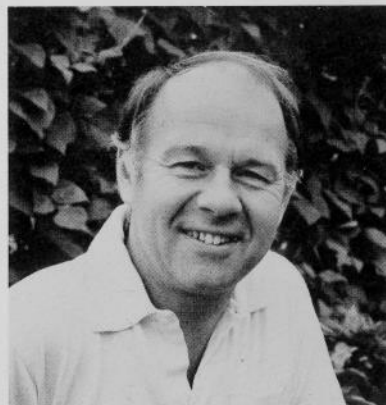
The whole idea behind our Factory Service Policy is to provide you with direct access to the parts and service information you may need as quickly as possible, and to answer all questions you may have.

Nothing is more important to all of us here at the Factory than making sure that every customer is completely satisfied at all times. You're always entitled to first-rate service. Please be assured that we will do our very best to see that you receive it.

Thank you,

Dean Leith, Jr.

Dean Leith, Jr.
Sales Manager

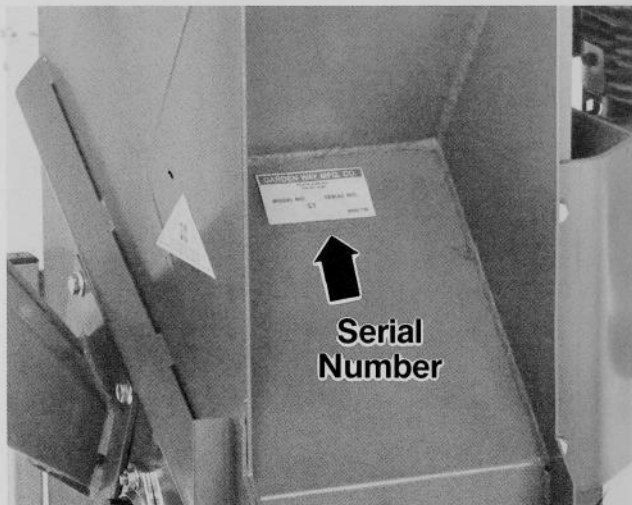


IMPORTANT — WRITE THE SERIAL NUMBER OF YOUR TOMAHAWK® MODEL IN THE SPACE PROVIDED BELOW...

To provide fast and efficient service, should you contact us, we'll need to know the SERIAL NUMBER of your Chipper/Shredder. The photo at right shows you where to look to find this number. For ready reference, please record your Serial Number, specific Model ordered, and delivery date below.

Check Model:

- | | | |
|---|--|--|
| <input type="checkbox"/> 8HP SUPER TOMAHAWK (Industrial/Comm. Rated)
Electric Start Model
(Model 15016) | <input type="checkbox"/> 8HP SUPER TOMAHAWK
Recoil Start Model
(Model 15014) | <input type="checkbox"/> 8HP SUPER TOMAHAWK
Electric Start Model
(Model 15015) |
| <input type="checkbox"/> 5HP SUPER TOMAHAWK
Recoil Start Model
(Model 15012) | <input type="checkbox"/> 5HP SUPER TOMAHAWK
Electric Start Model
(Model 15013) | |
| <input type="checkbox"/> 4HP TOMAHAWK
Recoil Start Model
(Model 15017) | <input type="checkbox"/> 4HP TOMAHAWK
Electric Start Model
(Model 15018) | |



Your Serial Number is located here.

Serial Number

W520148

Delivery Date

3-1-90

9325 md



WARNING TO CALIFORNIA OWNER/OPERATORS

Under California Law, 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 arrestor muffler in continuous effective working order. The engine on your Chipper/Shredder, like most garden equipment, is an internal combustion engine that burns gasoline (a hydrocarbon fuel); therefore, it must be equipped with a spark arrestor muffler in proper working order. The spark arrestor 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 operator to comply with this regulation is a misdemeanor under California Law.

Chipper/Shredder Service:

You'll find helpful service and maintenance procedures in this Owner/Operator Manual, so be sure to look here first...all the help you need may be right in the Manual. Just look at the Table Of Contents below for subject areas and page number references.

If you do not find the answers you need in this Manual, please contact us either by letter or phone, whichever you prefer. Remember, we'll need the Serial Number of your equipment to give you the most efficient service possible.

SEND SERVICE LETTERS TO:

Troy-Bilt Mfg. Company	Garden Way Canada, Inc.
c/o Technical Service Dept.	1515 Matheson Blvd.,
102nd St. & 9th Ave.,	Unit B11
Troy, NY 12180	Mississauga, Ontario L4W 2P5

OR TELEPHONE:

In the U.S.:

CALL TOLL-FREE 1-800-833-6990

In Canada:

Local only (416 Area Code), Call 624-8423

From Ontario & Quebec, Call Toll-Free 1-800-387-3351

From Western Canada and the Maritime Provinces,

Call Toll-Free 1-800-387-3316

When calling, ask for our *Technical Service Dept.* Our Technical Service Representatives are available from 8:00 A.M. to 7:00 P.M. (Eastern time) Monday through Friday, and from 9:00 A.M. to 4:00 P.M. on Saturdays, except on holidays.

Chipper/Shredder Parts:

For parts only, please write or telephone, using the address or telephone number given at left. Ask for the *Parts Dept.* Before writing or calling, refer to the Parts Listing you received to find out the Part Description and the Part Number of each item you'll be ordering. Be sure to include this information in your letter, or have it on hand if you're calling us.

Engine Service & Repairs:

Please contact your nearest authorized Briggs & Stratton or Tecumseh engine dealer if engine service or repair is needed. This listing is in the phone book "Yellow Pages" under "Engines, Gasoline" or "Gasoline Engines". The Service Outlet will need to know the Model and Serial Number of your engine — Section 5 in this Manual shows you how to locate these numbers.

Your local Briggs or Tecumseh Dealer can handle all repairs, parts orders and warranty service concerning the engine alone. If you wish to contact us before seeing the local Engine Dealer, or if you have difficulty getting engine service or parts locally, be sure to let us know. See the enclosed Engine Manufacturer's literature for full terms of the Limited Warranty on the engine and other details about the engine.

TABLE OF CONTENTS

	Page No.		Page No.
Section 1 — SAFETY INSTRUCTIONS	2-5	Engine Features & Controls:	
Section 2 — ASSEMBLY & PREPARATION		Carburetor Choke	19
Inspection After Delivery	6	Run-Stop (or On-Off) Control	20
Parts Checklist	6	Recoil Starter	20
Attach Chipper Chute	6	Optional Electric Start	20
Attach Engine Mounting Plate (8HP Models)	7	Fuel Tank	20
Attach Handlebar	7	Section 4 — OPERATING INSTRUCTIONS	
Belt Tension Check	7	Materials Recommended For Shredder	21
Add Motor Oil To Engine	8	Materials Recommended For Chipper	21
Assemble The Electric Start System	9-14	Moving The Chipper/Shredder	22
Section 3 — FEATURES & CONTROLS		Pre-Starting Steps	22
Chipper/Shredder Features & Controls:		Engine Starting & Stopping Steps	23
Shredder Hopper	15	Chipper Use	24
Chipper Chute	16	Shredder Use	24
Chipper/Shredder Chamber	16	Section 5 — MAINTENANCE & SERVICE	
(Chipper Blade & Shredder Flails)		Engine Maintenance	26-27
Discharge Tunnel & Screen	17	Chipper/Shredder Maintenance	28-35
Clutch Lever	18	Battery Care	36
		SPECIFICATIONS	Inside Back Cover

SECTION 1:

Safety Instructions — IMPORTANT!

CONTACT WITH ROTATING CUTTING BLADES INSIDE DISCHARGE OPENING WILL CAUSE SERIOUS PERSONAL INJURY! CUTTING BLADES ARE ROTATING WHILE MACHINE IS RUNNING, AND SLOW DOWN GRADUALLY AFTER ENGINE IS SHUT OFF.

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 INJURY. BEFORE DOING MAINTENANCE OR SERVICE, SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE.

Please read and follow all of the safety instructions in this safety section. Failure to comply can result in serious personal injury or property damage. If you have questions, or are not completely sure about any of the information found here or elsewhere in this Manual, please call us for assistance before you operate your equipment.

SAFETY BEFORE STARTING THE ENGINE

1. Become familiar with this Owner/Operator Manual before attempting to operate your equipment.
2. Know where the engine shut-off control is and how to use it. On manual start models, this control is a switch on top of the engine. On electric start models, it's a key-operated switch just under the engine.
3. The operation of any powered machine can result in foreign objects being thrown by high speed rotating parts. Always wear work gloves, sturdy footwear and hearing protection while using your equipment. Always wear safety glasses or other eye protection when using the equipment. Do not wear loose-fitting clothing, jewelry, scarves, ties, etc. that can get caught in moving parts.
4. The engine must be OFF and allowed to cool for several minutes before filling the fuel tank with gasoline. Use 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.
5. Before starting the engine, make a visual check to see that all screws, nuts, bolts and other fasteners are properly secured. The Discharge Screen must be **securely** in place if being used. It's not needed

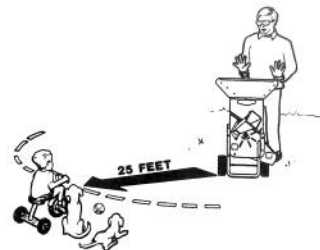


with wet material. Disconnect the spark plug wire before performing this check. **This check is recommended before each usage.**

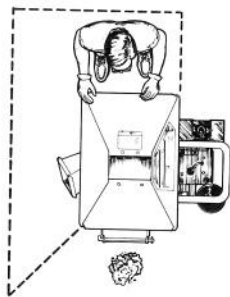
6. Before operating your equipment, be sure that the chipper chute, shredder hopper and internal cutting chamber are empty, and the service door is securely closed with a rod and hair pin. The engine must be off, all moving parts completely stopped, and the spark plug wire disconnected before you do this.

SAFETY DURING OPERATION

7. 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 injury.
8. Keep hands and feet out of discharge opening when machine is running. Rotating cutting blades inside opening will cause serious personal injury.
9. Do not allow children or untrained adults to operate the equipment.
10. Do not run the engine in an enclosed area. The exhaust fumes from the engine contain extremely dangerous carbon monoxide gas. Carbon monoxide is colorless, odorless, tasteless and deadly poisonous.
11. Do not operate your equipment when bystanders or pets are nearby. Keep bystanders at least 25 feet away from this equipment.
12. Do not operate the Chipper/Shredder on a paved or gravel surface. Discharged material may bounce from a hard surface and cause personal injury. Select a level, earthen surface.



13. Always stand clear of the Discharge Area when operating your equipment. The correct "Zone of Operation" is shown in the sketch nearby. Stand in the "Zone" when operating your equipment.



14. Do not put face, hands, feet, or any part of your body or clothing near the Chipper Chute, Shredder Hopper, or Discharge Area. Cutting blades will begin to rotate and build up speed once the engine is running and Clutch Lever is moved Down. **Once blades are revolving, moving the Clutch Lever Up will NOT stop the blades! To stop blade motion, shut off engine while Clutch Lever is in Down position. Important — after engine is shut off, cutting blades slow down GRADUALLY.** Under normal shut-down circumstances (engine shut off and stopped, with Clutch Lever in Down position), rotating blades will require from 30-to-45 seconds to stop completely. If engine is shut off and Clutch Lever were Up (or the belt broke or slipped off a pulley), the rotating blades will require 90-to-120 seconds, or longer, to stop. Don't assume blades have stopped! Be sure! Look at the end of the drive shaft (next to the Chipper Chute) to verify it's motionless. Look for the white paint mark on the bearing. Injury can occur unless blades are completely stopped.

15. If Chipper or Shredder becomes jammed or clogged, shut the engine off and move the Clutch Lever Up (normal stopping procedure is to leave the Clutch Lever Down) to prevent damage to Chipper/Shredder parts. To avoid injury, **make sure all moving parts have come to a complete stop!** Disconnect the spark plug wire. Only then inspect the shredder hopper, chute, the discharge screen, and the internal chamber. **Remember — rotating blades can take from 90-to-120 seconds or longer to stop after the engine is off!** Use only a wooden stick to clear away jammed material.

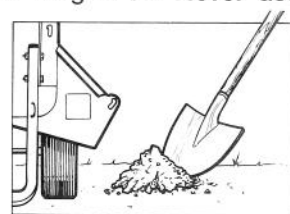
16. When feeding appropriate material into the Chipper or Shredder, be extremely careful that pieces of metal, rocks, bottles, nails, cans and any other foreign objects are not included. Please use organic materials only!

17. Shut off the engine immediately and move the Clutch Lever Up if the Chipper/Shredder strikes any foreign object or develops any unusual noises or vibrations. **Make sure all moving parts have stopped completely!** Then, disconnect the spark plug wire from the spark plug and take the following steps: **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.



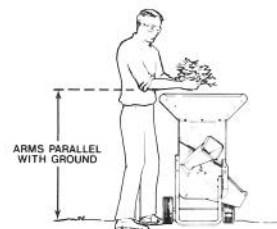
18. Do not allow the engine, especially around the cooling fins and muffler, to become clogged with leaves, oil, grease or any other combustible material. Keep these areas clean to avoid a potential fire hazard.

19. Do not allow chipped or shredded material to build up in, or clog, the Discharge Tunnel or opening — clogging prevents proper discharge of materials and can result in kickback of material through the Shredder Hopper or Chipper Chute. In order to remove material from the discharge area, use a long-handled shovel or long stick. **Never use your hands or feet!**



- Blades cut 1/4-inch from Discharge Screen. Keep away! **Never put your hands or feet in the discharge opening.**
20. Keep all safety shields, guards, screens and deflectors securely in place and in good condition. **Do not operate the unit unless the Chipper Chute and Discharge Tunnel are bolted in place, and the Service Door is closed with a rod and hair pin.**

21. Do not overreach when feeding material into the Hopper or Chute. Keep proper footing and good balance at all times. **Arms should be parallel to the ground when shredding materials; when chipping, keep arms perpendicular to the Chipper Chute.** Obey the safety and instruction decals on your equipment at all times.

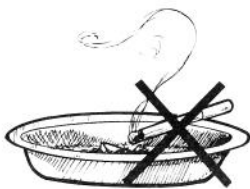


22. Do not transport or move your equipment while the engine is running.
23. Do not tamper with the governor setting on the engine. The governor controls the maximum safe operating speed and protects the engine and other moving parts from damage that can be caused by engine overspeeding.

SAFETY INSTRUCTIONS FOR MAINTENANCE AND STORAGE

24. Before service, maintenance, cleaning, inspection, changing Shredder Discharge Screens or work of any other kind is to be done, be sure the engine is stopped, all moving parts are still, and the spark plug wire is disconnected. If the engine had been running, allow the hot muffler to cool before working near it or installing a storage cover.
25. Store this equipment where children will not have access to it. Always disconnect the spark plug wire.

26. 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 woodstove, or a furnace.



27. For seasonal storage, drain 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. Let the engine cool before storing.

MAKE SURE THE SAFETY DECALS ON YOUR EQUIPMENT ARE KEPT CLEAN AND IN GOOD CONDITION SO YOU CAN FOLLOW THE INSTRUCTIONS ON THEM! SHOULD YOU NEED REPLACEMENT DECALS, PLEASE CONTACT US FOR THE ONE YOU NEED — AT NO COST. REFER TO YOUR SEPARATE PARTS CATALOG FOR INDIVIDUAL PART NUMBERS.

- #1. This decal appears once on the service door of your equipment.
#2. This decal is used once on the side of your equipment opposite the service door. It is next to the hole where the screen tab appears when the discharge screen is installed.

#1

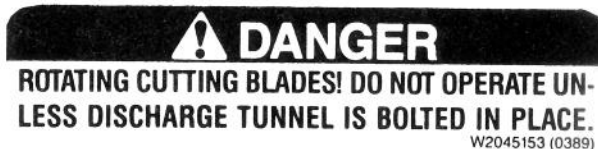


#2



- #3. This decal is just above the Service Door.
#4. This decal appears twice on your machine: once in the shredder hopper and once in the chipper chute. (On 4HP Models, there is a special down-sized version in the smaller chipper chute.)
#5. Look for this decal in two locations; once on each side of the discharge tunnel.
#6. This decal appears right under the chipper chute.
#7. This decal appears next to the clutch lever — it's on the engine mounting plate.
#8. You'll see this decal by looking underneath the engine — it's on the belt cover.
#9. This is the Operating Instructions decal. It is located in the shredder hopper.
#10. This decal is located just above the engine on the steel wall.

#3



#4



#5



⚠ DANGER

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

#6

IMPORTANT

- Read the Owner/Operator Manual before starting and using this equipment. If you need a replacement Manual or decal, contact Troy-Bilt Mfg. Co., 102nd St. & 9th Ave., Troy, NY 12180.
- 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 injury.
- Keep hands and feet out of discharge opening when machine is running. Rotating cutting blades inside opening will cause serious personal injury.
- Wear approved safety glasses, gloves, and ear protection. Avoid wearing loose fitting clothing.
- Keep bystanders, children, and pets away from operating and discharge areas.
- If unit jams or becomes clogged, shut engine off right away and let all

moving parts come to a complete stop. Disconnect the spark plug wire. Use only a wooden stick to clear away discharged material or blockages.

- Keep all shields and service door in place and securely attached.
- DO NOT use hands or feet to clear material from the discharge area.
- DO NOT install parts, or remove, adjust or service the discharge screen or any other part while machine is running. DO NOT operate unit on uneven ground, or on a paved, gravel or hard surface. DO NOT run engine in an enclosed area—exhaust gas contains poisonous carbon monoxide fumes.

⚠ WARNING

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

BEFORE STARTING:

1. The Discharge Screen must be correctly and securely installed with rods and hair pins before shredding dry material (refer to Owner/Operator Manual for screen installation procedure).
2. Be sure the Service Door is securely closed with a rod and hair pin.

TO START:

1. Move engine Choke Lever to "full choke" position. If engine has already been running, do not use Choke Lever.
2. Move On-Off Switch (Briggs & Stratton engines) to "On" position or Run-Stop switch (Tecumseh engines) to "Run" position. (Does not apply to electric-start models.)
3. Move Clutch Lever all the way UP.
4. Pull Start Rope out firmly to start engine. On Electric Start models, turn Key to "Start" position. Move Choke Lever to "Partial" choke position once engine starts. After a few seconds, move lever to "No Choke" position.
5. Swing Clutch Lever down slowly to transfer power to the internal rotating cutting blades.

TO STOP:

1. Move On-Off Switch to "Off" or the Run-Stop Switch to "Stop" position. On electric-start models, turn key to "Off".
2. Keep Clutch Lever "Down" until all moving parts have come to a complete stop.

#9

⚠ DANGER

Once Blades Are Rotating, Moving The
Clutch Lever Up Will NOT Stop Blade
Motion!

To Stop Blade Motion, Shut Engine Off
While Clutch Lever Is Down. Blades
Slow Gradually. Allow All Moving Parts
To Stop Completely.

Contact With Moving Blades Will
Cause Serious Personal Injury.

#7

⚠ WARNING

DO NOT START ENGINE UNLESS BELT
COVER IS ATTACHED. Failure to Comply
Could Result in Personal Injury From Moving
Belt And Pulleys. See Owner's Manual For
Full Safety And Maintenance Instructions.

60074 (1/85)

#8

⚠ WARNING

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

W2045156 (0389)

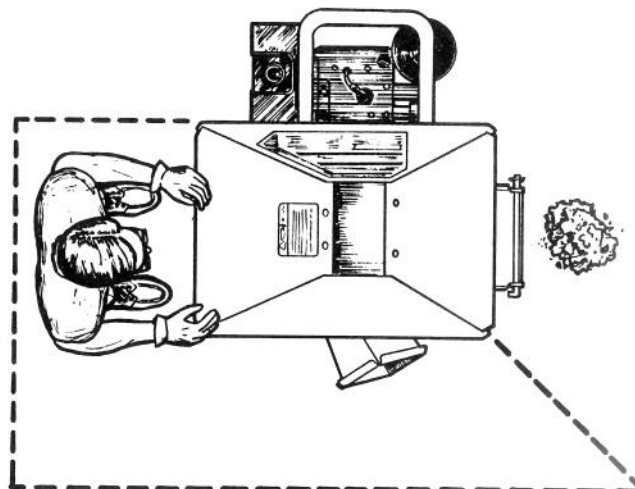
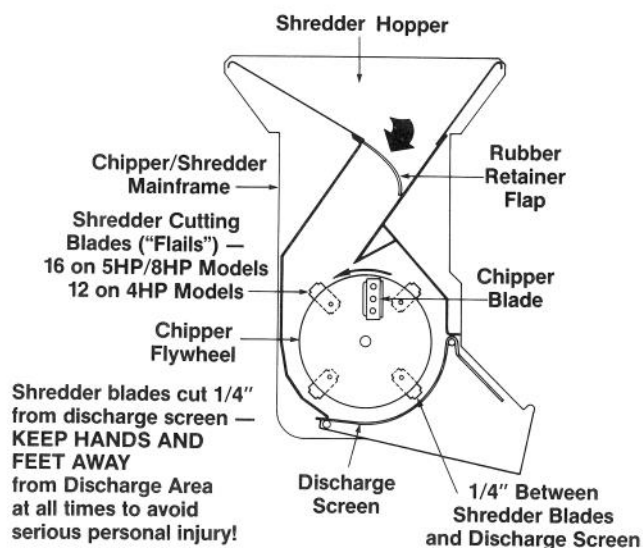
#10

⚠ DANGER

THE ROTATING SHREDDER CUTTING BLADES INSIDE THE DISCHARGE OPENING CUT 1/4" FROM THE DISCHARGE SCREEN. CONTACT WITH ROTATING CUTTING BLADES WILL RESULT IN SERIOUS PERSONAL INJURY. 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.

IN ORDER TO REMOVE CHIPPED OR SHREDDED MATERIAL FROM THE DISCHARGE AREA, USE A LONG-HANDLED SHOVEL OR LONG STICK — NEVER USE YOUR HANDS OR FEET!

IF MATERIAL SHOULD EVER CLOG THE CHAMBER, DISCHARGE TUNNEL, OR DISCHARGE OPENING, SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE. USE A STICK TO CLEAR THE CLOGGED MATERIAL.

**OPERATION ZONE**

SECTION 2:

Easy Assembly & Preparation

Now that your TROY-BILT® SUPER TOMAHAWK® Chipper/Shredder has arrived, you'll find that assembly steps to get it ready for operation are very simple and go quickly. Be sure to follow all assembly and preparation steps in this section. Use these instructions for all models, including the 8HP I/C, the regular 8HP models, the 5HP models, and the 4HP models.

IMPORTANT — Motor Oil Must Be Added To The Engine Before Starting! This Section Provides Full Instructions. Do Not Operate Your Equipment Until You Have Read This Owner/Operator Manual Completely.

STEP 1: Inspection After Delivery

Inspect your equipment while it's still secured to the shipping platform. If you find or suspect any damage (to equipment or the carton), telephone the trucking company (carrier) right away. Inform them of the damage and that you wish to file a claim. *Be sure to put this in writing to the carrier within 15 days to protect your rights.* The carrier will let you know how to proceed with a claim. Let us know if you need assistance.

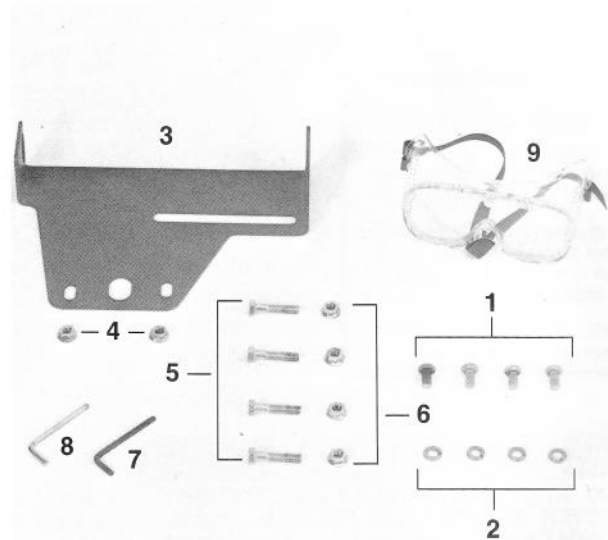
STEP 2: Parts Checklist

First, cut the retaining bands and remove the clamp securing the Chipper/Shredder to the wood shipping platform. Then remove the chipper chute and the transport handle which are shipped unassembled. Also, empty the package containing general assembly hardware (an additional hardware package is sent with electric start models — put electric hardware aside — it will be installed last). Note: the Discharge Screen inside your equipment is secured with rods and hairpins. We've included an extra hairpin. It's not needed for the assembly. **Only this style Hairpin should be used on your equipment.**

Checklist for General Hardware, Parts

Be sure you have the following parts which are needed for assembly (plus the chute and handlebar).

Photo 2-1 Ref. No.	Item Description	Qty.
1	Bolt — 5/16"-18 x 3/4" (to attach chipper chute)	4
2	Lockwasher — 5/16" (to attach chipper chute)	4
3	Engine Mounting Plate (8HP Models only)	1
4	Nut — flange-locking, 5/16"-18 (8HP Models only; to attach engine mounting plate)	2
5	Capscrew — hex head, 5/16"-18 x 1-3/4" (to attach handlebar)	4
6	Nut — flange-locking, 5/16"-18 (to attach handlebar)	4
7	Hex Key Wrench — 5/32" (for repairs)	1
8	Hex Key Wrench — 1/8" (for repairs)	1
9	Safety Goggles (universal fit)	1



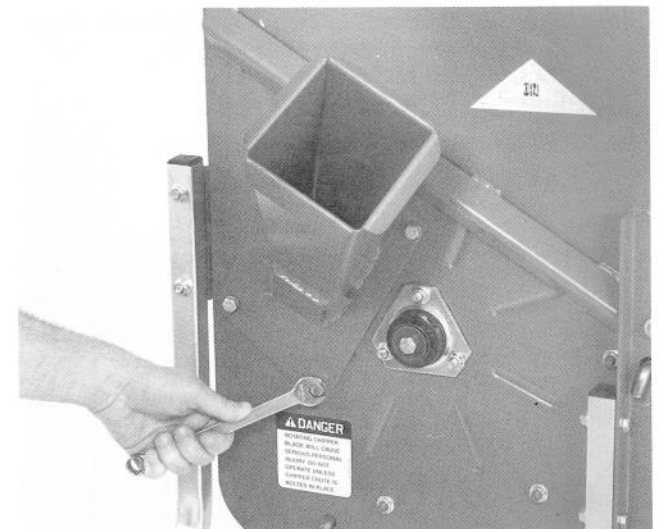
(Photo 2-1) See that you received everything above. Note: the Engine Mounting Plate and the two 5/16"-18 nuts shown next to the plate are shipped **only** with 8HP Models.

STEP 3: Attach Chipper Chute

Follow these directions to attach the Chipper Chute to the side of your equipment opposite the engine.

Align the four holes at the base of the chute with the four holes on the side of the Chipper/Shredder as shown in Photo 2-2. Secure the chute using the four bolts (5/16"-18 x 3/4") and lockwashers (5/16") you received. Tighten this hardware very securely.

NEVER OPERATE EQUIPMENT UNLESS CHIPPER CHUTE IS ATTACHED.

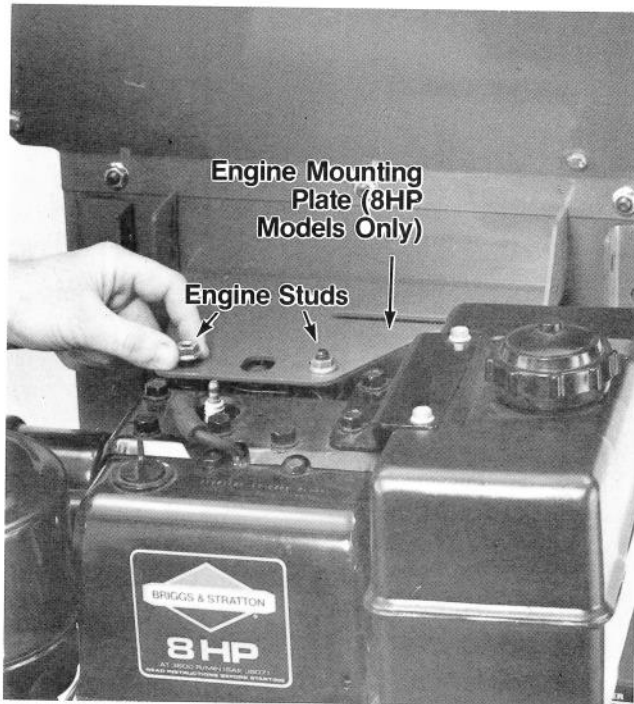


(Photo 2-2) Attach chipper chute to the side of your equipment. Use four bolts (5/16"-18 x 3/4") and four lockwashers (5/16") to secure it. Tighten hardware firmly.

STEP 4A: Attach Engine Mounting Plate (8HP Models Only — Recoil and Electric Start)

The 8HP Briggs & Stratton engines (I/C and non-I/C types), in both recoil start and electric start versions, come with a special engine mounting plate that secures easily. It is necessary due to the extra performance and weight of the powerful 8HP engine. **Do Not Use Your 8HP Equipment Unless This Engine Mounting Plate Is Securely Attached.**

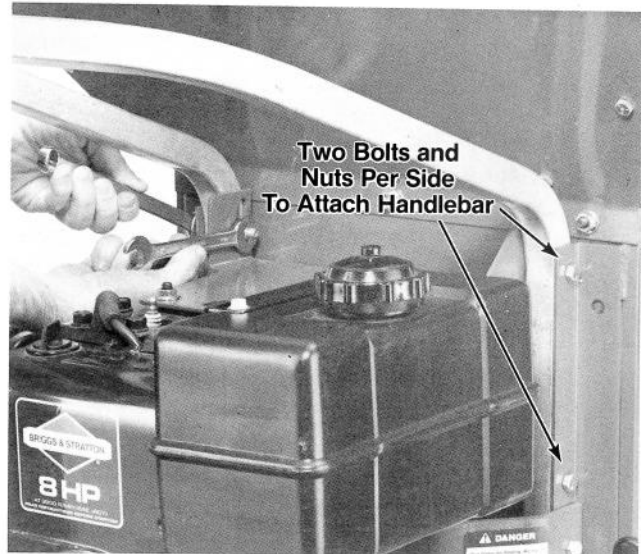
Position the Engine Mounting Plate over the engine as shown in Photo 2-3. The two slots at the narrow end of the plate go on the two vertical threaded studs on the top of the engine. Loosely attach the plate to those studs with two of the 5/16"-18 flange-locking nuts you received. The other end of the plate connects to the handlebar — proceed to Step 4B for handlebar mounting instructions.



(Photo 2-3) On 8HP engines only, place Engine Mounting Plate as shown over the two vertical engine studs. Loosely attach plate to studs with two 5/16"-18 flange-locking nuts. Do not tighten nuts yet. The other end of the engine mounting plate will be connected to the handlebar.

STEP 4B: Attach Handlebar To Chipper/Shredder

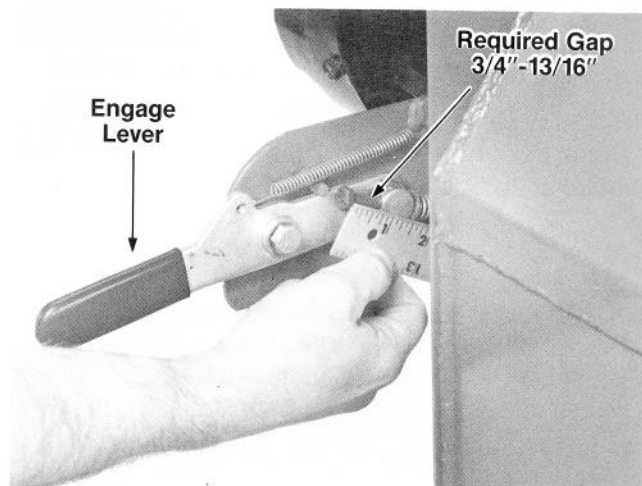
Place the Handlebar against the handlebar bracket on the Chipper/Shredder as in Photo 2-4. Insert four 5/16"-18 x 1-3/4" bolts (two per side) through the bracket and handlebar holes — *the bolts face inward*. Add four 5/16"-18 flange-locking nuts. On 4HP and 5HP Models, tighten the nuts securely. On 8HP Models, the bolts must also pass through the slots in the Engine Mounting Plate (see Photo 2-4). Put the nuts on finger-tight for now. Securely tighten the two nuts on top of the engine. Then tighten the handlebar nuts securely.



(Photo 2-4) Handlebar properly mounted on the Chipper/Shredder handlebar bracket. Use four bolts and nuts to secure the handlebar. Note: bolts on 8HP Models must also pass through the Engine Mounting Plate slots. An 8HP Model is shown in the photo.

STEP 5: Belt Tension Check

The tension put on the drive belt (when your equipment's Clutch Lever is engaged) is adjusted at the Factory. **To be certain the tension is still correct before operation, please double-check the tension adjustment.** Here's how: **1)** Move the Clutch Lever **DOWN** to the "Engage" position as you see in Photo 2-5; **2)** The head of the Belt Tension Adjustment Bolt must be from 3/4"-to-13/16" away from the bushing it passes through; **3)** If an adjustment is needed, turn the bolt head counterclockwise to increase distance — clockwise to decrease the distance to the bushing. Once the bolt head has proper clearance from the bushing, move the Clutch Lever **UP** to the "Disengage" position. Note: this tension adjustment should be good for the life of the belt. See Section 5 if further belt tension information is needed.



(Photo 2-5) Check belt tension adjustment. When Clutch Lever is **DOWN** in "Engage" position, head of Belt Tension Adjustment Bolt must be from 3/4"-to-13/16" away from bushing. Turn bolt in or out to get within this range.

STEP 6: Add Motor Oil To Engine

Your engine was shipped "dry." The proper type and amount of motor oil must be added to the engine crankcase before starting. *Use the instructions which follow that apply to your specific engine.* Note: the engine must be *level* for an accurate oil level reading: move your equipment off the shipping platform to a level surface (refer to Section 4 in this Manual for transporting instructions if you are not sure how to move your equipment properly).

How To Add Motor Oil To 5HP And 4HP Tecumseh Engines:

As recommended by the engine manufacturer, the motor oil specifications for 5HP and 4HP Tecumseh engines are — Use Clean High Quality Detergent Motor Oil with Engine Service Classification "SF", "SE", "SD" or "SC". *Summer (+32° F):* SAE30 weight oil (SAE10W30 is a substitute). *Winter (below 32° F):* SAE5W20 or SAE5W30 (SAE10W is a substitute). NOTE: below 0° F ONLY, SAE 10W oil diluted with 10% kerosene is acceptable. **FILL 5HP CRANKCASE WITH APPROX. 19 OUNCES OF OIL. FILL 4HP CRANKCASE WITH 21 OUNCES OF OIL.**

Procedure (for 5HP Tecumseh engine):

1. Remove Oil Level Dipstick from Oil Fill Tube on top of engine (see Photo 2-6). Turn counterclockwise.
2. Insert clean funnel in Oil Fill Tube. Pour 19 ounces of motor oil into Oil Fill Tube. Note: **DO NOT OVERFILL WITH OIL.** Check level frequently while adding motor oil. Add oil until it reaches the "FULL" mark on the dipstick. To check the level, insert the dipstick, tighten it, and remove again.

Procedure (for 4HP Tecumseh engine):

1. Unscrew the Oil Fill Plug from the Fill Tube. It is located on the left hand side of the engine as you face the recoil start rope. See Photo 2-7. The plug should be turned counterclockwise.
2. Insert a clean funnel into the Fill Tube.
3. Slowly pour oil into the crankcase until it just begins to flow out of the Oil Fill Tube. Your engine should require about 21 ounces of oil.
4. Replace the Fill Plug securely.

How To Add Motor Oil To The 8HP Briggs Engines:

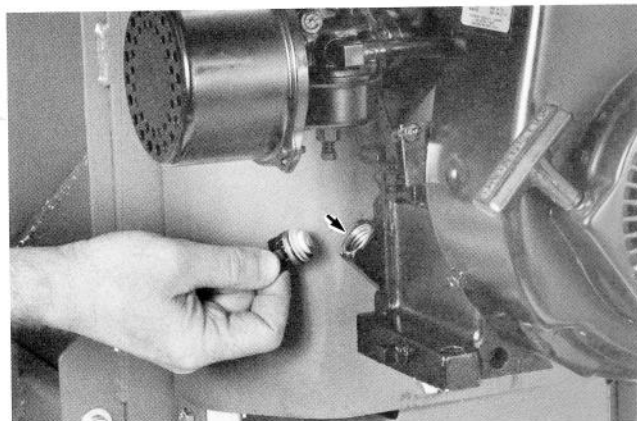
Motor oil specifications for this engine as recommended by the engine manufacturer are as follows: Use Clean High Quality Detergent Motor Oil classified for Service "SF", "SE", "SD", or "SC". *Summer (+40° F):* SAE30 weight oil (substitutes — SAE 10W30, SAE10W40 — these two substitutes may also be used from 0° F to 100° F). *Winter (below 20° F):* SAE5W20 or SAE5W30. **Nothing should be added to the recommended oil. FILL CRANKCASE WITH APPROX. 39 OZS. OF OIL.**

Procedure (for 8HP Briggs engines):

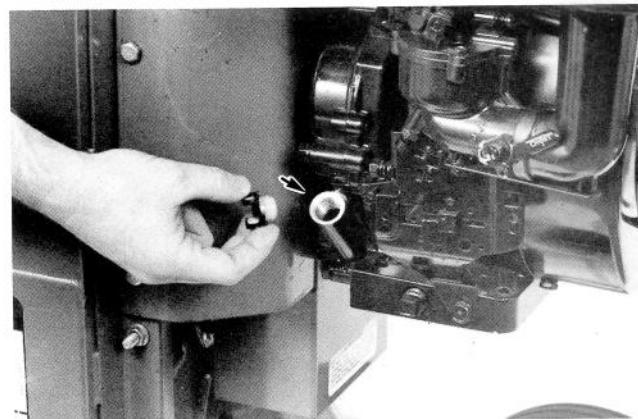
1. Remove the Oil Fill Plug from the Fill Tube (see Photo 2-8). Turn it counterclockwise. If necessary, use a screwdriver blade as a lever to loosen it.
2. Slowly pour about 39 ounces of motor oil through a clean funnel into the Fill Tube. Add until oil is right up to the top of the Fill Tube. **NOTE:** insufficient oil can cause engine damage!
3. Replace the Oil Fill Plug securely.



(Photo 2-6) On 5 HP Tecumseh engines, remove oil dipstick from oil fill tube, then add 19 ounces of motor oil using a clean funnel. Fill to "Full" mark on the dipstick. Do not overfill!



(Photo 2-7) On 4HP Tecumseh engines, turn and remove oil fill plug from left side of engine. Add oil to fill tube until it overflows (about 21 ounces). Replace the fill plug securely.



(Photo 2-8) On 8HP Briggs & Stratton engines, turn and remove oil fill plug. Add oil right up to the top of the oil fill tube. Approx. 39 ounces will be needed.

Assembly Instructions for the Electric Start System

IMPORTANT!

Your new battery must be activated with electrolyte and fully charged before using it.

If you ordered an electric start Chipper/Shredder — available in 4HP, 5HP and 8HP Models, it comes to you with most of the electrical system already assembled at the factory. Here are the final steps that are required for assembly of the electric start system.

The optional electric start system includes a 12-volt side-vented battery, a key switch ignition system, a solenoid, a starter motor (connected to the engine), and the cables and wires that connect the electrical system. A built-in recharging circuit on all the engines automatically recharges the battery during chipper/shredder operation.

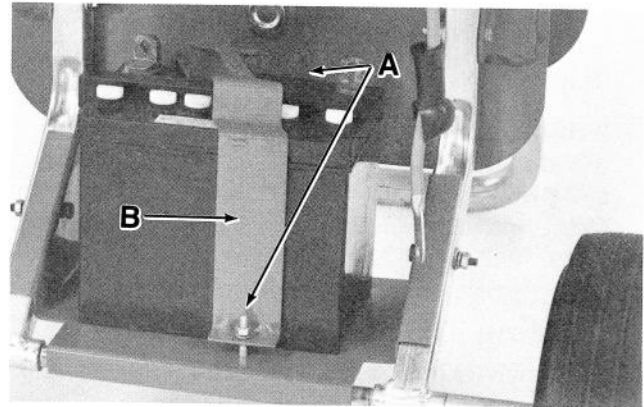
IMPORTANT — The battery is shipped to you “dry” (empty), and *it can not be used* until it has been properly activated with electrolyte (battery-grade sulfuric acid) and given a proper start-up charge.

Activating a battery with electrolyte is dangerous work (the acid can eat through clothing and burn skin), and we therefore strongly recommend that you take the battery to a local TROY-BILT Tiller Dealer or to a reliable service station, battery store or farm- or outdoor-power equipment center where a trained battery technician can complete the job safely. PLEASE DO NOT ATTEMPT TO ACTIVATE THE BATTERY YOURSELF UNLESS YOU ARE FULLY EXPERIENCED IN BATTERY SERVICE WORK! SERIOUS PERSONAL INJURY COULD RESULT.

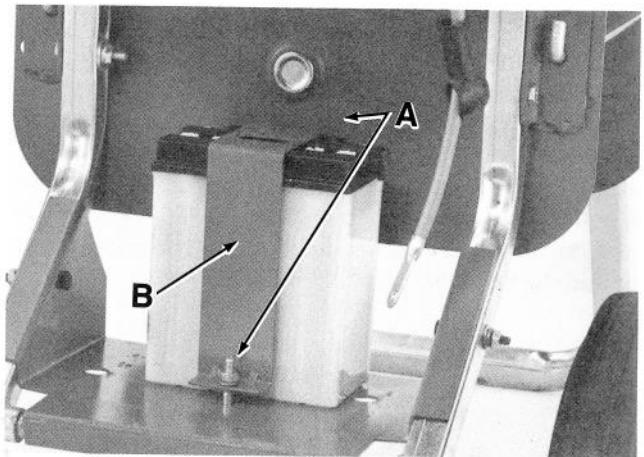
NOTE: For protection during transit, your battery was shipped mounted securely on the battery platform (held in place with a holddown clamp). It must be removed from the battery platform according to the instructions that follow so the battery may be activated and charged.

Remove Battery As Shipped On Battery Platform

To free the battery, simply remove the two bolts and nuts securing the battery holddown clamp to the platform (8HP models see Photo 2-9; 5HP and 4HP models see Photo 2-10). *Save this hardware and the clamp as they'll be needed later to reinstall the battery.* Lift off the clamp, and the battery is free for necessary servicing. **SAVE ALL HARDWARE.**



(Photo 2-9) Remove battery from 8HP shredder platform. Remove bolts “A” and clamp “B” to free battery.



(Photo 2-10) Battery on 5HP and 4HP units has a different style holddown clamp. To remove battery, take off bolts “A” and clamp “B”.

Activating The Battery With Electrolyte And Charging The Battery

DANGER

BATTERY ACID (ELECTROLYTE SOLUTION) CONTAINS SULFURIC ACID. CONTACT CAN CAUSE SEVERE BURNS.

AVOID CONTACT WITH SKIN, EYES AND CLOTHING. ALWAYS WEAR PROTECTIVE CLOTHING AND RUBBER GLOVES AND SHIELD EYES WITH SAFETY GOGGLES. NEUTRALIZE SPILLED ACID WITH BAKING SODA. KEEP CHILDREN AWAY.

ANTIDOTE: External — Flush with water. Eyes — flush with water for 15 minutes. Then get prompt medical attention.

ANTIDOTE: Internal — Drink large quantity of water or milk. Follow with milk of magnesia, beaten eggs, or vegetable oil. Get medical attention immediately.

2

Easy Assembly

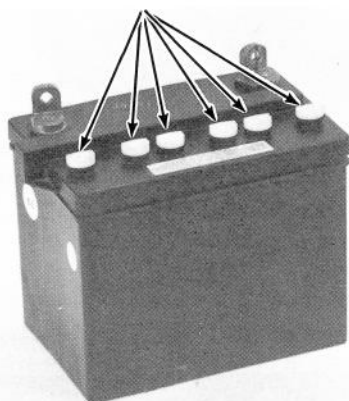
DANGER

BATTERIES PRODUCE EXPLOSIVE GASES WHICH CAN CAUSE SEVERE PERSONAL INJURY.

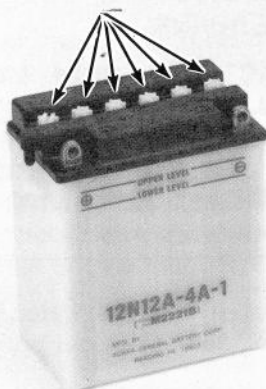
WHEN CHARGING OR USING BATTERY, DO SO IN A WELL-VENTILATED AREA. KEEP SPARKS, FLAME, SMOKERS' MATERIALS FAR AWAY. MAKE SURE BATTERY VENT AND VENT TUBE ARE NOT CLOGGED OR KINKED.

Activating The Battery

1. Place battery on a level surface and remove all filler caps. Leave the caps off during the filling and charging procedures. Batteries for 8HP and 5HP/4HP models are shown in Photos 2-11 and 2-12.
2. Carefully fill each cell (there are six cells) with battery-grade electrolyte (1.265 Specific Gravity sulfuric acid) until it just touches the lowest part of each filler well. By filling each well to this height, the plates inside the battery will be completely covered as they should be. The temperature of the battery and the electrolyte should be between 60°-80° F for best results. No water or other liquid should be added to the battery during this initial activation.



(Photo 2-11) The battery for 8HP Models is shown here. Remove all six filler caps in preparation for activation.



(Photo 2-12) This is the battery we provide for the 5HP and 4HP Models. To prepare it for activation, remove all six filler caps.

3. After allowing the battery to stand for 30 minutes, check each cell and, if necessary, add more electrolyte solution so that the solution level reaches right up to the lowest part of each filler well. DO NOT overfill with electrolyte as this may cause electrolyte to flood over from the cells during battery charging.

Charging The Battery

To obtain maximum starting capacity and longest life, your battery must be fully charged according to the instructions given below until all cells are gassing freely. When you check for gassing, wear safety goggles and use a flashlight to look into each cell while the battery is being charged. When gassing freely, the surface of the liquid electrolyte should be covered with tiny bubbles.

DANGER

BATTERIES PRODUCE EXPLOSIVE GASES WHICH CAN CAUSE SEVERE PERSONAL INJURY.

WHEN CHARGING OR USING BATTERY, DO SO IN A WELL-VENTILATED AREA. KEEP SPARKS, FLAME, SMOKERS' MATERIALS FAR AWAY. DO NOT LEAVE BATTERY UNATTENDED WHILE CHARGING. FOLLOW ALL CHARGING INSTRUCTIONS AND SAFETY RULES PROVIDED BY BATTERY AND RECHARGER EQUIPMENT MANUFACTURERS.

FOLLOW ONLY THIS CHARGING METHOD FOR THE BATTERY ON THE 5HP AND 4HP CHIPPER/SHREDDERS:

1. Charge this 12-volt battery at a rate of 1-to-2 amperes until all cells are gassing freely. Total charging time should not exceed 12 hours.
2. When the battery is fully charged, turn off the charger and disconnect the cables. Check electrolyte level in each cell, and if necessary add electrolyte until it just reaches the lowest part of the filler well.
3. Replace the filler caps securely, but don't over-tighten them. Wash off any spilled electrolyte with a water and baking soda solution.

THERE ARE THREE POSSIBLE CHARGING METHODS FOR THE BATTERY ON THE 8HP CHIPPER/SHREDDERS:

Recommended Method:

Charge this 12-volt battery at a rate of 1-to-2 amperes until all cells are gassing freely. Total charging time should not exceed 24 hours.

First Alternative Method:

Charge the battery at a rate of 4-to-6 amperes until all cells are gassing freely. Total charging time should not exceed 8 hours.

Second Alternative Method:

Charge the battery at a rate of 6-to-12 amperes until all cells are gassing freely. Total charging time should not exceed 4 hours.

When the battery is fully charged, turn off the charger and disconnect the cables. Check electrolyte level in each cell. Add electrolyte if needed to bring the level in each cell up to the lower part of the filler wells. Replace the filler caps and use a baking soda and water solution to wash off any electrolyte which may have spilled on the battery.

! DANGER

BATTERIES PRODUCE EXPLOSIVE GASES WHICH CAN CAUSE SEVERE PERSONAL INJURY.

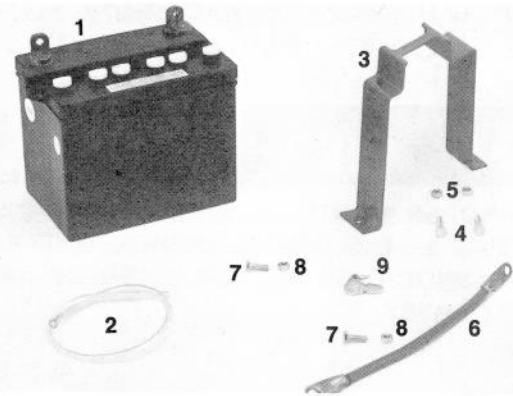
DO NOT CHARGE YOUR BATTERY AT AN AMPERAGE HIGHER THAN SPECIFIED. EXCEEDING THE AMPERAGE RATE COULD CAUSE AN EXPLOSION AND WILL GENERATE EXCESSIVE HEAT THAT WILL DAMAGE YOUR BATTERY.

Check To See You Have All Electric Start Parts And Hardware

Once the battery has been properly activated and charged, you can begin the final assembly steps that will prepare your equipment for use. Installing the battery on the battery platform is the first step. However, before you begin, please be sure you have all parts and hardware that are required for the electrical system assembly. The parts and hardware needed are shown in Photos 2-13 (8HP parts and hardware) and 2-14 (5HP and 4HP parts and hardware) and are listed below.

PARTS & HARDWARE REQUIRED FOR THE 8HP MODEL

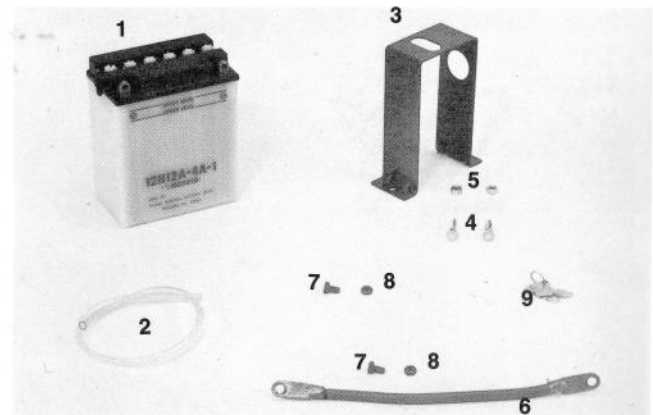
Photo Ref. No.	Item Description	Qty. Req'd.
1	Battery—must be activated and charged ...	1
2	Vent Tube	1
3	Hold-Down Clamp — for battery	1
4	Bolt — hex head, 1/4"-20 x 1"	2
5	Nut — self-locking, 1/4"-20	2
6	Negative Battery Cable	1
7	Bolt — hex head, 5/16"-18 x 3/4"	2
8	Nut — hex, 5/16"-18	2
9	Key — two shipped (one is a spare)	2



(Photo 2-13) Here are the parts and hardware you need to complete the electrical assembly on 8HP Super Tomahawk Chipper/Shredders. See text for item descriptions.

PARTS & HARDWARE REQUIRED FOR 5HP AND 4HP MODELS

Photo Ref. No.	Item Description	Qty. Req'd.
1	Battery—must be activated and charged ...	1
2	Vent Tube	1
3	Hold-Down Clamp — for battery	1
4	Bolt — hex head, 1/4"-20 x 1"	2
5	Nut — self-locking, 1/4"-20	2
6	Negative Battery Cable	1
7	Bolt — hex head, 1/4"-20 x 1/2"	2
8	Nut — hex, 1/4"-20	2
9	Key — two shipped (one is a spare)	2



(Photo 2-14) Please make sure you have these parts and the hardware shown above to finish the electrical assembly if you have the 5HP or 4HP Chipper/Shredder. Refer to the text for descriptions of each item shown.

Assembly Steps For The Electrical System

IMPORTANT: The belt cover over the lower pulley has been removed in several photos so you can see electrical parts and connections better. The belt cover should, however, be on *your* equipment at all times. It's needed to guard against accidental contact with the moving belt and pulley when the engine is running.

STEP 1: Installing The Battery On The Platform

DANGER

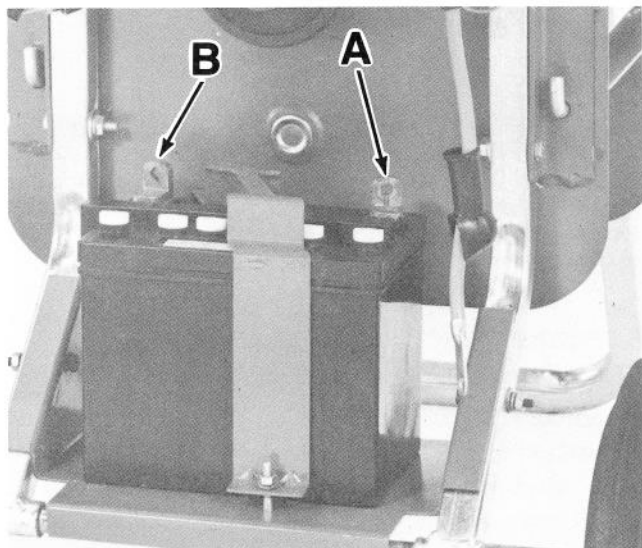
IMPROPER HANDLING OF BATTERY CAN RESULT IN ELECTRICAL BURNS, AN ELECTRIC SHOCK, OR AN EXPLOSION OF BATTERY GASES.

DO NOT TOUCH EITHER BATTERY POST SIMULTANEOUSLY WITH ANY OTHER SURROUNDING METAL PARTS WITH YOUR TOOLS, JEWELRY OR OTHER METAL OBJECTS TO AVOID INJURY.

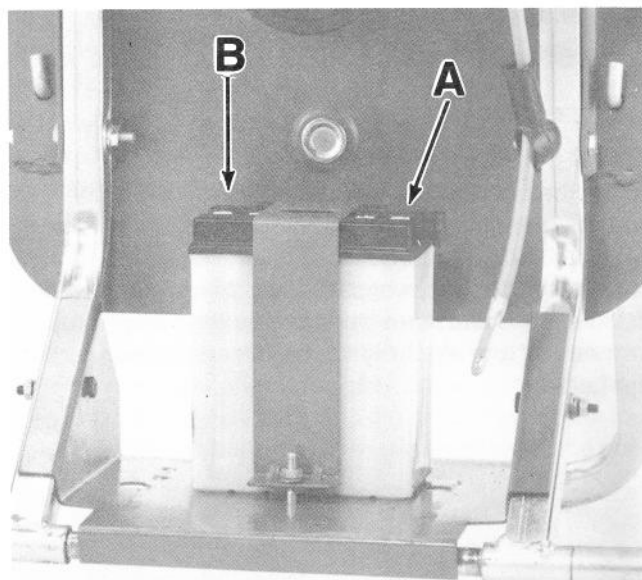
A. Place the battery on the platform, making sure that the positive (+) and negative (-) battery posts are facing away from you. As you position the battery, the positive post must be on the right, the negative post on your left. The correct position for the battery on the 8HP model is shown in Photo 2-15; the correct battery position on the 5HP and 4HP models is shown in Photo 2-16.

CAUTION

INSTALL THE BATTERY SO THE POSITIVE (+) POST IS ON YOUR RIGHT SIDE AND NEGATIVE (-) POST IS ON YOUR LEFT SIDE. POSITIVE POST MUST BE CONNECTED TO SOLENOID. FAILURE TO DO SO CAN RESULT IN DAMAGE TO BATTERY AND OTHER ELECTRICAL PARTS.



(Photo 2-15) The 8HP battery must be placed so the battery posts are toward the rear of the platform. The positive post ("A") must be on your right; negative post ("B") on your left. The holddown clamp and its hardware should be installed as shown.



(Photo 2-16) The battery on the 5HP and 4HP models must be positioned so the posts face the rear of the battery platform. Positive post ("A") is on your right; negative post ("B") on your left. Place the holddown clamp over the battery as shown, then install only the front bolt to connect the clamp to the platform; the rear bolt will be installed later.

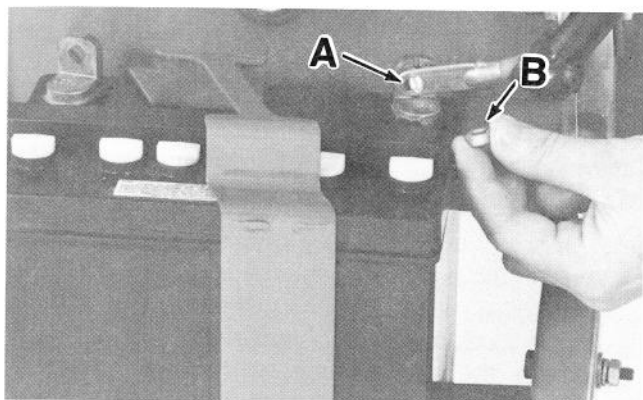
STEP 2: Install The Holddown Clamp

The holddown clamp should be mounted over the battery as shown in Photo 2-15 (8HP unit) and Photo 2-16 (5HP/4HP units). Secure the clamp to the battery platform with the two 1/4"-20x1" long bolts and 1/4"-20 self-locking nuts you received. Note the two different hole sets in the platform — the holes in the 8HP hold-down clamp should be aligned with the holes that are spaced widest apart on the platform; the holes in the 5HP/4HP holddown clamp must be aligned with the platform holes that are closest to each other. Install the bolts from underneath the platform and mount the nuts from the top. NOTE: Owners of 5HP and 4HP Chipper/Shredders should install the front bolt only at this time — once the battery cables are fully installed on your battery, then the rear holddown clamp bolt can be installed. Owners of 8HP Chipper/Shredders may install both holddown clamp bolts before the battery cables are installed.

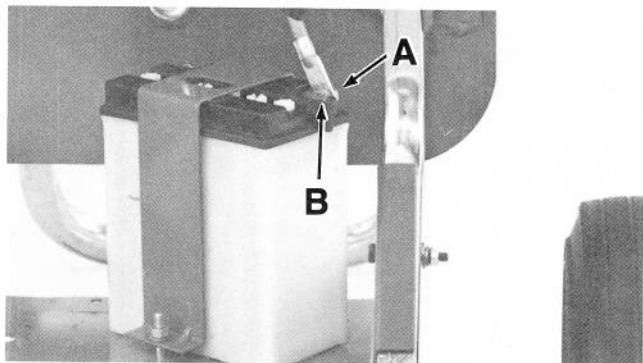
STEP 3: Connect Positive Cable To Battery

One end of the positive cable is already connected to the solenoid. Connect the loose end of the cable to the positive (+) post on the right side of the battery using one of the small bolts and hex nuts you received. Refer to Photo 2-17 if you have an 8HP Chipper/Shredder; refer to Photo 2-18 if you have the 5HP or 4HP Chipper/Shredder. NOTE: with the 5HP or 4HP unit, turn the battery slightly as shown in the photo for more room to secure the hardware.

Once the cable is connected to the battery post, be sure to slide the black rubber boot completely over the cable-to-post connection. Photo 2-19 and Photo 2-20 show the boot as it should be positioned.



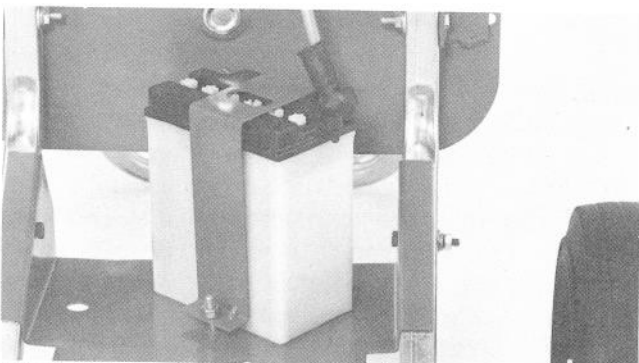
(Photo 2-17) On the 8HP electrical system, connect the positive (+) cable to the positive battery post as shown above. Use one of the small bolts and hex nuts to make the connection. Note that the bolt head ("A") faces away from you and the hex nut ("B") faces toward you.



(Photo 2-18) Turn the 5HP/4HP battery slightly to one side to make bolt and nut installation easier. The bolt head ("A") faces away from you; the nut ("B") faces you. Be sure that hardware connecting the positive cable to the positive battery post is secure.



(Photo 2-19) Slide the rubber boot over the battery post and the end of the positive cable (8HP system shown).



(Photo 2-20) As shown, the rubber boot must be slid completely over the cable-to-battery post connection (5HP and 4HP systems).

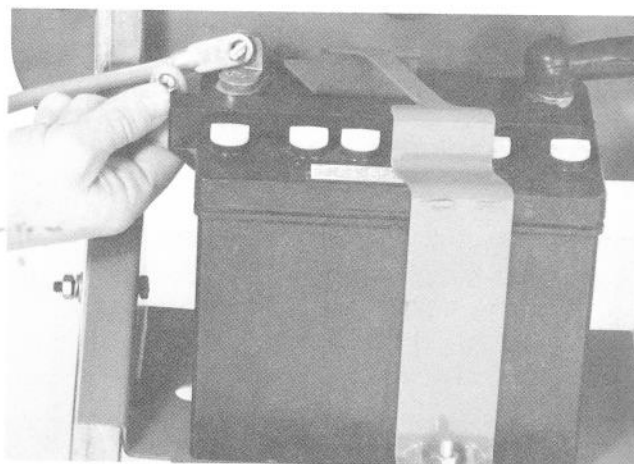
STEP 4: Connect Negative Cable To Battery

Remove the negative cable from the parts package. Connect the end of the cable with the small hole to the negative (-) post on the battery using the last small bolt and nut you received. See Photo 2-21 (8HP unit) and Photo 2-22 (5HP and 4HP units). Place the hardware just the way the positive cable hardware was connected to the battery.

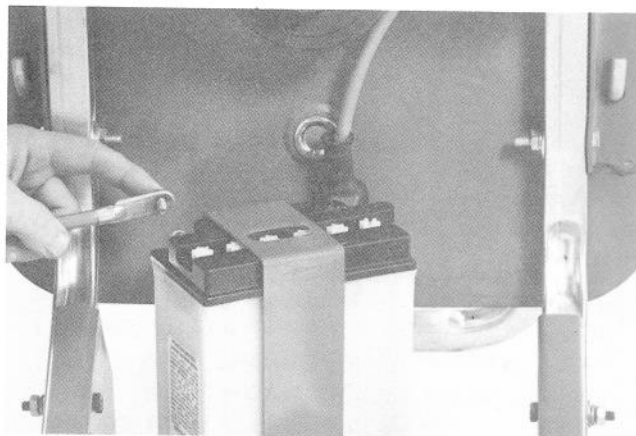
DANGER

IMPROPER HANDLING OF BATTERY CAN RESULT IN ELECTRICAL BURNS, AN ELECTRIC SHOCK, OR AN EXPLOSION OF BATTERY GASES.

DO NOT TOUCH EITHER BATTERY POST SIMULTANEOUSLY WITH ANY OTHER SURROUNDING METAL PARTS WITH YOUR TOOLS, JEWELRY OR OTHER METAL OBJECTS TO AVOID INJURY.



(Photo 2-21) Connect the negative cable from your hardware package to the negative battery post (8HP unit shown).



(Photo 2-22) On the 5HP and 4HP units, swing the battery to one side to make negative cable to negative battery post connection easiest. Once the cable is connected, straighten the battery, then connect the back of the holddown clamp to the battery platform.

STEP 5: Connect Negative Cable To Ground Location; Then Install The Vent Tube

Using an open end wrench, remove the whiz nut indicated in Photo 2-23. Position the loose end of the negative cable on the bolt, then replace the nut and tighten securely. This grounds the entire electrical system.

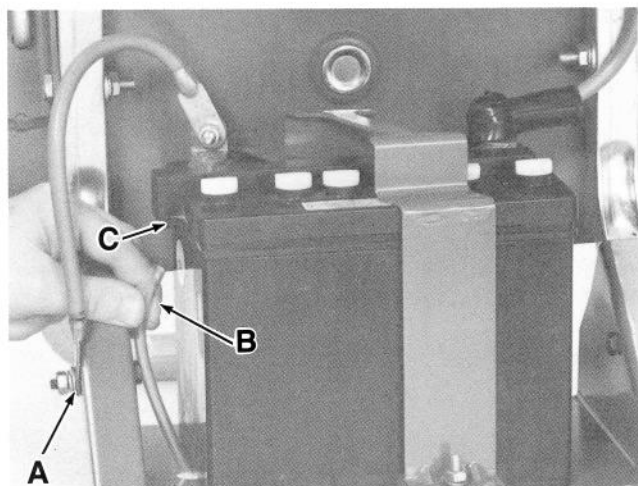
Also slip the clear plastic vent tube on the battery vent opening. See Photo 2-23. NOTE: on the 8HP battery, the vent opening is on the left side of the battery; on the battery for the 5HP and 4HP units, it's on the right side. Be sure the clear plastic tube is not crimped or kinked in any way. Improper venting could lead to a battery explosion. Put the other end of the vent tube down through the drain hole in the battery platform. We suggest that you cut the vent tube (scissors or knife will do) so that it is about 2" above the ground.



DANGER

BATTERIES PRODUCE EXPLOSIVE GASES WHICH CAN CAUSE SEVERE PERSONAL INJURY.

THE BATTERY MUST ALWAYS BE PROPERLY VENTED TO SAFELY RELEASE GASES. MAKE SURE BATTERY VENT AND VENT TUBE ARE NOT CLOGGED OR KINKED.

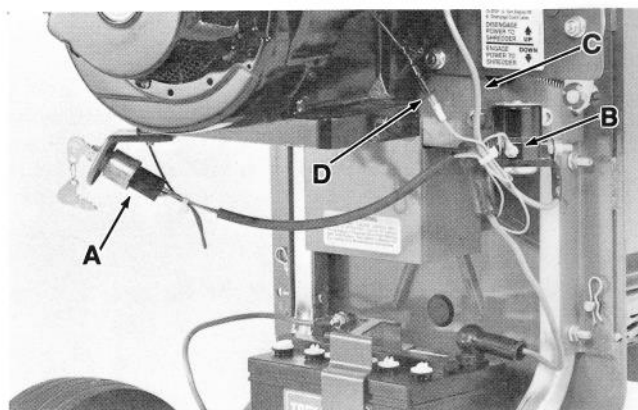


(Photo 2-23) Ground the electrical system by connecting the loose end of the negative cable to bolt "A". Just remove the nut, slide the cable end on the bolt, then replace the nut. Also slip the clear vent tube ("B") over the battery vent opening ("C"). The vent tube must not have any kinks.

STEP 6: Final Check Of All Electrical Connections

Now that the battery is activated, charged and installed, please make a visual check of all the wires in the wiring harness to be sure they're connected securely. Check these locations and refer to Photo 2-24.

- Be sure the plastic wire connector going to the keyswitch is securely attached.
- Be sure all wires attached to the solenoid are held firmly in place by their hardware.
- Check the starter cable connecting the starter motor to the solenoid — hardware should be tight.
- Also be sure the plastic connector on the recharging line is secure.



(Photo 2-24) On the wiring system, be sure the following connections are secure: wire connector to keyswitch ("A"); wires attached to solenoid ("B"); cable to starter motor ("C"); plastic connector on recharging line ("D"). 8HP system is shown above.

SECTION 3:

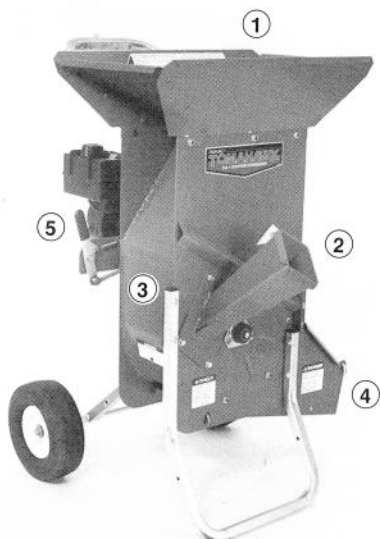
Features & Controls On The Chipper Shredder And Engine

Before putting your new SUPER TOMAHAWK® Chipper/Shredder to work on the projects you've been planning, please read this Section completely to understand exactly how the equipment works and the location and function of all the features and controls. Basically, there are chipper/shredder features and there are engine features. This section groups them as such, and explains each in detail.

Chipper/Shredder Features & Controls

Please refer to Photo 3-1 to locate the following chipper/shredder features and controls:

1. Shredder Hopper (inlet)
2. Chipper Chute (inlet)
3. Chipper/Shredder Chamber
4. Discharge Tunnel
5. Clutch Lever



(Photo 3-1) Your equipment has the features/controls shown above, regardless of which engine option you chose.

1. Shredder Hopper (Inlet)

The Shredder Hopper (see Photo 3-2 for a closeup) is located at the top of the unit and is the opening into which all materials to be shredded should be fed. A rubber retainer flap is secured to the hopper. Material must be pushed past the retainer flap (use a stick) in order to enter the main chipper/shredder chamber where revolving steel cutters do the shredding (see Danger above). **The retainer flap is an important feature — it prevents kickback of materials! Do Not Use Your Equipment Unless The Rubber Retainer Flap Is Securely Fastened.** Most organic materials can be shredded. Section 4 provides a list of such materials.

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY. DO NOT PUT HANDS, FACE, FEET OR CLOTHING INTO THE SHREDDER HOPPER, CHIPPER CHUTE, 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 ALL MOVING PARTS HAVE COME TO A COMPLETE STOP. USE ONLY A WOODEN STICK TO CLEAR JAMMED MATERIAL AFTER ALL MOVING PARTS HAVE STOPPED COMPLETELY.



(Photo 3-2) The top-loading Shredder Hopper can be used to shred a variety of organic materials. The rubber retainer flap inside the hopper must always be securely fastened.

DANGER

SHREDDED PARTICLES CAN KICKBACK UP THROUGH THE SHREDDER HOPPER INLET UNLESS THE RUBBER RETAINER FLAP IS IN PLACE AND SECURELY FASTENED. PERSONAL INJURY CAN RESULT FROM FLYING PARTICLES.

BEFORE USING YOUR EQUIPMENT, BE SURE THE RETAINER FLAP IS SECURELY ATTACHED AND THAT YOU ARE WEARING PROTECTIVE SAFETY GOGGLES OR GLASSES.

2. Chipper Chute (Inlet)

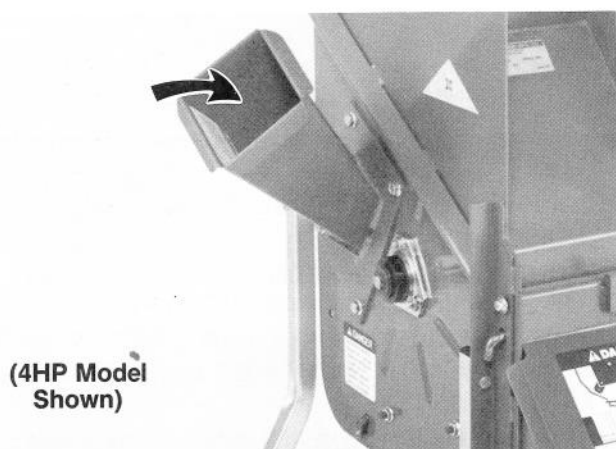
This side-mounted Chipper Chute gives you a way to process into "chips" the larger, heavier materials that the Shredder wasn't designed to handle. The Chipper Chute is shown in a close-up in Photo 3-3. The chute is bolted to the side of your equipment with heavy-duty hardware. Branches fed into the chute are turned into "chips" by a revolving blade mounted on a flywheel. With 8HP and 5HP models, we recommend that branches and vines from 1" in diameter up to 3" in diameter be fed into the Chipper Chute. With 4HP models, use materials that are 3/4"-to-2" in diameter. It's a good idea to cut your materials into manageable lengths before feeding them into the Chipper. **Note: the Chipper Chute must be securely bolted to the side of your equipment before using the Chipper/Shredder!**

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY. DO NOT PUT HANDS, FACE, FEET OR CLOTHING INTO THE SHREDDER HOPPER, CHIPPER CHUTE, 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 ALL MOVING PARTS HAVE COME TO A COMPLETE STOP. USE ONLY A WOODEN STICK TO CLEAR JAMMED MATERIAL AFTER ALL MOVING PARTS HAVE STOPPED COMPLETELY.

WARNING

DO NOT OPERATE YOUR EQUIPMENT UNLESS THE CHIPPER CHUTE IS PROPERLY BOLTED TO THE SIDE OF THE UNIT. SERIOUS PERSONAL INJURY CAN RESULT IF THE CHUTE IS NOT SECURELY ATTACHED.

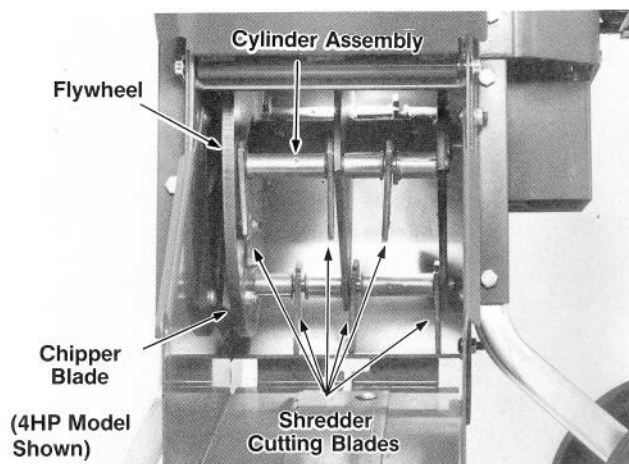


(Photo 3-3) The Chipper Chute is for processing larger, heavier branches (1"-to-3" diameter in 8HP and 5HP machines; 3/4"-2" diameter in 4HP machines). It must be securely attached to your equipment at all times.

3. Chipper/Shredder Chamber

Inside the steel mainframe chamber of your equipment is a chipper flywheel/cylinder assembly that is bolted to the drive shaft. The round flywheel has a chipper blade attached to it. The cylinder assembly holds the shredder flail cutter blades ("flails") that do all the shredding. If you have an 8HP or 5HP model, your unit has 16 steel shredder blades; if you have a 4HP model, your machine has 12 steel shredder blades. Additional horsepower, plus the difference in blade count (and a 10" wide frame versus an 8" wide frame) is the reason the more powerful machines can handle thicker material (up to 1" in shredder; 1"-to-3" in chipper) than the 4HP unit (up to 3/4" in shredder; 3/4"-to-2" in chipper).

See Photo 3-4 for a view of the inside of the mainframe showing the chipper flywheel and the shredder cutting blades. When your equipment is running (engine started; Clutch Lever moved DOWN to "Engage" position), the chipper blade and the shredder blades revolve at the same time — making either chipping or shredding available to you.



(Photo 3-4) Shown above is the combination chipper flywheel/shredder cylinder assembly (the Service Door is open and the Discharge Screen is removed). The flywheel holds the chipper blade — feed branches up to 3" thick into the chipper chute (2" in 4HP model) and the chipper blade creates even-sized wood chips. Or feed material up to 1" (or 3/4" with 4HP models) thick into the shredder hopper and the flails will process it.

DANGER

CONTACT WITH ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER WILL CAUSE SERIOUS PERSONAL INJURY. DO NOT PUT HANDS, FACE OR CLOTHING INTO THE SHREDDER HOPPER, CHIPPER CHUTE, 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 ALL MOVING PARTS HAVE COME TO A COMPLETE STOP. THEN, USE ONLY A WOODEN STICK TO CLEAR JAMMED MATERIAL.

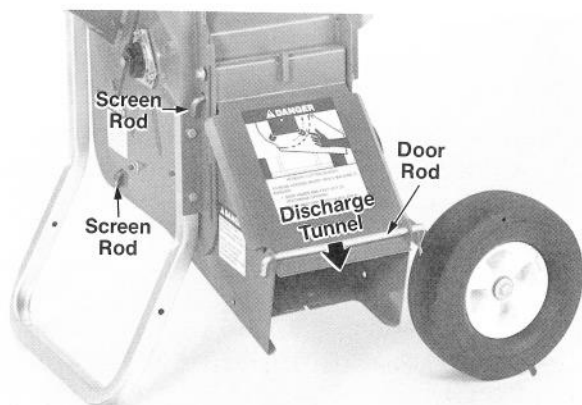
4. Discharge Tunnel & Discharge Screen

The discharge area on your equipment, as you stand facing the chipper chute, will be on the side to your right, near the bottom of the chipper/shredder. This is the location where all chipped and shredded materials exit once they've been processed. See Photo 3-5 for a close-up view of the discharge area.

Inside the discharge tunnel (refer to Photo 3-5) there is a steel discharge screen through which the processed materials must pass in order to exit from the discharge tunnel. The holes in the screen not only provide an exit from the internal chamber, but the **diameter of the holes in the screen determines how finely materials are shredded**. Your machine is fitted with a removable screen with 3/4" diameter holes — ideal for many of the tasks you'll be doing. However, should you need more finely shredded particles, or you wish to grind corn for feed, you may wish to order the optional screen with 3/8" holes; if more coarsely processed material is needed, order the optional screen with 1" diameter holes. Just call us and we'll be glad to assist you with screen selections.

DANGER

CONTACT WITH INTERNAL ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY. DO NOT PUT HANDS, FACE, FEET OR CLOTHING INTO THE SHREDDER HOPPER, CHIPPER CHUTE, 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 ALL MOVING PARTS HAVE COME TO A COMPLETE STOP. USE ONLY A WOODEN STICK TO CLEAR JAMMED MATERIAL AFTER ALL MOVING PARTS HAVE STOPPED COMPLETELY.



(Photo 3-5) Chipped and shredded materials are discharged from the discharge tunnel. To avoid personal injury, stay away from this area during operation. A removable screen inside the tunnel is interchangeable with other optional screens to vary the size of discharged material.

Reasons To Remove The Discharge Screen:

- **The screen may need cleaning.** Holes in the screen may be clogged, thereby preventing materials from being discharged.
- **You may want to process wet or green materials like damp or matted leaves, spoiled or leftover vegetables, manure and the like.** This is best accomplished by removing the screen and running your equipment without a screen in place. In this way, clogging will be kept to a minimum.
- **You may wish to alter the size of discharged material.** Removing the standard screen with 3/4" holes and installing one of the optional screens accomplishes this.

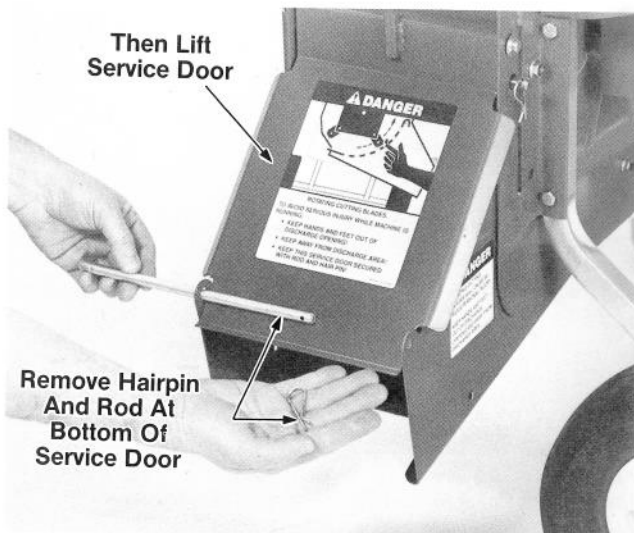
How To Remove The Discharge Screen:

DANGER

ROTATING CUTTING BLADES INSIDE THE DISCHARGE OPENING WILL CAUSE SERIOUS PERSONAL INJURY.

BEFORE OPENING SERVICE DOOR TO REMOVE DISCHARGE SCREEN, BE CERTAIN THE ENGINE IS OFF, ALL MOVING PARTS HAVE STOPPED COMPLETELY, AND THE SPARK PLUG WIRE IS DISCONNECTED.

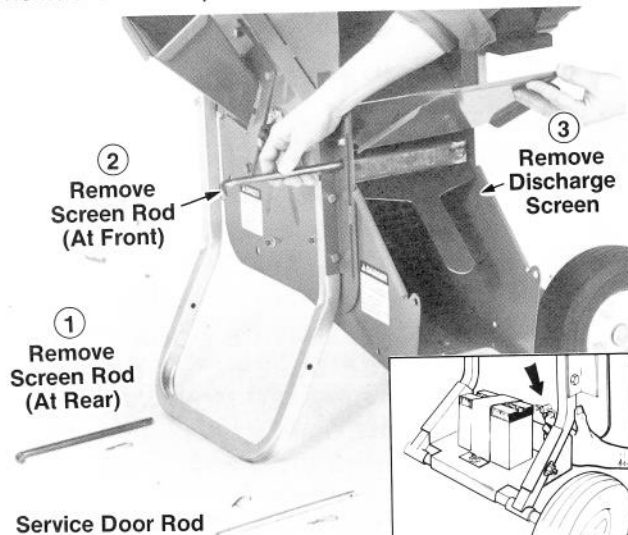
1. Be sure the engine is off, all moving parts have stopped completely, and the spark plug wire is disconnected. It's now OK to start work.
2. You must open the Service Door to gain access to the discharge screen. To open the door, first remove the Hairpin from the steel rod shown in Photo 3-6, then slide the rod out from the two tabs. Once out, the Service Door can be lifted and the screen inspected. If the screen must be removed, proceed as follows.



(Photo 3-6) Remove the hairpin and the rod securing the front of the Service Door. Lift the door up to inspect the discharge screen.

3. Two other rods and hairpins secure the screen to the mainframe. Remove the rod (and hairpin) at the far end (furthest from service door) of the screen (see Photo 3-7), then the rod and hairpin at the near end of the discharge screen (see Photo 3-7). Note: if you have an electric start model, the hairpin furthest from you can be most easily removed by walking around to the other side of the machine. (See sketch inside Photo 3-7).

4. Once the rods are out, lift up the Service Door and slide the screen out from the mainframe by using the built-in handle (refer to Photo 3-8). You can now clean the screen thoroughly, or clean the interior of the shredder chamber with a stick if necessary, or install one of the other optional screens if desired.



(Photo 3-7) Slide out the rear and front rods in order to remove the Discharge Screen. Hold the Service Door up and support the screen while you remove the front rod last. The screen is then free. Electric Start owners — the easiest way to remove the rear rod and hairpin on your machine is to walk around to the other side. See the sketch above.



(Photo 3-8) Carefully slide the screen out. Note that there is a positioning tab at the far end of the screen. When installing the screen, the tab must go into a slot on the other side of the mainframe. Go to the other side of your machine and you'll see the tab protruding through the slot when the Discharge Screen is properly positioned. Remember to put all three rods back in and to secure them with the hairpins.

How To Install The Discharge Screen:

Note: if you've been shredding wet or green material with the screen out, you'll want to clean out the tunnel and perhaps even the inner chamber with a stick first, before installing the discharge screen. Never clean tunnel or chamber while unit is running.

1. With the service door up, position the screen so the tab at the end of the screen goes into the slot at the back of the mainframe.

2. Install one rod and a hairpin to secure the **front end** of the screen.

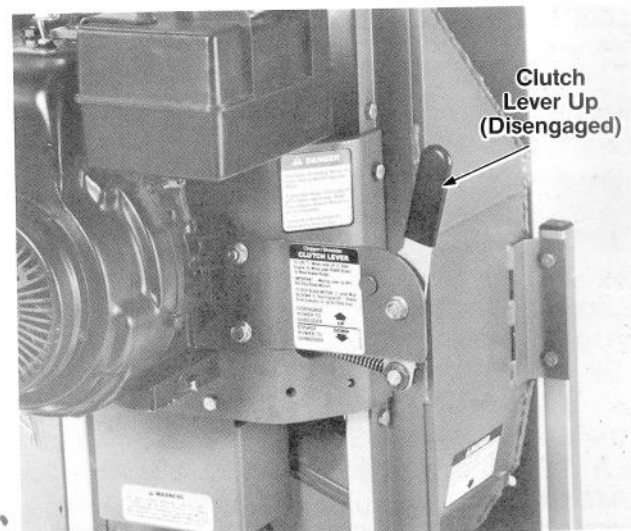
3. Install one rod and its hairpin at the **rear end** of the discharge screen, using the tab to assist you in aligning the screen hole and the rod.

4. Lock the service door closed with the last rod and hairpin.

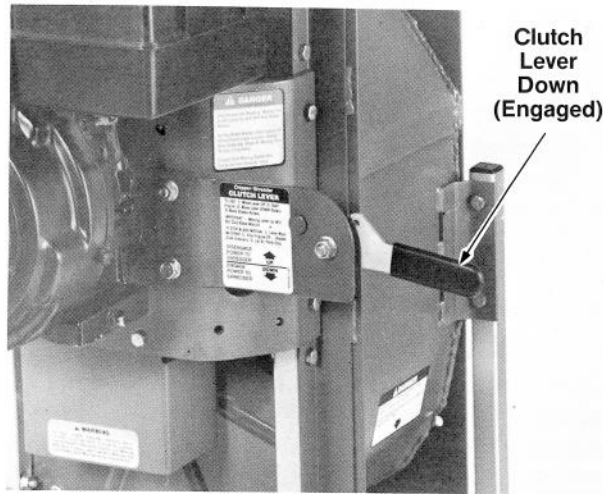
5. Clutch Lever

The Clutch Lever can be moved to either of two positions: UP or DOWN. It should be UP only while the engine is being started, and DOWN at all other times. Once the engine starts, slowly move the lever all the way DOWN to "ENGAGED" — this tightens the belt tension and lets power from the engine turn the drive-shaft. The chipper blade and shredder cutting blades will build up speed to 3600 RPM.

IMPORTANT — Moving the Clutch Lever UP to "DIS-ENGAGED" will NOT STOP blade motion! The only way to stop blade motion is to shut the engine off while the Clutch Lever is DOWN. The blades will slow down very gradually before stopping because they were rotating at such high speed. Refer to Photos 3-9 and 3-10 for the "UP" and "DOWN" Clutch Lever positions. See full operating instructions on the Clutch Lever in Section 4.



(Photo 3-9) The Clutch Lever should be UP as shown only when starting the engine. Move it DOWN slowly to make the chipper and shredder cutting blades rotate. Keep the Clutch Lever DOWN at all times (except when starting engine).



(Photo 3-10) Moving the Clutch Lever DOWN to the "ENGAGE" position after the engine is started allows engine power to be transferred through the drive belt to the chipper/shredder cylinder assembly.

⚠ DANGER

ROTATING CUTTING BLADES ARE REVOLVING AT HIGH SPEED WHEN THE ENGINE IS RUNNING AND THE CLUTCH LEVER IS DOWN (ENGAGED). BLADES SLOW DOWN GRADUALLY AFTER ENGINE IS SHUT OFF. TO AVOID SERIOUS PERSONAL INJURY DO NOT PUT HANDS, FACE, FEET OR CLOTHING NEAR OR INTO SHREDDER HOPPER, CHIPPER CHUTE, DISCHARGE OPENING OR NEAR THE DISCHARGE AREA.

Engine Features & Controls

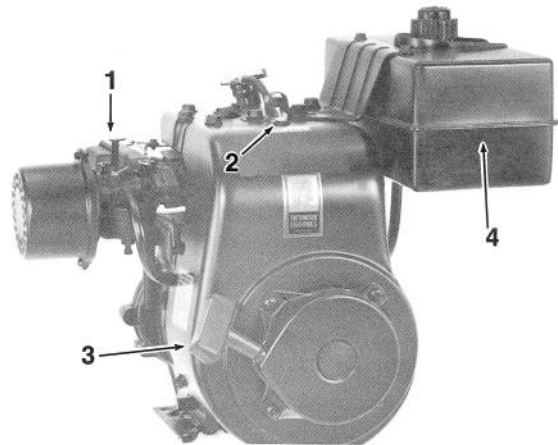
1. Carburetor Choke Control
2. "Run-Stop" Switch (5HP and 4HP Tecumseh engines)
"On-Off" Switch (8HP Briggs & Stratton engine)
3. Manual Start and Optional Electric Start
4. Fuel Tank

1. Carburetor Choke Control

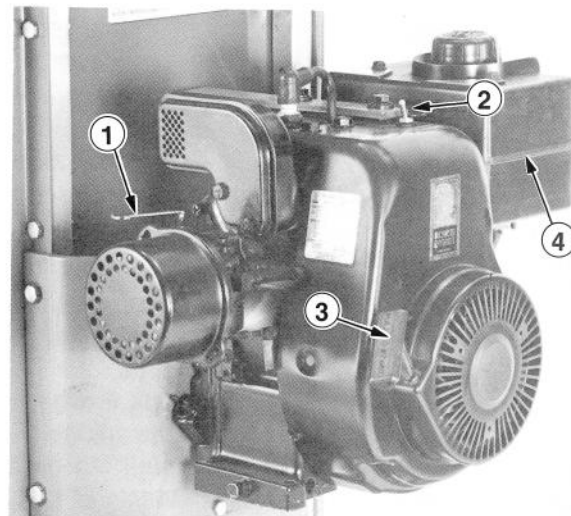
The 5HP Tecumseh, 4HP Tecumseh, and 8HP Briggs & Stratton engines have a Choke Control Lever located on the carburetor. This lever lets you regulate the air-fuel mixture to make starting a cold engine easier. Use the FULL CHOKE position when starting a cold engine; switch to PARTIAL CHOKE (Half Choke) for a few seconds once the engine is started; use the NO CHOKE position when warming up the engine and during general operation. Important: if engine falters when the choke lever is in the NO CHOKE position, switch back to PARTIAL CHOKE temporarily. ALWAYS HAVE THE CHOKE LEVER IN THE NO CHOKE POSITION DURING GENERAL OPERATION. Harmful deposits will build up inside the engine if you don't do this.

Tecumseh 5HP Choke Control Lever: see Photo 3-11 for its location on the engine. This lever has an "arrow-head" shape — the point of the arrow indicates the direction in which the lever must swing for the FULL CHOKE position.

Tecumseh 4HP Choke Control Lever: refer to Photo 3-12. Like the 5HP Tecumseh engine, this engine has a choke lever in the form of an "arrowhead". Swing the lever in the direction the arrow is pointing to activate the choke mechanism.

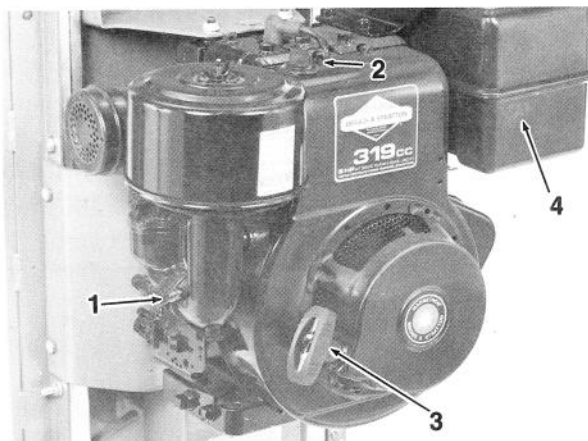


(Photo 3-11) Controls on the 5HP Tecumseh engine: Choke Lever ("1"); Run-Stop Switch ("2"); Recoil Starter ("3"); Fuel Tank ("4"). (Electric start Tecumsehs have a keyswitch instead of a Run-Stop Switch).



(Photo 3-12) Here are the major controls on the 4HP Tecumseh engine: Choke Lever ("1"); Run-Stop Switch ("2"); Recoil Starter ("3"); Fuel Tank ("4").

Briggs & Stratton 8HP Choke Control Lever: see Photo 3-13 which shows the location of the lever. Move the lever **DOWNWARD** all the way for **FULL CHOKE**. All versions of the 8HP Briggs engine have this control lever in the same location.



(Photo 3-13) Controls on the 8HP Briggs & Stratton engine. Choke Lever ("1"); On-Off Switch ("2"); Recoil Starter ("3"); Fuel Tank ("4"). 8HP I/C engine has the same features and control locations as the regular 8HP engine.

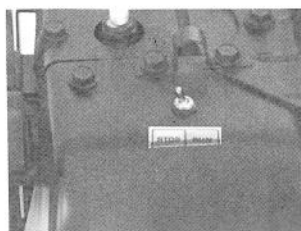
Emergency Engine Stopping Information — if the On-Off Switch (or Run-Stop Switch), or the electric start keyswitch fails to work properly, use the Choke Control Lever to stop the engine if necessary. Just move the Lever to the Full Choke Position. Be sure the shut-off problem is diagnosed and repaired before starting the engine again. Using the choke lever to shut the engine off is not good for the engine — this will cause the build-up of harmful deposits.

2. 5HP And 4HP Tecumseh "Run-Stop" Switch And 8HP Briggs & Stratton "On-Off" Switch

This switch, located on top of your engine near the engine identification number, must be activated before the engine can be started, and must also be used to shut off the engine. Only manual start engines have this switch. Note: on Electric Start models, a Keyswitch is used instead for starting and stopping the engine. The ideal operating speed for your engine has been pre-set at the factory by the engine manufacturer, allowing your engine to always provide sufficient power to the Chipper/Shredder regardless of the type of job it's doing. **Please do not alter the pre-set engine speed in any way.** A higher speed could damage it.

Tecumseh 5 HP and 4HP Run-Stop Switch. See Photo 3-14 for the location of this toggle-style switch. It must be in the "Run" position before you try to start the manual start engine with the recoil start rope. **Move the switch to the "Stop" position to shut off the engine.**

Briggs & Stratton 8HP On-Off Switch: Photo 3-15 shows you where this dial-type switch is located on top of the engine. Turn it to the "On" position and use the recoil start rope to start the engine. **To stop the engine, turn the switch to "Off".**



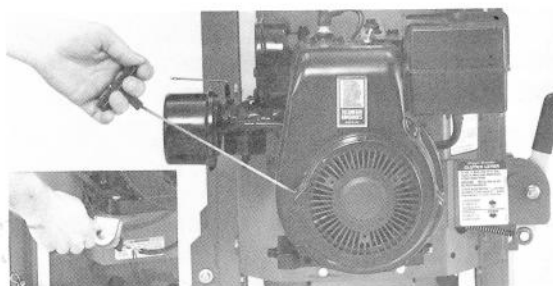
(Photo 3-14) Run-Stop switch on 5HP and 4HP Tecumseh engines.



(Photo 3-15) On-Off switch on 8HP manual start Briggs engine.

3. Manual Start and Optional Electric Start Models

Manual Start engines have only a rope-pull recoil starter. Electric Start engines have a Keyswitch-activated electric starter and a manual recoil starter backup. Be sure the Clutch Lever is UP. On manual models, grasp the starter rope handle (see Photo 3-16) and slowly pull the rope until you feel resistance... then pull the rope out rapidly to start the engine. Always let the starter rope back in slowly to prevent damage to the recoil assembly. You may have to pull the start rope several times to start a cold engine. Of course, with Electric Start Models, all you have to do is turn the ignition key to start the engine. (See Inset Photo 3-17).



(Photo 3-16) To start the engine (recoil start models only), pull out the starter rope. Let the starter back in slowly once the engine is running. A 4HP recoil start Tecumseh engine is shown. The 5HP and 8HP engines are started the same way. (Inset Photo 3-17) Keyswitch starting is the easiest way. It's how you start the electric versions.

4. Engine — Fuel Tank

WARNING

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

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

Be sure to use gasoline that meets the specific requirements listed in the engine manufacturer literature. Recommended is Unleaded Regular automotive gasoline. Leaded Regular is an acceptable substitute. The fuel tank on your engine is located on the upper right-hand side. **Do Not Mix Oil With Gasoline!**

SECTION 4:

Operating Instructions



DANGER

CONTACT WITH ROTATING CUTTING BLADES INSIDE DISCHARGE OPENING WILL CAUSE SERIOUS PERSONAL INJURY.

READ THE COMPLETE OWNER/OPERATOR MANUAL, INCLUDING THESE OPERATING INSTRUCTIONS, BEFORE USING YOUR EQUIPMENT.

This section provides you with detailed information on the use of your Chipper/Shredder, lots of helpful tips to make jobs go faster and smoother, and an important Checklist of Pre-Starting Steps and Engine Starting Steps that you should always use. **Please read all of the information in this section before you start the engine.**

IMPORTANT — Do not allow processed material to build up beside or beneath the machine to the point where it contacts the Discharge Tunnel. If material can not freely exit via the Discharge Tunnel into the discharge area, it will continue to circulate within the processing chamber leading to clogs and the possibility of having some of the material being “blown” back up through the feed hopper.

To remove discharged material from the discharge area, use a long-handled shovel or stick.

Use The Shredder For Most Materials; Use The Chipper For the Biggest, Toughest Jobs

To get the greatest benefits from your equipment, it's 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. Please see examples of appropriate materials for chipping and shredding listed below.**

Materials Best Suited For Shredding:

Due to the wide variety of materials that can be shredded, and their very different 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. Your judgement is important — *be sure not to overload the Shredder.* Overloading will cause engine speed to decrease significantly, making the engine labor and cause poor performance.

- Twigs and branches — up to 1" in diameter in the Shredder hopper (3/4" in 4HP Model). Several small branches can be fed into the Shredder hopper at once

providing their combined diameter is less than 1". Longer branches (more than 2-to-3 feet) should be cut to make them more manageable. Green materials should be allowed to dry, or processed in small batches with dry materials, to avoid winding up and binding the cylinder. Wet materials will clog up easily, so remove the discharge screen **before** processing them.

- Leaves, grass clippings, and all other light, loose materials. These process most easily.
- Organic waste materials and organic garbage (be sure to first remove all metal, bottles, cans, rocks, and plastic).
- Sections of vines less than 1" (3/4" if you have a 4HP) in diameter. Long vines should be cut to manageable lengths — 2-to-3 feet.
- Wood chips processed by the Chipper if even finer particles are required.
- All paper trash.
- Partially finished compost.
- Stalks and most brush material.
- A mixture of any of the materials listed above.

Materials Best Suited For Chipping:

- Thicker branches — from 1"-to-3" in diameter (3/4"-to-2" with 4HP Models), depending upon hardness of wood. Extremely hard knots will not process very well. Short, thick branches (up to 3" in diameter) that are left over after an original longer branch was fed through the chipper may also be chipped — move these shorter stubs through the chipper with the next longer branch you'll be chipping.
- Tough 1"-to-3" diameter stalks. We recommend not chipping vines smaller than 1" in diameter. Cut them to manageable lengths — no more than five or six feet long — before chipping them.



DANGER

CONTACT WITH ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY. THE CHIPPER AND SHREDDER BLADES ROTATE AT EXTREMELY HIGH SPEED.

NEVER PUT YOUR HANDS OR ANY OTHER PART OF YOUR BODY INTO THE CHIPPER CHUTE, SHREDDER HOPPER INLET, OR DISCHARGE OPENING WHEN MACHINE IS RUNNING. BEFORE SERVICING OR UNCLOGGING JAMMED MATERIAL, SHUT OFF THE ENGINE, LET ALL MOVING PARTS COME TO A COMPLETE STOP, AND DISCONNECT THE SPARK PLUG WIRE. ROTATING BLADES SLOW DOWN GRADUALLY AFTER THE ENGINE IS OFF — LET THEM COME TO A COMPLETE STOP BEFORE SERVICING.

Transporting The Chipper/Shredder

When you move your equipment, please follow the instructions below. Remember — the SUPER TOMAHAWK® Chipper/Shredder weighs over 200 pounds. **This weight must be properly balanced over the wheel axle and carefully rolled in order to move the equipment safely and easily.** Here's how:

- First shut the engine OFF. Keep the Clutch Lever in "ENGAGED" position (DOWN) until all moving parts stop completely. The Chipper and Shredder blades will slow down gradually. Allow the moving blades to come to a complete stop before proceeding. After they have stopped, move the Clutch Lever to "DISENGAGE" position (UP). Then disconnect the spark plug wire.
- Space both hands evenly and firmly on the handlebar. A good grip is very important.
- Place one foot on the wheel axle (on electric start models, put your foot on the battery bracket), halfway between the ends of the axle. Your other foot should be firmly planted.
- While steadying the equipment with the foot that's on the axle, pull the handlebar toward you (Photo 4-1).
- As the equipment tilts back toward you, stop pulling when you find the balance point (center of gravity) and hold the equipment there. Take your foot off the axle.
- Slowly pull or push the Chipper/Shredder to the work area. Be sure the path is clear of obstacles and that you keep a firm grip on the handlebar. On smooth, level ground, it's easier to push the unit. Pulling is better when the wheels have to go over ruts or obstacles.
- At your destination, make a complete stop. Then put your foot back on the wheel axle (or battery bracket) to steady the wheels and lower the handlebar slowly until the front stand touches the ground. Remember — your equipment should only be used on an earthen, level



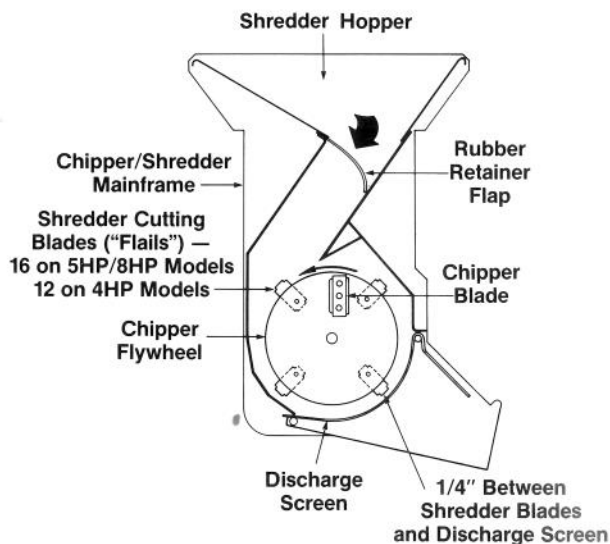
(Photo 4-1) To move your Chipper/Shredder, plant one foot on the axle, tilt equipment back with both hands until "balance point" is reached, then push or pull your equipment to a work area. Engine must be OFF.

surface...not on hard driveways, patios or gravel where discharged materials can bounce back up and strike you or others.

DANGER

THE ROTATING SHREDDER CUTTING BLADES INSIDE THE DISCHARGE OPENING CUT 1/4" FROM THE DISCHARGE SCREEN. CONTACT WITH ROTATING CUTTING BLADES WILL RESULT IN SERIOUS PERSONAL INJURY. 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.

IN ORDER TO REMOVE CHIPPED OR SHREDDED MATERIAL FROM THE DISCHARGE AREA, USE A LONG-HANDLED SHOVEL OR LONG STICK — NEVER USE YOUR HANDS OR FEET! IF MATERIAL SHOULD EVER CLOG THE CHAMBER, DISCHARGE TUNNEL, OR DISCHARGE OPENING, SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE. USE A STICK TO CLEAR CLOGGED MATERIAL.



Shredder blades pass within 1/4" of discharge screen — KEEP HANDS AND FEET AWAY from Discharge Area at all times to avoid serious personal injury!

Pre-Starting Steps

1. Engine must be OFF. Disconnect the spark plug wire temporarily. Move your equipment to the work area. Select a level, earthen surface...never a hard surface (like concrete, macadam, brick, patio block, gravel or rocks) which can cause discharged materials to bounce upward.
2. Check the engine for correct oil level.
3. Add gasoline to the fuel tank, if needed. Follow safety requirements in Section 1.

4. Be sure all bystanders are at least 25 feet away from the area of operation.
5. Put on your safety goggles, hearing protectors, and sturdy work gloves.
6. Visually check the Chipper Chute and the Shredder Hopper to see that they're empty.
7. Check the Discharge Screen to be sure it's correctly and securely installed and the screen holes are not clogged. If clogged, clean them with a stick. Be sure all hardware is securely fastened. The Service Door must be closed and secured with a rod and hairpin.
8. Reconnect the spark plug wire. You are now ready to start the engine.

Engine Starting & Stopping Steps

DANGER

ROTATING CUTTING BLADES INSIDE THE CHIPPER/SHREDDER CHAMBER ARE IN OPERATION ONCE THE ENGINE IS STARTED AND THE CLUTCH LEVER IS MOVED TO THE "ENGAGE" POSITION. CONTACT WITH CUTTING BLADES WILL CAUSE SEVERE INJURY. KEEP HANDS, FEET AND CLOTHING AWAY FROM CHUTE AND HOPPER INLETS AND DISCHARGE AREA AT ALL TIMES.

How To Start

1. Move the Carburetor Choke Control Lever to FULL CHOKE Position (see Photo 3-11, 3-12, or 3-13 in Section 3) if the engine is being started "cold".
2. If you have the 5HP or 4HP Tecumseh Manual Start engine, move its Run-Stop Switch to the "Run" position. Move the 8HP Briggs & Stratton On-Off Switch to the "On" position (see Photo 3-14 or 3-15). Disregard if you have an Electric Start engine.
3. Put Clutch Lever in UP position (Photo 3-9).
4. Grip the Starter rope handle securely (Photo 3-16). Pull the rope out slowly until you feel resistance. Then quickly pull the starter rope firmly all the way out to start the engine. Several attempts may be needed. With Electric Start engines, turn the Key-switch to "START". Once the engine starts, let it warm for a few seconds with the Choke in "Full" position, then for a few more seconds with the Choke in "Partial" position — finally move the choke to "No Choke".
5. To transfer engine power to the Chipper/Shredder cutting blades, SLOWLY swing the Clutch Lever down. **Doing this too quickly will cause the engine to stall.** The cylinder assembly holding the shredder flail cutter blades and the chipper disc holding the

chipper blade will start to revolve. In a few seconds the blades will begin to build up to full speed — 3600RPM! Once you hear the cylinder assembly reach full operating speed, only then move the Clutch Lever all the way down. Learning how to engage the Clutch Lever properly will take a few tries, much like learning a manual transmission automobile. Your equipment is now ready to use.

DANGER

ROTATING CUTTING BLADES SLOW DOWN GRADUALLY AFTER ENGINE IS SHUT OFF. BLADES NORMALLY REQUIRE 30-TO-45 SECONDS TO STOP. ROTATING BLADES CAN CAUSE SERIOUS PERSONAL INJURY.

KEEP HANDS, FEET, FACE AND CLOTHING OUT OF THE CHIPPER CHUTE INLET AND SHREDDER HOPPER INLET, AND AWAY FROM THE DISCHARGE OPENING WHEN MACHINE IS RUNNING.

How To Stop:

1. **STOP** — On a manual start Tecumseh engine, move the "Run-Stop" Switch to the "STOP" position. On the manual start Briggs engine, turn the "On-Off" Switch to the "OFF" position. On Electric start versions, turn the key "OFF". Leave the Clutch Lever DOWN; this utilizes engine compression as a partial brake to reduce stopping time. The cylinder normally requires 30-to-45 seconds to stop.
2. **LISTEN** — Remove hearing protection. There is a definite audible tone that changes as the cylinder slows. Removal of hearing protection aids you in detecting this changing tone.
3. **LOOK** — The bearing on the chipper side of your machine has a white line on it. When this white line is stationary, the cylinder assembly is stopped.

IMPORTANT — If the drive belt should ever break or slip off a pulley, or the Clutch Lever is accidentally moved UP, the stopping time required for the cylinder assembly will increase to 90-to-120 seconds or even longer after the engine is shut off. Listen and Watch to be sure cylinder assembly has stopped completely.

In the unlikely event of a malfunction in the keyswitch or the engine shutoff switch, the shredder may be stopped by moving the engine "Choke" lever to the "Full Choke" position until cylinder assembly stops. Do not continue to stop unit in this manner since it could lead to engine damage. Determine problem and replace necessary parts.

How To Use The Chipper

After the engine is started and the Clutch Lever is moved to the "DOWN" position, the chipper blade will build up to 3600 revolutions per minute. The chipper is then ready to use. Be sure to wear safety goggles, gloves and hearing protection.

Position yourself on the right or left side of the Chipper Feed Chute (see Photo 4-2). The chipper will process branches from 1"-to-3" (4HP Model to 2") in diameter. To reduce branches to small chips, simply grip one end of a branch firmly with both hands and feed the other end of the branch into the chipper chute. Don't feed material with your arms pointing toward the chipper chute opening. Keep your arms perpendicular to the branch or material you are chipping. **Keep the branch away from your body to avoid any bounceback, and don't overreach.** Hold the branch firmly so you can control the rate of feed at all times (see Photos 4-3, 4-4).

All branches should be *evenly rotated* when fed into the chipper. This will help to prevent the bark from turning into long strips or strings that can get tangled around the internal cylinder shaft.

Feed the branch into the chipper chute until just a few inches stick out from the chute. **NEVER put your hands into the chipper chute. 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.

DANGER

CONTACT WITH ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY. BLADES ROTATE WHEN ENGINE IS ON AND CLUTCH LEVER IS ENGAGED, AND SLOW GRADUALLY AFTER ENGINE IS SHUT OFF.

KEEP HANDS, FEET AND CLOTHING AWAY FROM THE CHIPPER AND SHREDDER FEED INLETS AND THE DISCHARGE OPENING WHEN MACHINE IS RUNNING.



(Photo 4-2) Feed material into chipper at proper angle, and rotate branch. Do not overload the chipper.



(Photo 4-3) Hold branches firmly; feed in smoothly.



(Photo 4-4) If engine speed starts to slow, reduce feed pressure and let engine speed build up.

How To Use The Shredder

Once the engine on your equipment has been started and the Clutch Lever moved DOWN to the "ENGAGE" position, the flail cutter blades inside the Chipper/Shredder chamber will begin to revolve at a high rate of speed and the Shredder is ready to use. Of course, you must wear your safety goggles, sturdy work gloves, and hearing protection.

Stand 1-to-2 feet from the Shredder Feed Hopper in the "Operating Zone" as shown in Photo 4-5. You'll be facing the Operating Instruction decal inside the shredder hopper. Don't feed material in if you're not in this zone.

DANGER

CONTACT WITH ROTATING CUTTING BLADES WILL CAUSE SERIOUS PERSONAL INJURY.

BLADES ROTATE WHEN ENGINE IS ON AND KEEP HANDS, FEET AND CLOTHING AWAY FROM THE CHIPPER CHUTE, SHREDDER FEED HOPPER AND THE DISCHARGE OPENING WHEN MACHINE IS RUNNING.



(Photo 4-5) When using the Shredder, stand 1-to-2 feet away from the top-loading hopper and release materials into it from any position within the "Operation Zone".

A steady flow of materials into the Shredder Feed Hopper provides the most effective results. See Photo 4-6. The rate of feed for branches, vines and brush can be controlled by lightly pushing and guiding the far end of material until it extends above the top of the hopper. At this point, **LET GO OF THE MATERIAL**. Use your tamper to push the material if necessary. It's best to cut long branches and vines into more manageable 3-to-5 foot lengths.

IMPORTANT — The shredder blades can tug suddenly at material being fed into the Shredder Feed Hopper, so don't hold on tightly to branches and vines, and don't 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.

Also: don't put any part of your body or clothing inside the hopper or near the discharge area; stand clear of the discharge area; and keep face and body back from the discharge opening.



(Photo 4-6) Feed materials in steadily, but don't overload the shredder.

Under certain conditions, it may become necessary to push bulky materials into the Shredder Feed Hopper. **DO NOT USE YOUR HANDS** — Instead, use a small diameter stick.

When you have loose materials to process, such as leaves, straw, or grass clippings, just drop them into the hopper opening, then push them past the retainer flap with your tamper. **Do not allow combustible materials to contact the engine. IMPORTANT** — If the engine slows down while feeding material, stop right away and give the engine time to come up to full speed.

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.

DANGER

THE DISCHARGE AREA AND DISCHARGE OPENING ARE DANGEROUS. SEE PAGES 4-5 FOR SAFETY INSTRUCTIONS TO AVOID INJURY.

All shredded material will be forced through the Discharge Screen and out the Discharge Tunnel at the side of your unit. Always keep clear of the discharge area since the materials exit with considerable velocity. The standard screen that came with your Chipper/Shredder is a perforated screen with 3/4" holes. This screen is best for processing most dry materials like brush and dry leaves.

Shredding Wet, Soggy, or Green Materials

Wet or green materials (such as wet, matted leaves, gone-by vegetables, green vegetation like squash vines, etc.) will clog the 3/4" holes of the standard discharge screen.

Before shredding these types of materials, shut engine off, let all moving parts come to a complete stop, and disconnect spark plug wire; then remove the discharge screen from the machine and secure the service door with its rod and hairpin clip. You can now shred wet or green materials.

These types of materials will be shredded to a fine consistency when you follow this procedure. If you prefer an even finer consistency, you may wish to process the material a second time. **NOTE:** green cornstalks will be shredded into 3-4" chunks; reprocessing is recommended if you desire a finer material.

DO NOT use the optional Collection Bag when shredding wet or green material — doing so will cause clogging.

DANGER

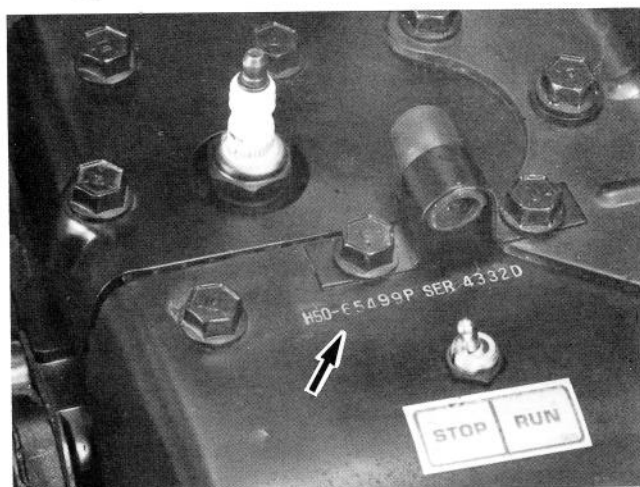
WITH DISCHARGE SCREEN REMOVED, DO NOT SHRED BRUSH, BRANCHES, OR OTHER DRY MATERIALS — THEY WILL EXIT THE DISCHARGE OPENING AT HIGH SPEED.

SECTION 5:

Maintenance & Service

Engine Maintenance/Service

Your TROY-BILT® SUPER TOMAHAWK Chipper/Shredder is equipped with one of several engine options. All are four-cycle, air-cooled, and gasoline powered. **DO NOT MIX OIL WITH YOUR GASOLINE.** Read and follow all of the service and maintenance information given here and in the accompanying engine manufacturer literature to keep the engine running at peak performance. If you need engine repairs or parts, contact your local authorized Briggs dealer or Tecumseh dealer. The dealer will need to know the engine identification numbers. Briggs & Stratton engines have MODEL, TYPE AND CODE NUMBERS; Tecumseh engines have MODEL AND SERIAL NUMBERS. Look on top of the engine blower housing, near the spark plug, per Photo 5-1.



(Photo 5-1) Location of Tecumseh engine I.D. numbers. Briggs & Stratton I.D. numbers are in similar location.

WARNING

MOVING PARTS ON YOUR EQUIPMENT CAN CAUSE SERIOUS PERSONAL INJURY.

SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE MAINTENANCE OR SERVICE PROCEDURES ARE PERFORMED.

Change Engine Oil As Recommended

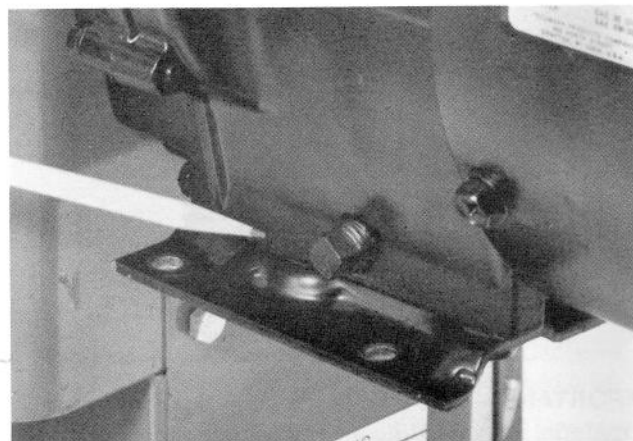
Remember to *check* the engine oil level prior to each use and at least every two hours during continuous operation. The oil level must always be up to the "Full" mark on the 5HP Tecumseh dipstick and **at the top of** the oil fill tube on the 4HP Tecumseh and 8HP Briggs & Stratton engines.

Oil Change Schedule For Your Engine

Initial Oil Change — After First 2 Hours of Operation
Schedule Thereafter — Every 10 Hours of Operation

To Change The Engine Oil On The 8HP Briggs & Stratton Engine, Or The 4HP and 5HP Tecumseh Engines:

1. Run the engine a few minutes to warm the oil. Then stop the engine and disconnect the spark plug wire.
2. The Briggs & Stratton and the Tecumseh engines have two oil drain plugs on opposite sides of the engine near the engine base. Either drain plug may be used. Photo 5-2 shows a 5HP Tecumseh drain plug — the drain plug location is similarly located on the Briggs engines and other Tecumseh engines.



(Photo 5-2) Left-side oil drain plug location on Tecumseh engine. Similarly located on the Briggs engines.

3. On all Briggs & Stratton engines and the 4HP Tecumseh engines: clean thoroughly around the Oil Fill Cap, then remove the fill cap to vent crankcase for fast drainage. **On the 5HP Tecumseh engine:** clean around the Dipstick, then remove the dipstick on top of the engine. Also — prop up one wheel with a wood 2" x 4" on the opposite side of the engine from which you'll be draining the oil.
4. Place an oil collection pan beneath the Oil Drain Plug. Now remove the drain plug and allow all the dirty oil and sludge to drain out completely. Replace the drain plug — put gasket sealant on the threads.
5. You're now ready to add fresh oil. **In the 4HP Tecumseh and 8HP Briggs engine:** add oil until the level is right up to the top of the Oil Fill tube (see Photo 2-7 or 2-8). Replace the oil fill cap. **In the 5HP Tecumseh engine:** add oil until the level is up to the "Full" mark on the dipstick atop the engine (about 19 ounces — see Photo 2-6). See Page 8 for oil specifications. Replace the dipstick.
6. Start the engine outdoors and let it warm up. Check the level again and be sure there is no leakage around the drain plug. If leaking, tighten it.

Air Cleaner Service

The air cleaner prevents dirt and dust from entering the engine through the carburetor. It is very important that the air cleaner filter be replaced if dirty, and properly installed at all times. This will prevent premature wear or damage to the engine. A clean filter also avoids starting and overheating problems.

8HP Briggs & Stratton Air Filter Service Schedule & Replacement Procedure:

Service Schedule — Inspect and clean “dry” filter every 3 months or 25 operating hours. See engine literature for cleaning instructions. Replace the filter annually or every 100 operating hours (all 8HP versions).

To Replace Air Filter — 1) Remove external wing nut from air cleaner outer cover and remove cover (see Photo 5-3); 2) Remove wing nut securing paper cartridge air filter and lift filter off; 3) clean outer cover and plate on which filter sits; 4) install new filter, its wing nut, outer cover and the external wing nut.

5HP & 4HP Tecumseh Air Filter Service Schedule & Replacement Procedure:

Service Schedule — Inspect filter every 10 operating hours, sooner if needed. See engine literature for full instructions. Replace the filter annually, or more often with extremely dusty or dirty conditions.

To Replace Air Filter — 1) Loosen both outer screws holding air cleaner cover in place; 2) Twist cover to the left, then remove cover with the air filter inside it (see Photo 5-4); 3) Check tightness of mounting screws on back mounting plate (Photo 5-4); 4) Clean the back plate and the outer cover, then install the new air filter and reassemble the components.

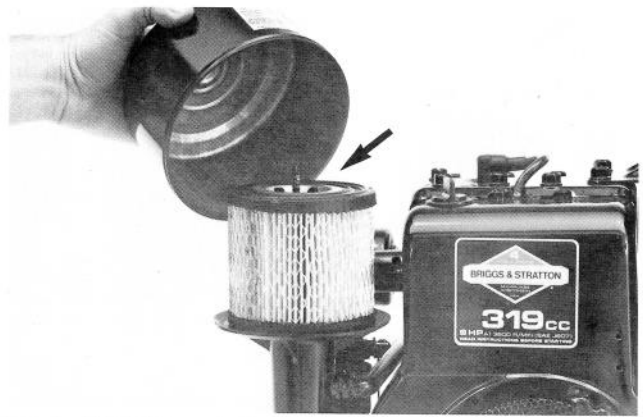
Engine Cooling Fins

Your equipment has an air-cooled engine, so it is important that air be able to circulate freely to keep the engine cool while running. To prevent a fire hazard, always remove dirt, grass and debris from the following areas: the cooling fins; engine covers; the air intake screen just behind the starter rope. Use a brush for thorough cleaning regularly. See Photo 5-5 for reference.

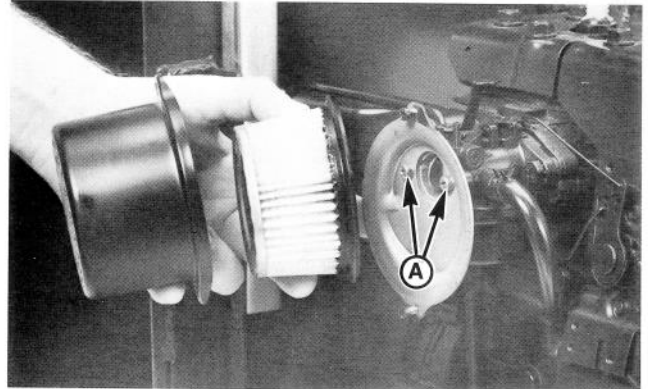
Spark Plug And Ignition System Information

8HP Briggs & Stratton Specifications — Use a Champion RCJ-8 spark plug or its equivalent. Clean and re-set spark plug gap (to .030”) annually or every 100 operating hours. Do not blast clean the spark plug. If spark plug is damaged or badly worn, please install a new plug. Your engine needs no ignition tune-up — it has the Magneton™ ignition which eliminates condenser and points.

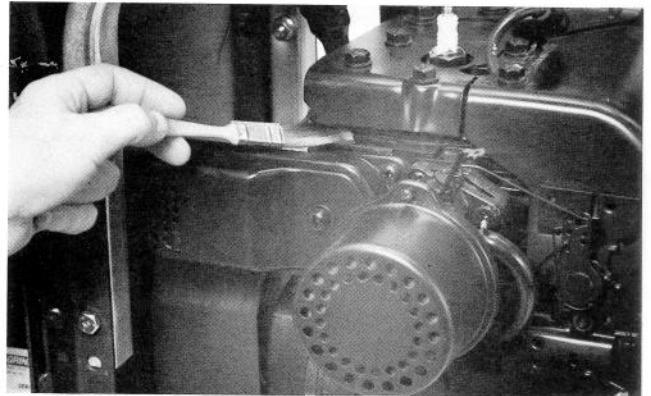
5HP and 4HP Tecumseh Specifications — Use a Champion J-8 or the equivalent. Proper electrode gap is .030”. (Note: Canadian owners must use a Champion



(Photo 5-3) Briggs & Stratton 8HP air filter.



(Photo 5-4) 5HP Tecumseh air filter. Note screws (“A”) in back mounting plate — they must be tight. (4HP — same design.)



(Photo 5-5) Keep the engine cooling fins clean to prevent a potential fire hazard.

RJ-17LM Resistor Plug to comply with government standards.) Your engine has a dependable, maintenance-free solid-state ignition, eliminating the need for points and condenser.

For further information on spark plugs and ignition systems, see separate engine manufacturer literature.

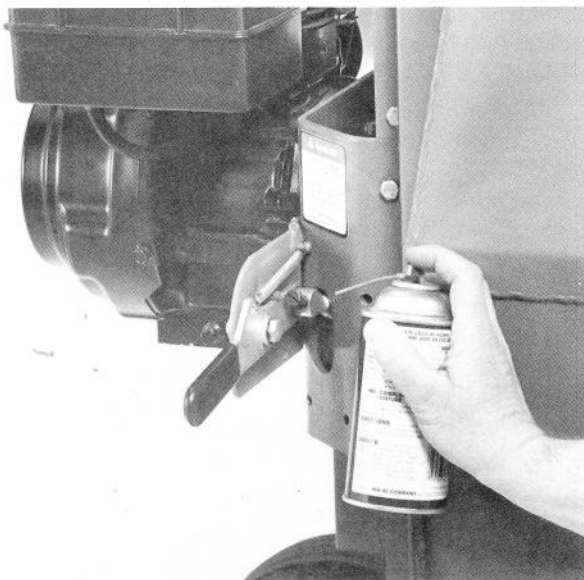
Carburetor Adjustment, Engine Storage & Other Engine Maintenance/Service

Please refer to the engine manufacturer brochure which was included in your literature package for further details on topics such as carburetor adjustment, etc. Remember: your closest authorized engine dealer is fully equipped to handle all repairs, provide parts and engine warranty service.

Chipper/Shredder Maintenance And Service

Lubrication Recommendations

An all-purpose spray-type lubricant should be used several times a year to keep moving parts in good condition and operating smoothly. Apply lubricant to these areas: **1)** the Clutch Lever (see Photo 5-6); **2)** the wheels and axle spacers (refer to Photo 5-7); **3)** the Belt Tension Adjustment Bolt (Photo 5-8). Note: a good quality grease containing a metal lubricant may be substituted for the spray-type lubricant.



(Photo 5-6) Apply a good spray-type lubricant to the Clutch Lever. Move the lever while applying the lubricant.



(Photo 5-7) The wheels and axle spacers should also be lubricated regularly.

WARNING

MOVING PARTS ON YOUR EQUIPMENT CAN CAUSE SERIOUS PERSONAL INJURY.

SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE MAINTENANCE OR SERVICE PROCEDURES ARE PERFORMED.

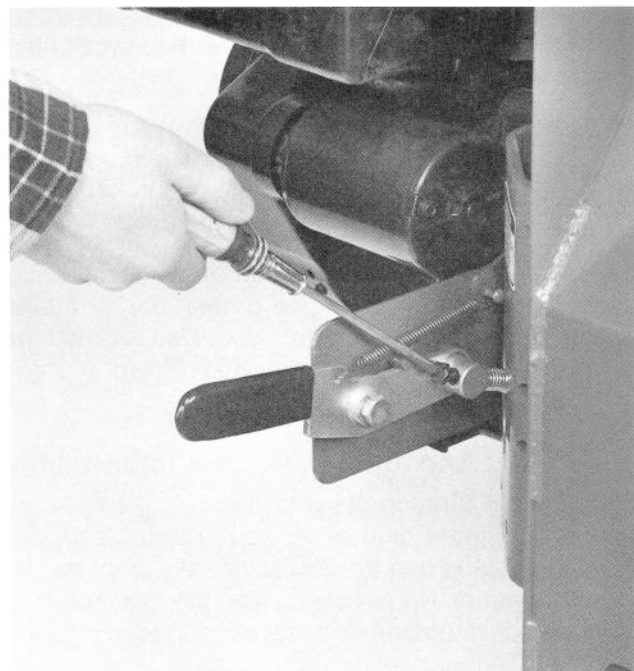
Belt Tension Adjustment & Replacement

The belt on your Chipper/Shredder is a quality, heavy-duty belt. To perform correctly, however, it must be aligned and have the correct tension applied by the Belt Tension Adjustment Bolt (controls idler pulley tension against belt). Belt tension is Factory pre-set with this bolt. The setting should be good for the life of the belt. However, we suggest you check belt tension twice a year and make an adjustment if necessary.

To Check And Adjust Belt Tension: Tools Required — one flatblade screwdriver (if adjustment bolt has a slotted head); or an adjustable wrench (if head not slotted).

Shut engine off and disconnect the spark plug wire. Move the Clutch Lever to the "ENGAGE" position (move it downward). Next, measure the distance from the bottom of the bolt head to the bushing it passes through — this distance was Factory pre-set at 3/4"-to-13/16". As the belt wears over time, this distance will gradually decrease. If the gap ever decreases to less than 1/4", adjust the bolt to make the gap approximately 3/8". Turn it counterclockwise.

This is the only way in which full engine power can be transferred properly to the cylinder assembly. See Photo 5-8 for reference. **NOTE:** once an adjustment needs to be made, it is advisable from there on in to check this gap more frequently (every season), and if another adjustment is ever needed, the belt should be replaced at that time. We suggest you order a new belt from us and plan to install it on arrival. Belt replacement instructions are found on the next page.



(Photo 5-8) Belt Tension Adjustment Bolt determines amount of tension applied to drive belt through the Clutch Lever and idler pulley. If gap between bolt head and bushing ever decreases to less than 1/4", adjust bolt out to make gap 3/8". Clutch Lever must be in "ENGAGE" position when making this adjustment.

Belt Replacement Instructions:

Tools Required —

- One flathead screwdriver or an adjustable wrench (for belt tension adjustment bolt)
- Two 7/16" open end wrenches (for belt cover)



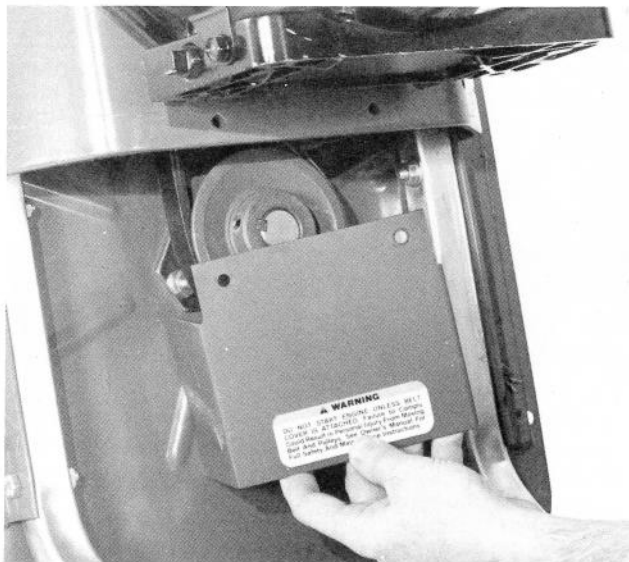
WARNING

MOVING PARTS ON YOUR EQUIPMENT CAN CAUSE SERIOUS PERSONAL INJURY.

SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE MAINTENANCE OR SERVICE PROCEDURES ARE PERFORMED.

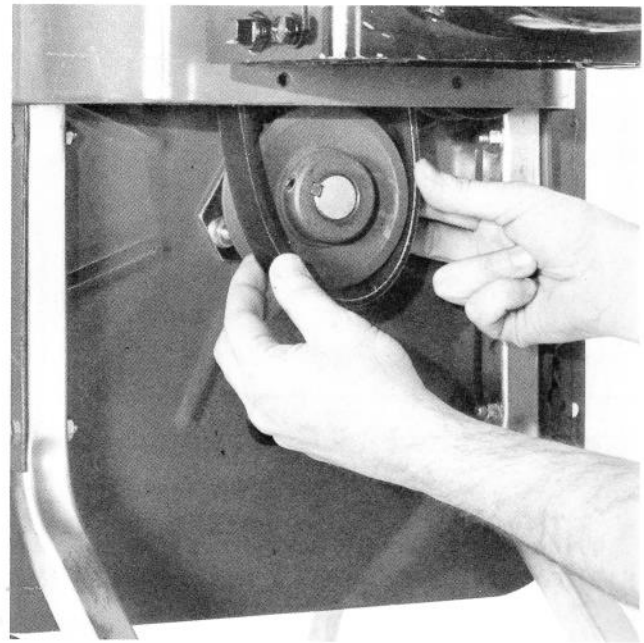
If the drive belt on your equipment is worn out or damaged (chipped, cracked, abnormally frayed or torn), please replace the belt right away. A damaged belt is obvious. Whether a belt is too badly worn can be checked by the belt tension adjustment procedure on the previous page. Please contact us for another belt — the correct belt length is very important, and your belt has special high-strength properties. **NOTE:** on initial start-up when your unit is brand new, the belt will lose some black rubber compound because it's a "raw edge" belt. This is normal and not a sign of belt wear. A mild solvent will remove any black rubber compound that may have been deposited on painted surfaces.

1. Shut the engine OFF. Allow all moving parts to stop completely. Then disconnect the spark plug wire from the spark plug. This prevents the chance of accidental engine starting while you're working.
2. Move the Clutch Lever up to "DISENGAGE".
3. Next, remove the belt cover (shield) below the engine which covers the lower drive pulley and the belt. See Photo 5-9. Just remove the two bolts and locknuts that hold the cover in place (use 7/16" wrenches).



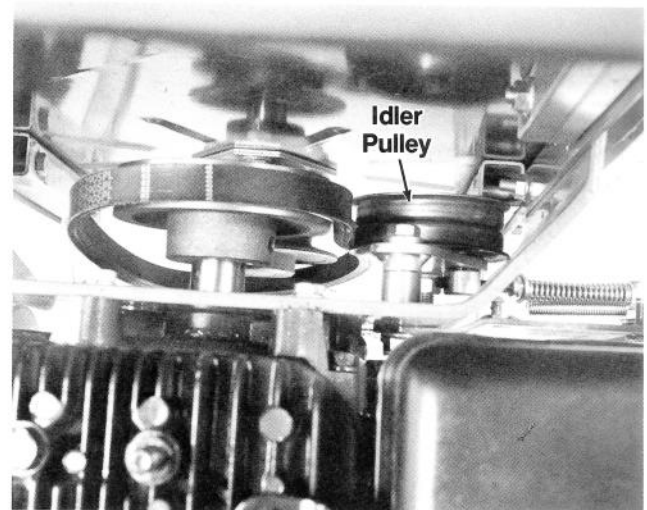
(Photo 5-9) Remove the belt cover held in place by two bolts and locknuts. The lower pulley and drive belt are behind it.

4. Look down between the rear of the engine and the chipper/shredder steel wall. You can see the drive belt around the upper pulley (engine pulley) and the lower pulley (driveshaft pulley). You'll also see the idler pulley between the other two pulleys — the idler pulley is what puts tension on the drive belt when the Clutch Lever is moved to the "ENGAGE" position (DOWN). Remove the belt from the lower (driveshaft) pulley first because it's the fastest and easiest way. To do this, kneel next to the lower pulley, then turn the pulley (rotate it) with one hand while using your other hand to "ride" the belt off the pulley. See Photo 5-10.



(Photo 5-10) Turn (rotate) the lower pulley with one hand and use your other hand to guide the belt off the pulley. The rest of the job is easy.

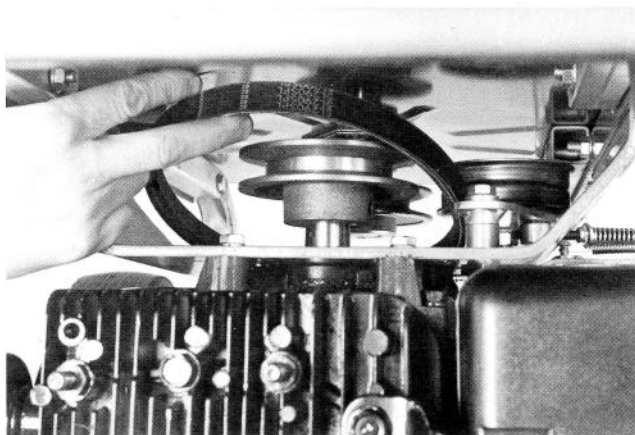
Once the belt is off the lower pulley, move the belt away from the idler pulley (see Photo 5-11), then upward and off the upper pulley (see Photo 5-12). You can now remove the belt from your equipment.



(Photo 5-11) Work the belt away from the idler pulley.

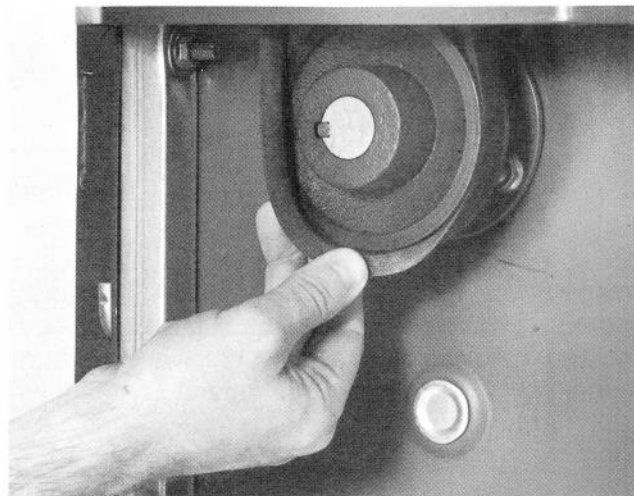
5. To install a new belt, just reverse the steps you took to remove the old belt. Insert the new belt from the bottom of your equipment. Position it first over the upper pulley. Make sure it's positioned properly alongside the idler pulley. Then "ride" the belt back on the lower pulley by turning the lower pulley as you guide the belt on. See Photo 5-13.

Once the new belt is on, make sure the tension on the belt is correct. Move the Clutch Lever to "ENGAGE"



(Photo 5-12) Push old belt upward and off the top pulley.

(DOWN) (engine must be OFF). Measure the gap between the bottom of the Belt Tension Adjustment Bolt head and the bushing next to it. Turn the bolt to make the gap between them $\frac{3}{4}$ "-to- $\frac{13}{16}$ ". Don't forget to replace the belt cover securely, and then to reconnect the spark plug wire. The job is done.



(Photo 5-13) Once the new belt is on the upper pulley and positioned alongside the idler pulley, guide it back on the lower pulley. Use pulley rotation to assist you if necessary.

The Shredder Flail Cutters (Blades) — Rotation Of Cutting Edges & Replacement

WARNING

MOVING PARTS ON YOUR EQUIPMENT CAN CAUSE SERIOUS PERSONAL INJURY.

SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE MAINTENANCE OR SERVICE PROCEDURES ARE PERFORMED.

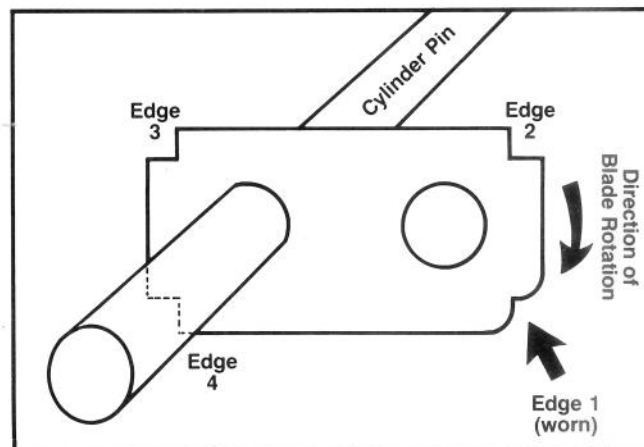
The 16 steel blades (12 blades on the 4HP models) inside the processing chamber do all the shredding. Naturally, they're subject to wear because of the grinding action they provide. To lengthen their lifespan, these blades have been designed with four cutting surfaces (one at each corner) — only one edge on each blade is working at any given time. When that edge becomes dull, you can remove and rotate the blade to use one of the three other fresh cutting edges (see Illustration 5-14). When all four edges become dull, replace the blade.

To inspect and rotate cutting edges on the shredder blades (or to replace blades), follow these instructions.

Tools Required: Drift Pin; Mallet (or Hammer); Pliers; Flathead Screwdriver; Phillips Screwdriver;

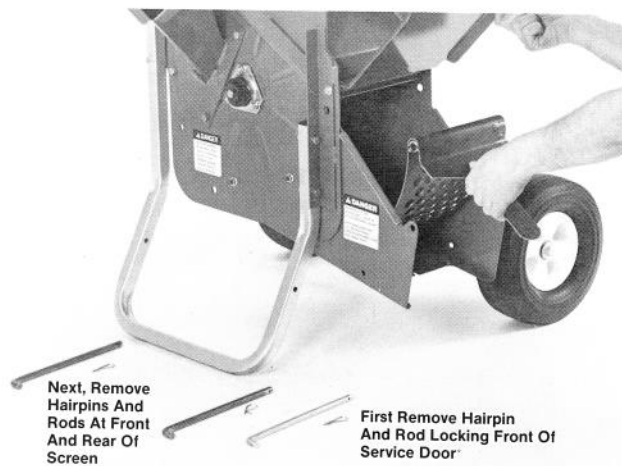
$\frac{1}{2}$ " Wrench; Flashlight; 4-foot length of 2" x 2" wood

1. Shut off the engine, let all moving parts stop completely, and disconnect the spark plug wire. This is for safety's sake. Also, if you have an electric start engine, disconnect the negative cable at the grounding point on the axle bracket.

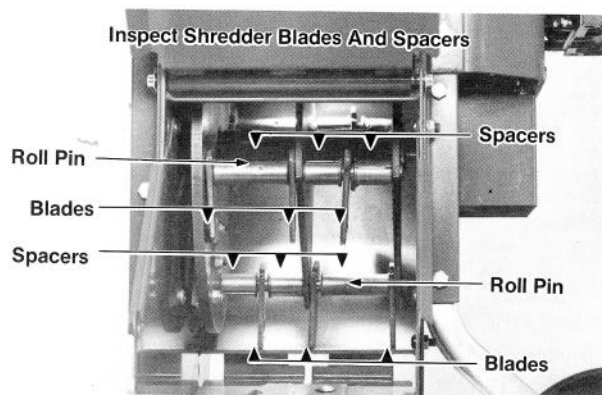


(Illustration 5-14) There are four cutting edges on each shredder blade. When an edge becomes dull, that blade can be removed, rotated, and replaced to use one of the sharp edges.

2. To inspect the blades, the discharge screen must be removed from inside your machine. First take out the long rod (and hairpin) securing the Service Door — refer to Photo 5-15. Also slide out the two screen rods (and hairpins) securing the screen (Photo 5-15). Now lift up the Service Door with one hand and remove your discharge screen with the other (Photo 5-15). Keeping the door open, rotate the cylinder assembly slowly to inspect all of the blades. A flashlight will be helpful. See Photo 5-16. If cutting edges and spacers seem in good condition, reassemble your machine. If one or more blades is worn, or any spacers between the blades are damaged, continue with Step 3. If just a roll pin is sticking out, center it with your drift pin and mallet.

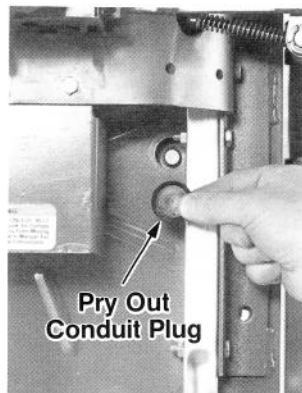


(Photo 5-15) To take out the discharge screen, first remove the hairpin and rod securing the Service Door. Then take out the two hairpins and two rods securing the screen itself.



(Photo 5-16) Inspect condition of shredder blades and spacers. Note the roll pin which locks each row of blades and spacers to a cylinder pin. There are four rows of blades.

3. If any blades must be removed and rotated (or replaced), use your drift pin and mallet to drive out the small roll pin in the row which contains the worn blades. Refer to Photo 5-16. Note: keep the cylinder assembly steady by wedging it with a length of wood fed down the shredder hopper. Save the roll pin. Remove the length of wood after the roll pin is out.



(Photo 5-17) Pry out conduit plug with a screwdriver.

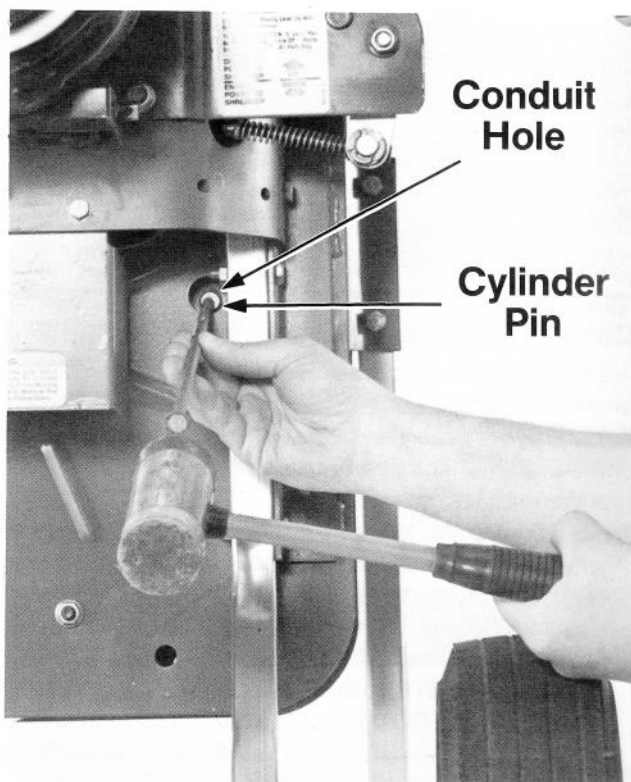


(Photo 5-18) To take off discharge tunnel for more working room, remove three screws from frame on chipper side, then do the same on the engine side.

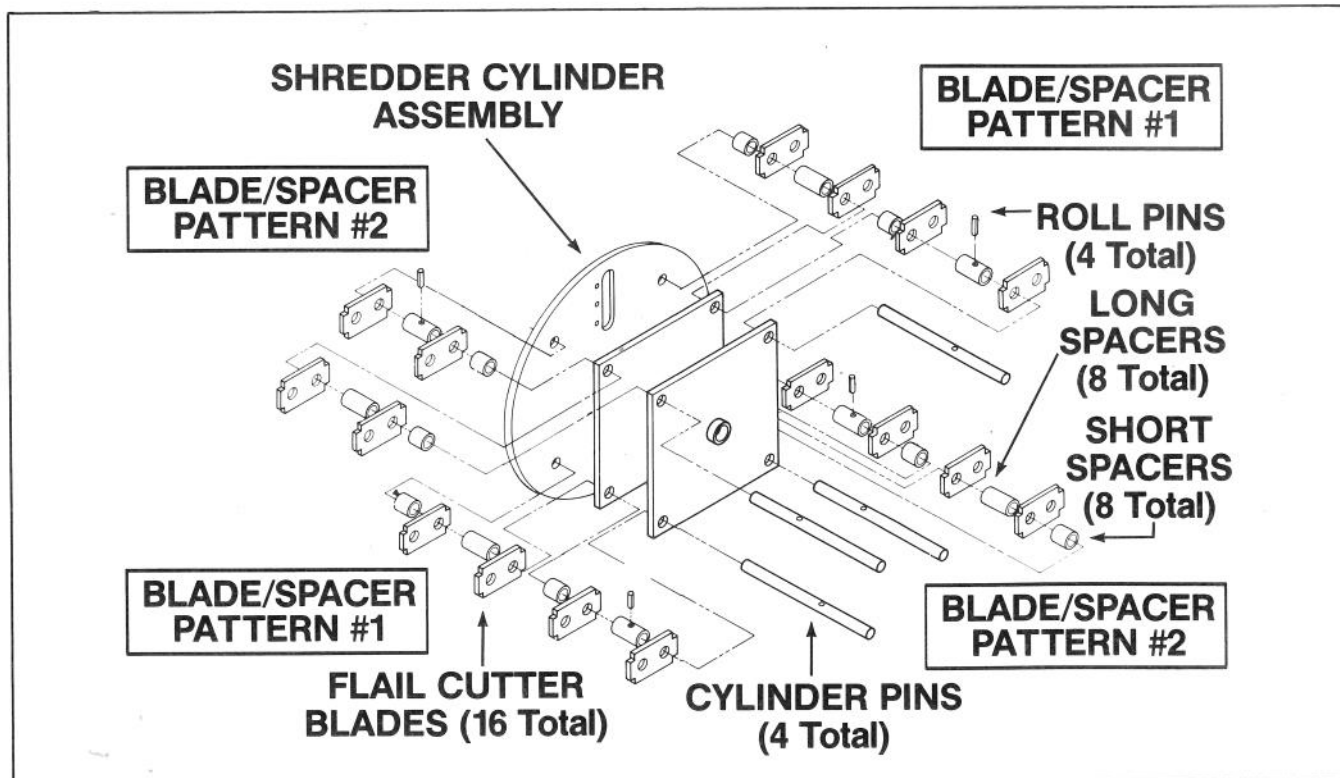
4. Use a screwdriver (flathead) to pry out the round, conduit plug fitted in the mainframe hole just to the right of the belt guard (see Photo 5-17) on the engine side of your equipment.

Also remove the chipper chute on the other side of your equipment. To do this, use a 1/2" wrench to take out the four bolts that secure it to the steel wall. Put the chute aside with the bolts. Next, remove the discharge tunnel from the bottom of your machine which will give you more room to work. Only six Philips head screws with whiz nuts must be removed, and are shown in Photo 5-18. With a Philips head screwdriver and a 1/2" wrench, remove the three screws on the chipper side, then walk around and take out the three screws on the engine side. Put the discharge tunnel and its hardware aside.

5. Now, turn the cylinder assembly slowly by hand until the cylinder pin holding the worn blade(s) is aligned with the conduit hole (see Photo 5-19). On all models, now engage the clutch lever. Be sure to note the exact placement of the blades (and spacers between them) **before** driving the cylinder pin out. You must later reassemble the blades and spacers the same way. From the engine side of your equipment (see Photo 5-19), use your mallet and drift pin to slowly drive the cylinder pin out the chipper chute hole on the other side. The blades and spacers will drop off one at a time. Arrange them on the ground in the order in which they came off. Any blade worn on one corner can now be turned end-to-end or just flipped over so a new cutting edge is in position.



(Photo 5-19) Rotate cylinder assembly to align appropriate cylinder pin with the conduit hole. Use hammer and drift pin to drive cylinder pin out. Rotate blades or replace, as needed.



(Illustration 5-20) Chipper/Shredder cylinder assembly for 8HP and 5HP models is shown. 4HP models have fewer blades. Two rows of blades have one blade/spacer pattern. Other two rows of blades have a second blade/spacer pattern. Reassemble parts as shown — see your Parts Catalog if more detail is required.

NOTE: Two of the cylinder pins have blades and spacers arranged one way; the other two cylinder pins have blades and spacers arranged in a second pattern. See Illustration 5-20 for details.

6. Reassemble the blades and spacers on the cylinder pin as you slowly feed the pin back into the cylinder assembly. Having removed the discharge tunnel earlier, you can see how much more working room this has created. By working from underneath your equipment, you can replace the blades and spacers one at a time while feeding the cylinder pin in. Once everything is in place, drive the roll pin back in securely. The 4-foot

long piece of wood may be needed once again to steady the assembly while you strike the roll pin. Refer to your Parts Catalog if you need new roll pins.

7. Repeat this procedure with the other three cylinder pins if blades need rotation or replacement.

8. After all blades and spacers have been securely reassembled, replace the conduit plug, discharge tunnel, chipper chute, and discharge screen with its hardware. Electric Start owners, please reattach the ground wire securely. Also reconnect the spark plug. **NOTE: Rotating Blades. To Avoid Serious Personal Injury, Do Not Operate Your Equipment Unless Discharge Tunnel Is Bolted In Place.**

Chipper Blade Replacement

Over time, the tempered steel chipper blade mounted on the revolving chipper flywheel will dull with hard use. You'll know if the blade needs sharpening when wood chips aren't as consistent in size and shape, or when branches take longer to process.

Tools Required: 7/16" open end wrench; 1/2" open end wrench; 5/32" hex key wrench

DANGER

ENGINE MUST BE OFF, ALL MOVING PARTS MUST HAVE COME TO A COMPLETE STOP, AND SPARK PLUG WIRE MUST BE DISCONNECTED BEFORE ANY SERVICE OR MAINTENANCE PROCEDURES ARE PERFORMED. SEVERE PERSONAL INJURY CAN OCCUR OTHERWISE.

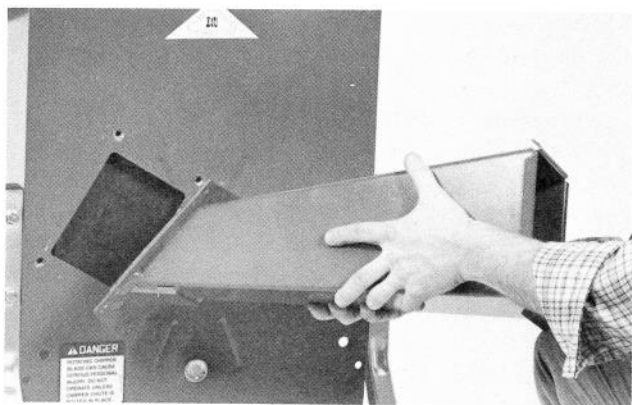
DANGER

CONTACT WITH ROTATING CUTTING BLADES INSIDE YOUR EQUIPMENT WILL CAUSE SERIOUS PERSONAL INJURY.

SHUT OFF THE ENGINE, LET ALL MOVING PARTS STOP COMPLETELY, AND DISCONNECT THE SPARK PLUG WIRE BEFORE MAINTENANCE OR SERVICE PROCEDURES ARE PERFORMED.

1. **The Spark Plug Wire Must Be Disconnected!** First remove the Discharge Screen near the bottom of your equipment. Remove the hairpin and the rod so the Service Door can open. Take out the two hairpins holding the screen rods, slide the rods out, then put the screen aside. (Refer back to Photo 5-15.)

2. Remove the four bolts and lockwashers securing the Chipper Feed Chute to the wall of the Chipper/Shredder chamber. Use a 1/2" wrench. Once the Chipper Feed Chute is off, put it aside. See Photo 5-21. Also take off the Discharge Tunnel at the bottom of your equipment — see Photo 5-22. Remove three screws on each side of the mainframe (chipper side and engine side) and the tunnel is disconnected. Put it aside.

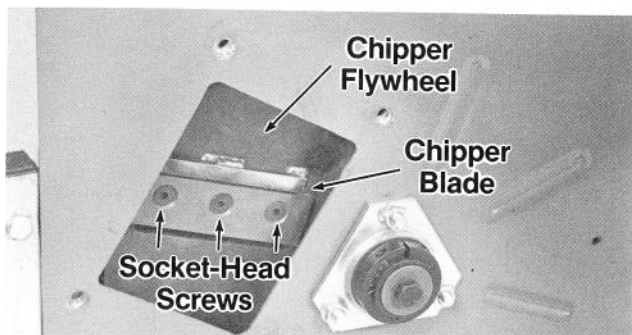


(Photo 5-21) Remove the Chipper Feed Chute which is secured with four bolts through the wall of the chamber. The Discharge Screen must also be removed.



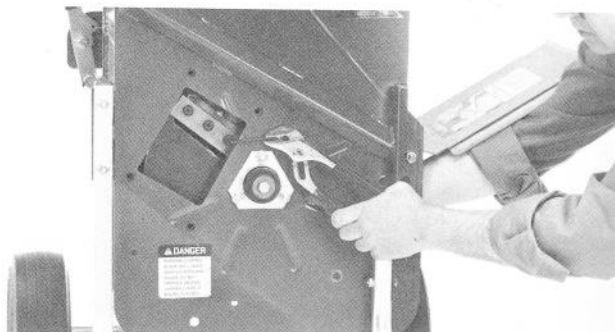
(Photo 5-22) Take off three screws on both sides of the shredder in order to remove the discharge tunnel. This gives you a lot more room to maneuver.

3. You now have access to the chipper flywheel. Turn the flywheel (be sure Clutch Lever is in Disengage position) until the chipper blade comes into view. Move Clutch Lever to Engage position now. The chipper blade is secured with three socket-head screws as shown in Photo 5-23. Lock nuts on the back side of the chipper flywheel hold the socket-head screws. Be sure to clean out the screw heads with a nail or ice pick.



(Photo 5-23) Shown above are the chipper blade secured with socket-head screws and lock nuts, and the chipper flywheel.

4. Use your 7/16" open end wrench and your 5/32" hex key wrench to remove the hardware securing the chipper blade. Use a nail to clean out the socket heads on the screws first. Place the open end wrench up into the chipper/shredder chamber behind the flywheel and on the lock nut closest to you. Position the hex key wrench in the appropriate socket-head screw. For leverage, you may wish to hold the hex key wrench steady with a pliers (regular type or clamping type) while loosening the lock nut with the open end wrench. See Photo 5-24. Remove hardware and chipper blade.



(Photo 5-24) Use 5/32" hex key wrench and a 7/16" open end wrench to take off hardware securing the chipper blade to the chipper flywheel.

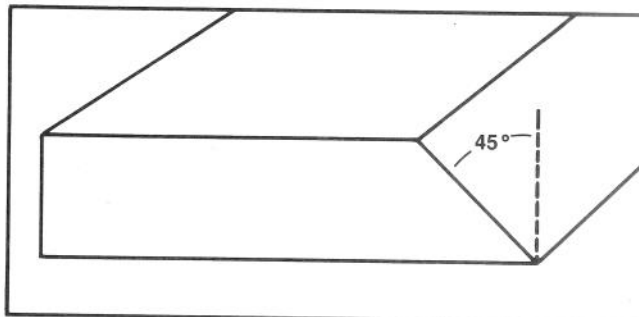
CAUTION

CHIPPER BLADE IS EXTREMELY SHARP AND CAN CAUSE PERSONAL INJURY.

AVOID CONTACT WITH THE BLADE EDGE. HANDLE THE BLADE CAREFULLY.

5. Inspect the cutting edge of the blade carefully. If dull or nicked, it should be sharpened at a 45° angle (see Illustration 5-25). Note — if you do not have sharpening experience and proper equipment, take the blade to a professional sharpening service in your local area. **If the blade is cracked or damaged, please replace the blade right away. Never use a cracked blade.**

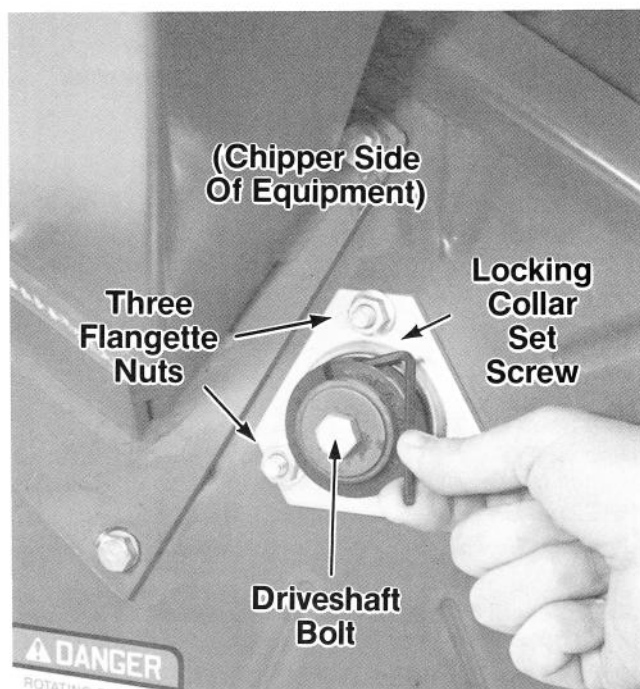
6. Reinstall the sharpened or new blade with the three socket-head screws and lock nuts. **Tighten them firmly.**
7. Replace the Discharge Tunnel and Chipper Chute securely, and the Discharge Screen. Don't forget to reconnect the plug wire. **NOTE: Rotating Blades. To Avoid Serious Personal Injury, Do Not Operate Your Equipment Unless Discharge Tunnel Is Bolted In Place.**



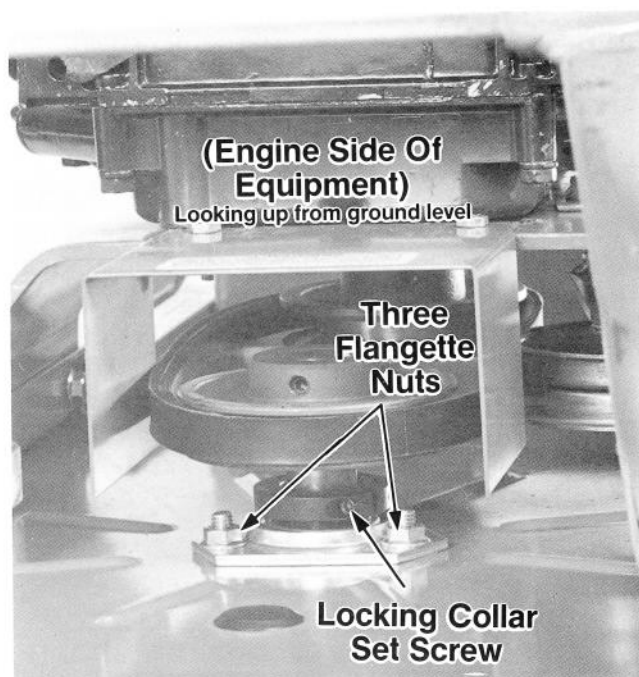
(Illustration 5-25) The chipper blade should be sharpened at a 45° angle. A professional blade sharpener is recommended if you do not have this experience.

Regularly Inspect Hardware At End Of Driveshaft, In Bearing Locking Collars, And On Flangette Plates

The belt-driven cylinder driveshaft inside your equipment receives power from the engine and rotates at high speed, thereby turning the chipper/shredder cylinder assembly that's bolted to the driveshaft.



(Photo 5-26) Check hardware tightness in this area at least once a year. If anything is loose, you must follow a specific tightening procedure given in the text. Please follow the steps exactly.

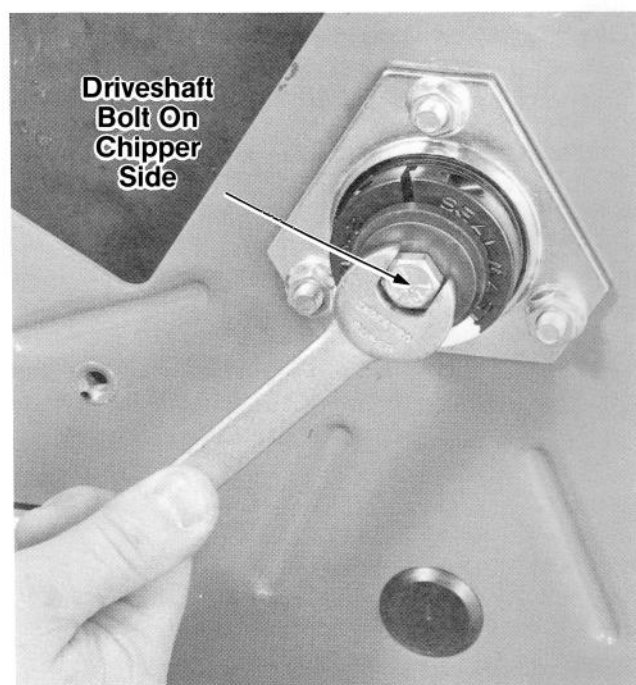


(Photo 5-27) Walking around the engine side of your equipment, look behind the drive pulley (belt cover must be removed) and you'll see another locking collar set screw and three more flangette nuts. You can check and tighten this hardware **without** removing the pulley.

The driveshaft is supported by and rotates within two bearings, one at each end of the driveshaft. Locking the driveshaft so it will not move out of position within the bearings are two bearing locking collars (which tighten with set screws) connected to the ends of the bearings, and a bolt at the end of the shaft on the chipper side of your equipment. At the Factory, this hardware is securely tightened. However, many hours of use can loosen hardware — **so we recommend you check all the hardware listed as follows at least once a year.**

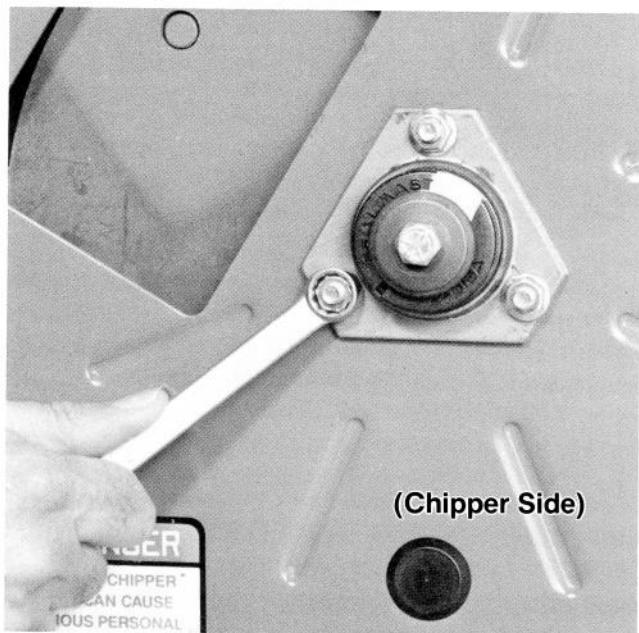
Hardware to check (refer to Photos 5-26, 5-27):
1) The locking collar set screws (check both sides of machine); **2)** Flangette Whiz Nuts (check both sides of machine); **3)** the bolt at the end of the driveshaft (chipper side of machine only). **If any of this hardware worked loose, there is a specific hardware tightening sequence that must be followed. Proceed as follows.**

Hardware Tightening Sequence: **1)** With a 1/8" hex key wrench, loosen the set screw in the locking collar on the chipper side of your equipment (see Photo 5-26); **2)** Use a 1/2" wrench to loosen the three flangette nuts on the chipper side (Photo 5-26); **3)** Lower a 4-foot long broom handle or length of wood down through the shredder hopper on top of your equipment and through the cylinder assembly jamming it so the assembly can not revolve; **4)** With a 9/16" wrench, loosen the bolt at the end of the driveshaft on the chipper side (Photo 5-26); **5)** Now go around to the engine side of the equipment and loosen the locking collar set screw and the three flangette nuts behind the drive pulley (see Photo 5-27); **6)** To begin the hardware tightening procedure, go back to the chipper side and tighten the bolt at the end of the driveshaft first (see Photo 5-28) —



(Photo 5-28) Use a 9/16" wrench to tighten the driveshaft bolt. Once tight, back off one full turn until other hardware is tight, then retighten.

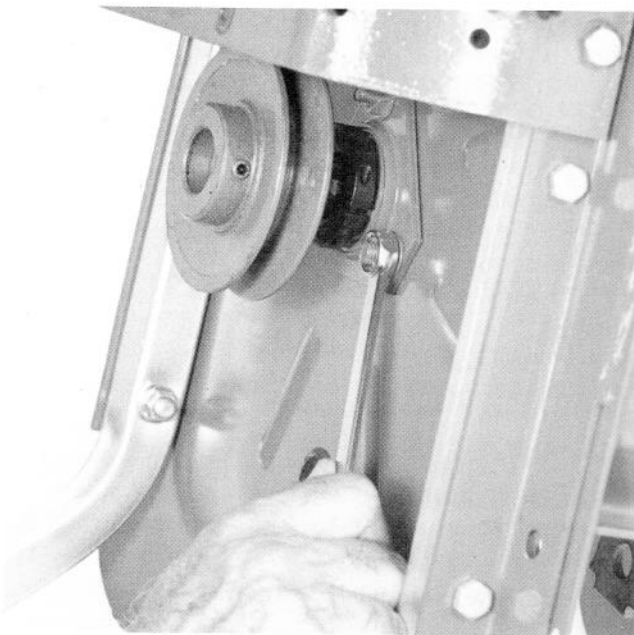
then **loosen** it one full turn (this centers the shaft and the cylinder assembly inside the mainframe); **7)** On the chipper side, tighten fully the locking collar set screw and the three flangette nuts (Photo 5-29); **8)** Fully tighten the bolt at the end of the shaft; **9)** Return to the



(Chipper Side)

(Photo 5-29) The three flangette nuts must also be tight. Use a 1/2" wrench.

engine side of the unit and fully tighten the three flangette whiz nuts and the locking collar set screw. (See Photo 5-30.) Don't forget to take out the broom handle (or length of wood) inside the equipment, and reconnect the spark plug wire.



(Photo 5-30) The last hardware to be tightened in this procedure is the locking collar set screw and the three flangette nuts on the engine side.

Battery Care And Maintenance

DANGER

FOLLOW ALL THE SAFETY RULES WHEN WORKING WITH OR NEAR THE BATTERY. FAILURE TO FOLLOW SAFETY RULES CAN RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE FROM HAZARDS SUCH AS EXPLOSION OF BATTERY GASES, ACID BURNS OR ELECTRICAL BURNS.

The guidelines below will help you protect the battery while it is in service during seasonal use and during extended periods of non-use. To ensure maximum battery life and performance, these guidelines are important.

Care In Service

1. Once a month or every 10 operating hours, whichever occurs first, check the level of electrolyte in each battery cell. Make sure the battery is level when you check. The electrolyte solution must cover the battery plates and must come up high enough so that it just touches the lowest part of each filler well. If any cell is low, fill it to the proper level with distilled or demineralized water (DO NOT USE BATTERY ACID). Replace battery caps securely and wipe top of battery after filling. Then run the engine outdoors for about 20 minutes which will recharge the battery and recirculate the electrolyte solution. For safety, do not leave the chipper/shredder unattended while the engine is running.
2. The battery should be kept clean at all times. If corrosion is found on the battery posts or cable terminals, the battery should be removed from your equipment and cleaned with a baking soda and water solution. AVOID CONTACT WITH THE CORROSIVE MATERIAL (WHICH IS ACID OXIDATION) ON YOUR SKIN OR IN YOUR EYES. Use sandpaper or steel wool to clean the posts and terminals. Then coat the posts and terminals with petroleum jelly or silicone grease to prevent new corrosion.
3. Periodically check the entire electrical system for loose or dirty connections.
4. Periodically check the hardware holding the hold-down clamp to the battery platform. It should be snug, but do not overtighten which could damage the battery case.
5. Also check the vent tube occasionally. It must not be crimped or pinched anywhere along its length.

Battery Storage

Your chipper/shredder engine is equipped with a recharging circuit that will properly maintain the battery's state of charge during the times of the year when you are using your equipment fairly regularly. However, if the chipper/shredder will not be used during an extended period (perhaps during the winter months), we recommend that the battery be removed and fully charged before it's placed in storage. When coming out of storage and prior to being reinstalled on your equipment, again give the battery a thorough charging. Proceed as follows to charge battery before storage:

DANGER

BATTERIES PRODUCE EXPLOSIVE GASES WHICH CAN CAUSE SEVERE PERSONAL INJURY.

WHEN CHARGING OR USING BATTERY, DO SO IN A WELL-VENTILATED AREA. KEEP SPARKS, FLAME, SMOKERS' MATERIALS FAR AWAY. DO NOT LEAVE BATTERY UN-ATTENDED WHILE CHARGING. FOLLOW ALL CHARGING INSTRUCTIONS AND SAFETY RULES PROVIDED BY BATTERY AND RE-CHARGER EQUIPMENT MANUFACTURERS.

1. Remove the battery from your equipment and place it on a level surface.
2. Clean the battery if needed. If the battery is extremely cold, allow it to warm to between 60° F-80° F.
3. Remove all the filler caps. Leave caps off during the filling and charging procedures.
4. Carefully check electrolyte levels. If, and only if, the electrolyte level is below the top of the plates, add distilled or demineralized water (NOT ACID) until the plates are covered. Avoid overfilling.
5. Charge the battery completely (until all cells are gassing freely). Please read previous information about proper charging time and rate. Refer to Section 2.
6. When the battery is fully charged, turn off the charger and disconnect the cables. Add water (NOT ACID) to adjust the electrolyte levels to the correct height. Then reconnect the charger cables to the battery and charge until the cells are fully gassing once again.
7. Replace the filler caps and wash off any spilled electrolyte which may be on the battery.
8. Store the battery in a cool, dry location away from heat ducts and radiators, and out of direct sunlight. Avoid freezing temperatures. A battery loses voltage in storage, more so in hot weather than in cold. The ideal storage temperature is 50° F.

Battery Removal & Replacement

Here are simple steps to take whenever you wish to remove the battery from your equipment for storage or to install the battery.

1. Always turn the key to OFF position and remove key.
2. Always disconnect the spark plug wire before doing any maintenance or service work on your equipment.
3. First disconnect the negative (—) cable from the ground location on the bolt through the axle bracket. Bend the cable safely away from any metal parts.
4. Disconnect the negative (—) cable from the negative battery post next and remove it.
5. On the other side of the battery, disconnect the positive (+) cable from the positive post. Leave the other end of the positive cable connected to the solenoid. However, cover the loose end with the rubber boot.
6. Remove the battery hold-down clamp hardware, lift off the clamp, then remove the battery.

NOTE: Always install the battery cables in the reverse order from which they were disconnected.

SPECIFICATIONS

	8HP Super Tomahawk Chipper/Shredder	5HP Super Tomahawk Chipper/Shredder	4HP Tomahawk Chipper/Shredder
Chipping/Shredding Capability:	1"-to-3" diameter material in chipper; up to 1" diameter material in shredder	Same as 8HP Model	3/4"-to-2" diameter material in chipper; up to 3/4" diameter in shredder
Frame Construction:	Heavy-gauge steel; with 10" wide steel shredding chamber	Same as 8HP Model	Same as 8HP Model; but 8" wide mainframe
Shredder Flail Cutter Blades:	Sixteen 3/16" thick, hardened steel blades (4 cutting edges per blade)	Same as 8HP Model	Twelve 3/16" thick, hardened steel blades (4 cutting edges per blade)
Chipper Blade:	Hardened steel blade (revolves @ 3600RPM)	Same as 8HP Model	Same as 8HP Model
Chipper/Flywheel:	13" diameter steel flywheel	Same as 8HP Model	Same as 8HP Model
Overall Measurements:			
Length —	40" (with chipper chute attached)	Same as 8HP Model	30" (with chipper chute attached)
Width —	29" (discharge tunnel to wheel)	Same as 8HP Model	Same as 8HP Model
Height —	45" (to top of handlebar)	Same as 8HP Model	Same as 8HP Model
Tires:	10" x 4", semi-pneumatic	Same as 8HP Model	Same as 8HP Model

ENGINES

	8HP Briggs & Stratton	5HP Tecumseh	4HP Tecumseh
Manufacturer & General Specs:	Briggs & Stratton, Model 190402 (manual), Model 190417 (electric) four-cycle single-cylinder, air-cooled. Horizontal crankshaft. Manual choke. Industrial/Commercial (I/C) version of this engine is Model 195437.	Tecumseh, Model H50 (manual and electric) four-cycle single-cylinder, air-cooled. Horizontal crankshaft. Manual choke.	Tecumseh, Model HS40 (manual and electric) four-cycle single-cylinder, air-cooled. Horizontal crankshaft. Manual choke.
Horsepower:	8HP	5HP	4HP
Motor Oil Requirements:	Summer — SAE 30 (substitutes: SAE 10W30 or SAE 10W40). Winter — SAE 5W20 or SAE 5W30. Use Service Classification SF or SE.	Summer — SAE 30 (substitute: SAE 10W30). Winter — SAE 5W20 or SAE 5W30. Use Service Classification SF or SE.	Summer — SAE 30 (substitute: SAE 10W30). Winter SAE 5W30 (substitute: SAE 10W). Use Service Classification SF or SE.
Motor Oil Quantity:	39 ounces approx.	19 ounces approx.	21 ounces approx.
Fuel Tank Capacity:	4 quarts	4 quarts	4 quarts
Fuel Recommendation:	Use Unleaded Regular automotive gasoline. If not available, Leaded Regular may be used.	Use Unleaded Regular automotive gasoline. Leaded Regular is an acceptable substitute.	Same as 5HP Model.
Spark Plug:	Champion RCJ-8 or its equivalent. Spark plug gap — .030".	Champion J-8 or its equivalent. Spark plug gap — .030". Canadian Owners use Champion RJ-17LM.	Champion J8C or J-8, or its equivalent. Spark plug gap — .030". Canadian Owners use Champion RJ-17LM.
Ignition System:	Maintenance-free Magnetron™ solid-state system (no points or condenser).	Maintenance-free solid-state system (no points or condenser).	Maintenance-free solid-state system (no points or condenser).

(See your engine manufacturer literature for further specifications and details.)

FULL NO TIME LIMIT WARRANTY

Your TROY-BILT® TOMAHAWK® Chipper/Shredder is backed by a FULL NO TIME LIMIT WARRANTY. We, or your dealer, will at any time repair or replace at no cost to you any part which is defective in materials or workmanship except the engine, which is warranted separately by the engine manufacturer (write for free details). This FULL NO TIME LIMIT WARRANTY also applies to all optional attachments for the TOMAHAWK® Chipper/Shredder. (Note: Warranty for commercial use is limited to one year).

To obtain warranty service, contact your authorized TROY-BILT® Dealer or Factory Store, or contact Troy-Bilt at the address or Toll-Free phone number listed below.

Troy-Bilt Manufacturing Co.
102nd Street & 9th Avenue,
Troy, NY 12180
Phone: 1-800-833-6990

(In Canada, call COLLECT 416-624-8423).

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

**Troy-Bilt Manufacturing Company, 102nd Street & 9th Avenue, Troy, NY 12180
Call Toll-Free 1-800-833-6990**

**Garden Way Canada, Inc., 1515 Matheson Blvd., Unit B11, Mississauga, Ontario L4W 2P5
From Ontario and Quebec, call 1-800-387-3351
From Western Canada and Maritime Provinces, call 1-800-387-3316
Local Only (416 Area), call 624-8423**