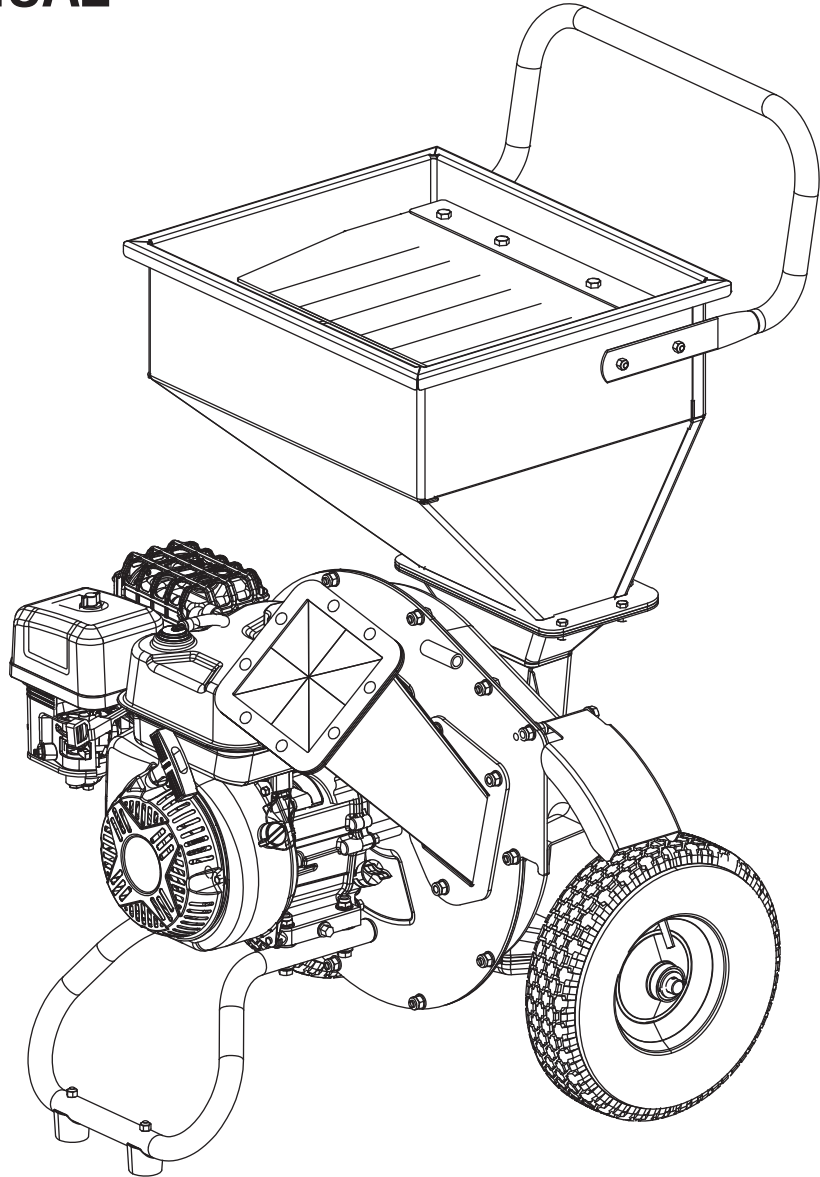


DUCCAR

3 in. Dia 2-in-1 Gas Powered Wood Chipper Shredder

OPERATOR'S MANUAL

Model: DUEB700



Warning: The Engine Exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.



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Specifications





Wood Chipper Shredder Specifications

Chipper Chute Capacity	3" Maximum Limb Diameter
Hopper Capacity	1/2" Maximum Limb Diameter
Wheel pressure	22 psi
Wheels	12" Diameter x 3-1/4" W




Engine Specifications




Displacement		212cc
Engine Type		Horizontal Single Cylinder 4-stroke
Cooling System		Forced air cooled
Fuel	Type	Unleaded gasoline
	Capacity	0.95 Gallon
Engine Oil	Type SAE	10w-30 above 32° F 5w30 at 32° F or below
	Capacity	20 ounces (0.6 Liter)
Run Time @ 50% Load with full tank		3 hr.
Sound Level at 22 feet		104 dB
Bore x Stroke		70 mm x 55 mm
Compression Ratio		8.7:1
Speed		3600 ± 50 RPM

WARNING SYMBOLS AND DEFINITIONS

	This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.
 DANGER	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
NOTICE	Addresses practices not related to personal injury.

Symbol Definitions

Symbol	Property or Statement
RPM	Revolutions Per Minute
	WARNING marking concerning Risk of Eye Injury. Wear ANSI-approved safety goggles with side shields.
	Read the manual before set-up and/or use.
	WARNING marking concerning Risk of Hearing Loss. Wear hearing protection.

Symbol	Property or Statement
	WARNING marking concerning Risk of Respiratory Injury. Operate engine OUTSIDE and far away from windows, doors, and vents.
	WARNING marking concerning Risk of Fire while handling fuel. Do not smoke while handling fuel.
	WARNING marking concerning Risk of Fire. Do not refuel while operating. Keep flammable objects away from engine.

IMPORTANT SAFETY INSTRUCTIONS



WARNING! Read all instructions.

Failure to follow all instructions listed below may result in fire, serious injury and/or DEATH.


The warnings and precautions discussed in this manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

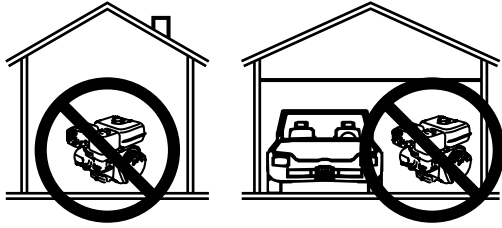
SAVE THESE INSTRUCTIONS

Set up Precautions

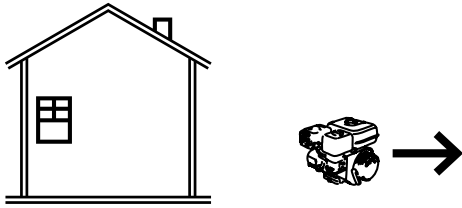
1. Gasoline fuel and fumes are flammable, and potentially explosive. Use proper fuel storage and handling procedures. Do not store fuel or other flammable materials nearby.
2. Have an ABC class fire extinguishers nearby.
3. Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.
4. Set up and use only on a flat, level, well-ventilated surface.
5. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during set up.
6. Use only oil and fuel recommended in the Specifications chart of this manual.

Operating Precautions

1.  **CARBON MONOXIDE HAZARD**
Using an engine indoors
CAN KILL YOU IN MINUTES.
Engine exhaust contains carbon monoxide. This is a poison you cannot see or smell.



NEVER use inside a home or garage, EVEN IF doors and windows are open.



Only use OUTSIDE and far away from windows, doors, and vents.

2. Keep children away from the equipment, especially while it is operating.
3. Locate the Chipper/Shredder on a flat, level, sturdy surface capable of supporting the weight of the Chipper/Shredder and any additional tools and equipment.
4. Be extremely cautious of the rotating Blades in the Chipper/Shredder. Never allow your hands, fingers, or any other part of your body to enter the Chipper Chute or Hopper.
5. Never place your hands, fingers, feet, or any other part of your body close to the Discharge Opening while the Chipper/Shredder is in operation.
6. Do not look into the Hopper, Chipper Chute or Discharge Opening when the machine is running.
7. Do not allow metal, stone, glass, or other foreign objects to be fed into the Chipper/Shredder. Use a stick to push the tree limbs, leaves, etc. into the feed Hopper.
8. Do not attempt to use the machine on a slope or slick surface.
9. Feed material slowly into the machine.
10. Branches larger than 3" diameter should not be fed into the Chipper Chute and branches larger than 1/2" diameter should not be fed into the Hopper.
11. Do not allow Discharge Bag to overfill with processed material. This may prevent proper discharge and can result in kickback of material through the feed Hopper.
12. If the machine becomes clogged, immediately turn the Engine off. Wait until the Chipper/Shredder comes to a complete stop. Unplug the Spark Plug Wire from the Spark Plug. Then clear the machine of the clogged material.
13. Keep all spectators at least six feet from the Engine during operation.
14. Fire Hazard! Do not fill fuel tank while engine is running. Do not operate if gasoline has been spilled. Clean spilled gasoline before starting engine. Do not operate near pilot light or open flame.
15. Do not touch engine during use. Let engine cool down after use.
16. Never store fuel or other flammable materials near the engine.
17. Only use a suitable means of transport and lifting devices with sufficient weight bearing capacity when transporting the equipment.
18. Secure the equipment on transport vehicles to prevent it from rolling, slipping, and tilting.
19. Industrial applications must follow OSHA requirements.
20. Do not leave the equipment unattended when it is running. Turn off the equipment before leaving the work area.
21. The equipment can produce high noise levels. Prolonged exposure to noise levels above 85 dB is hazardous to hearing. Wear ear protection when operating the equipment or when working nearby while it is operating.
22. Wear ANSI-approved safety glasses and hearing protection during use.
23. Use only accessories that are recommended by DUCAR for your model. Accessories that may be suitable for one piece of equipment may become hazardous when used on another piece of equipment.
24. Do not operate in explosive atmospheres, such as in the presence of flammable liquids, gases, or dust. Gasoline-powered engines may ignite the dust or fumes.
25. Stay alert, watch what you are doing and use common sense when operating this piece of equipment. Do not use while tired or under the influence of drugs, alcohol or medication.
26. Do not overreach. Keep proper footing and balance at all times. This enables better control of the equipment in unexpected situations.
27. Dress properly. Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts. Loose clothes, jewelry or long hair can be caught in moving parts.

Operating Precautions

28. Parts, especially exhaust system components, get very hot during use. Stay clear of hot parts.
29. Do not cover the equipment during operation.
30. Keep the equipment, engine, and surrounding area clean at all times.
31. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.
32. Use the equipment, accessories, etc., in accordance with these instructions and in the manner intended for the particular type of equipment, taking into account the working conditions and the work to be performed. Use of the equipment for operations different from those intended could result in a hazardous situation.
33. Do not operate the equipment with known leaks in the engine's fuel system.
34. When spills of fuel or oil occur, they must be cleaned up immediately. Dispose of fluids and cleaning materials as per any local, state, or federal codes and regulations. Store oil rags in a bottom-ventilated, covered, metal container.
35. Keep hands and feet away from moving parts. Do not reach over or across equipment while operating.
36. Before use, check for misalignment or binding of moving parts, breakage of parts, and any other condition that may affect the equipment's operation. If damaged, have the equipment serviced before using. Many accidents are caused by poorly maintained equipment.
37. Use the correct equipment for the application. Do not modify the equipment and do not use the equipment for a purpose for which it is not intended

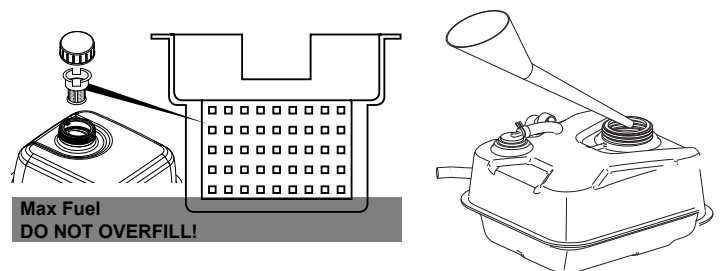
Service Precautions

1. **Before service, maintenance, or cleaning:**
 - a. **Turn the engine switch to its "OFF" position.**
 - b. **Allow the engine to completely cool.**
 - c. **Then, remove the spark plug boot from the spark plug.**
2. Keep all safety guards in place and in proper working order. Safety guards include muffler, air cleaner, mechanical guards, and heat shields, among other guards.
3. **Do not alter or adjust any part of the equipment or its engine that is sealed by the manufacturer or distributor. Only a qualified service technician may adjust parts that may increase or decrease governed engine speed.**
4. Wear ANSI-approved safety goggles, heavy-duty work gloves, and dust mask/respirator during service.
5. Maintain labels and nameplates on the equipment. These carry important information. If unreadable or missing, contact your dealer. Have the equipment serviced by a qualified repair person using only identical replacement parts. This will ensure that the safety of the equipment is maintained. Do not attempt any service or maintenance procedures not explained in this manual or any procedures that you are uncertain about your ability to perform safely or correctly.
6. Store equipment out of the reach of children.

8. Follow scheduled engine and equipment maintenance.

Refueling:

1. Do not refill the fuel tank while the engine is running or hot.
2. Do not smoke, or allow sparks, flames, or other sources of ignition around the equipment, especially when refuelling.
3. **TO PREVENT FUEL LEAKAGE AND FIRE HAZARD, do not fill fuel above the bottom of fuel strainer.**

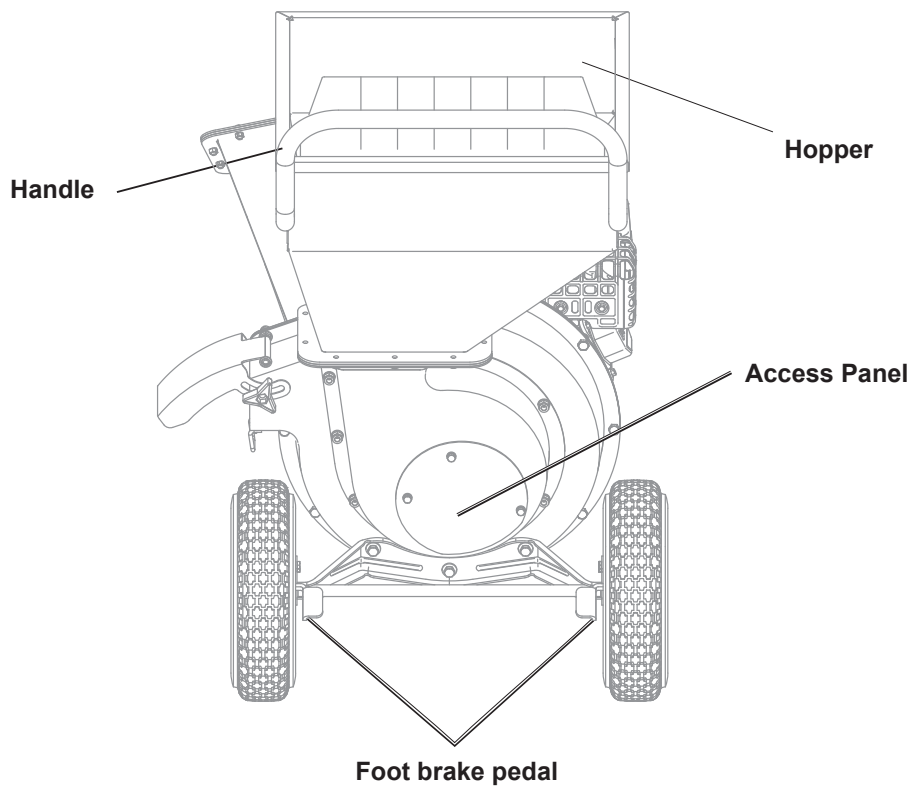
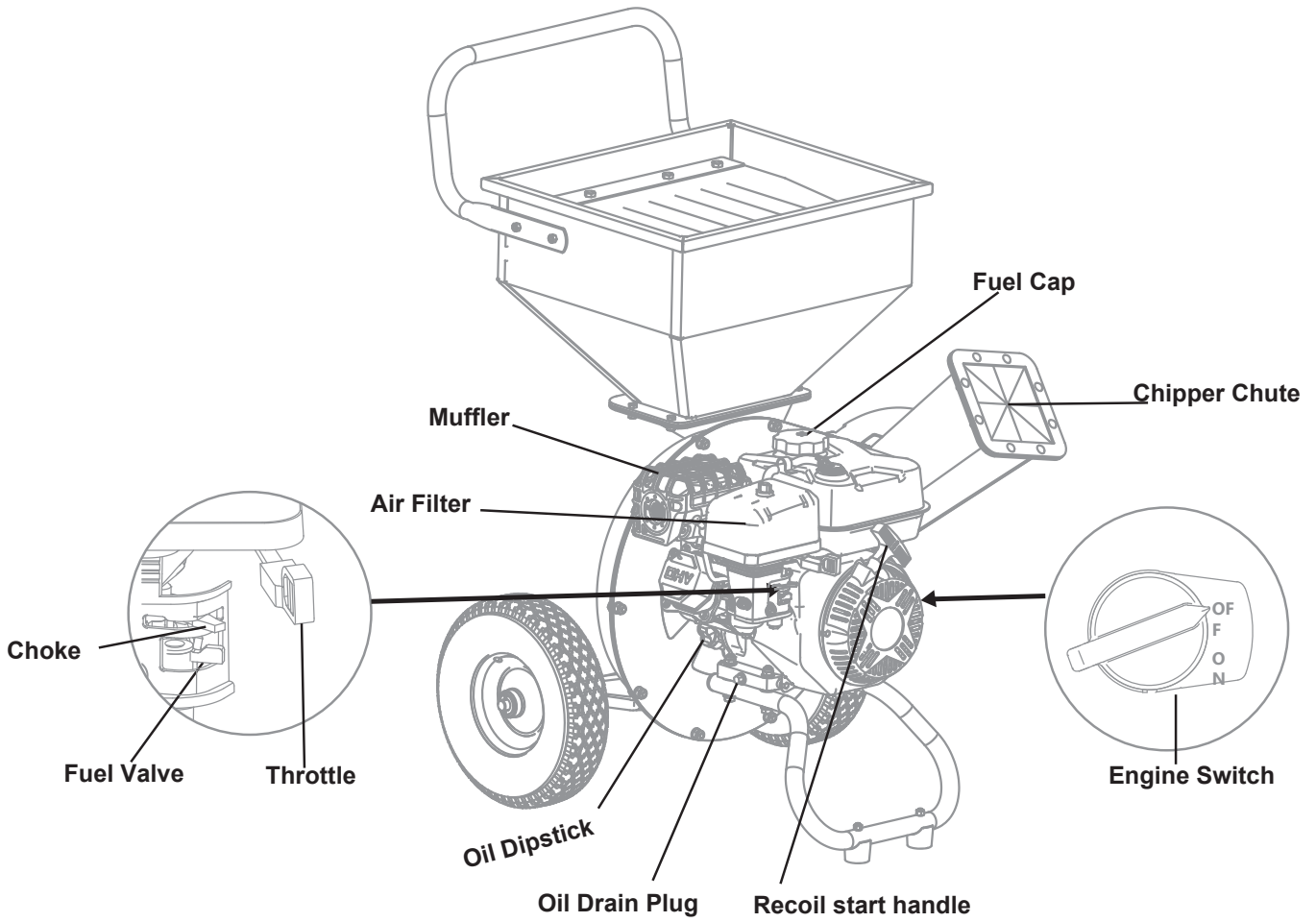


4. Refuel in a well-ventilated area only.
5. When filling gasoline, use the funnel.
6. Wipe up any spilled fuel and allow excess to evaporate before starting engine.
To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.



SAVE THESE INSTRUCTIONS.

Components



Assembly



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

⚠WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL STARTING: Turn the Power Switch of the equipment to its “OFF” position, wait for the engine to cool, and unplug the spark plug wire(s) before assembling or making any adjustments to the equipment.

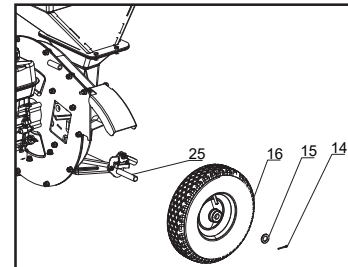
At high altitudes, the engine’s carburetor, governor (if so equipped), and any other parts that control the fuel-air ratio will need to be adjusted by a qualified mechanic to allow efficient high-altitude use and to prevent damage to the engine and any other devices used with this product.

Note: For additional information regarding the parts listed in the following pages, refer to the Assembly Diagrams near the end of this manual.

Assembly

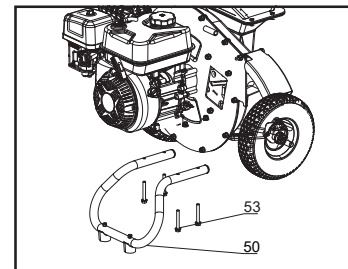
1.Wheel: Slide a Wheel (16) and Flat Washer (15) onto each end of the Axle Assembly (25) at the lower rear of the unit. Insert a Cotter Pin (14) through each end of the axle and bend the Cotter Pin over to secure the Wheels in place. See Figure 1 .

Figure 1



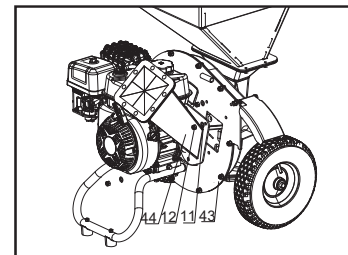
2.Support Leg: Secure the Support Leg (50) to the Engine using Bolts (53), Lock Nuts (49). See Figure 2

Figure 2



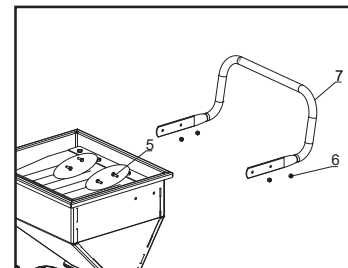
3.Chipper chute: Fasten chipper chute (44) to cutter cover plate (43) with nut (12) and flat washer (11). See Figure 3

Figure 3



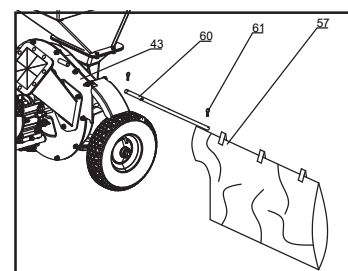
4.Handle: Attach Handle (7) to Hopper with four Lock Nuts (6) and four Bolts (5). Bolt should go through the Hopper. See Figure 4

Figure 4



5.Discharge bag: Insert the support rod (60) into the fixing hole (43) in the cover plate, put on the discharge bag, and secure the support rod at both ends with R pins (61). See Figure 5

Figure 5



Note: There is a zipper at the end of the discharge bag to facilitate the excretion of the chipper.

Operation



Read the **ENTIRE IMPORTANT SAFETY INFORMATION** section at the beginning of this manual including all text under subheadings therein before set up or use of this product.

Pre-Start Checks

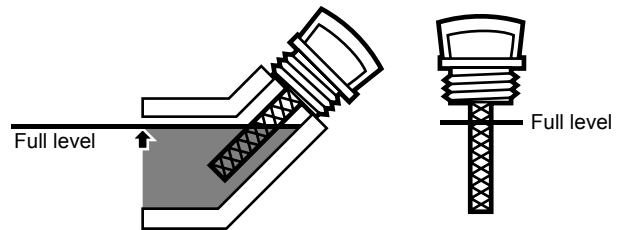
Inspect engine and equipment looking for damaged, loose, and missing parts before set up and starting. If any problems are found, do not use equipment until fixed properly.

Checking and Filling Engine Oil

NOTICE

Your Warranty is VOID if the engine's crankcase is not properly filled with oil before each use. Before each use, check the oil level. Engine will not start with low or no engine oil.

1. Make sure the engine is stopped and is level.
2. Close the Fuel Valve.
3. Clean the top of the Dipstick and the area around it. Remove the Dipstick by turning it counterclockwise, and wipe it off with a clean, lint free rag.
4. Reinsert the Dipstick without threading it in and remove it to check the oil level. The oil level should be up to the full level as shown above.
5. If the oil level is at or below the low mark add the appropriate type of oil until the oil level is at the proper level. SAE 10w-30 oil is recommended for general use. (The SAE Viscosity Grade chart on page 13 in the Maintenance section shows other viscosities to use in different average temperatures.)
6. Thread the dipstick back in clockwise



NOTICE: Do not run the engine with too little oil. Engine will shut off if engine oil level is too low.

Checking and Filling Fuel

WARNING



TO PREVENT SERIOUS INJURY FROM FIRE:

Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. Remove the Strainer and remove any dirt and debris. Then replace the Strainer.
4. Then replace the Fuel Cap.
5. Wipe up any spilled fuel and allow excess to evaporate before starting engine.
To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

Note: Do not use gasoline that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, affecting engine performance and/or causing damage.

Note: Do not use gasoline containing more than 10% ethanol (E10). Do not use E85 ethanol. Add fuel stabilizer to the gasoline or the Warranty is VOID.

Starting the Engine

Before starting the engine:

- a. Inspect the equipment and engine.
- b. Fill the engine with the proper amount and type of both stabilizer-treated unleaded gasoline and oil.
- c. Clean debris from discharge area—engine will not start if discharge area is jammed.
- d. When ready to start, step down the wheel brake system to prevent the machine from moving during the start up process..

Operation

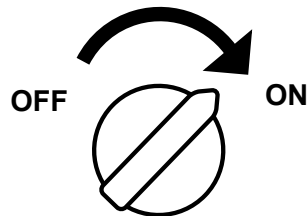
Recoil Start

1. To start a cold engine, move the Choke to the START position.
To restart a warm engine, leave the Choke in the RUN position.

2. Open the Fuel Valve.

3. Slide the Throttle or Speed Control Lever to 1/3 away from the SLOW position (the "turtle").

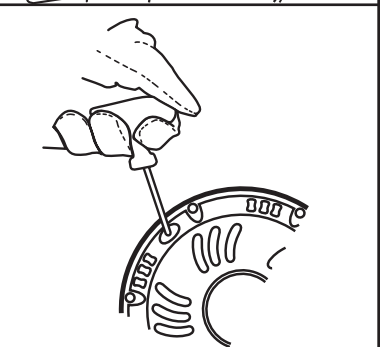
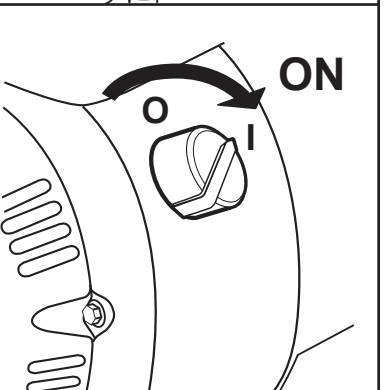
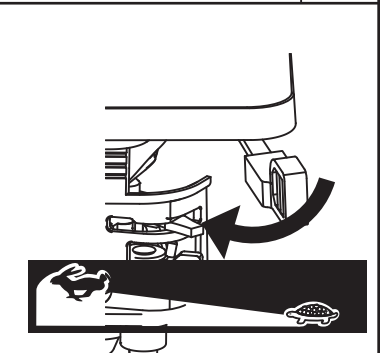
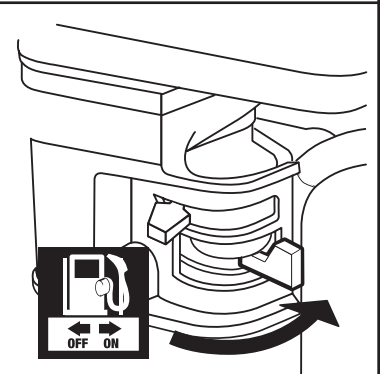
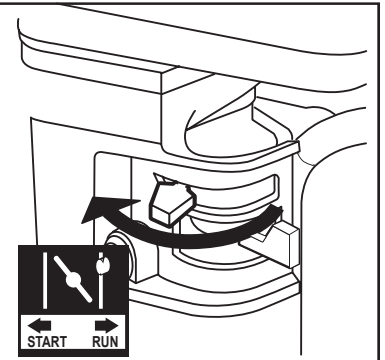
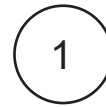
4. Turn the Engine Switch on.



5. Firmly grasp and pull the recoil handle slowly until you feel resistance, let it retract and pull swiftly.

NOTICE

- Do not let the Starter Handle snap back against the engine. Hold it as it recoils so it doesn't hit the engine.
- If engine does not start, check engine oil level. Engine will not start with low or no engine oil.



Operation

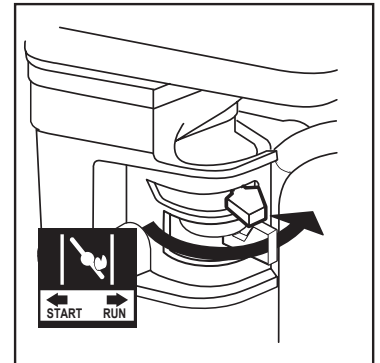
6. Allow the Engine to run for several seconds. If the Choke lever is in the START position, move the Choke Lever slowly to its RUN position.

Note: Moving the Choke Lever too fast could stall the engine.

IMPORTANT: Allow the engine to run at no load for five minutes after each start-up so that the engine can stabilize.

7. Adjust the Throttle as needed.

6



Break-in Period:

- a. Breaking-in the engine will help to ensure proper equipment and engine operation.
- b. The operational break-in period will last about 3 hours of use. During this period:
 - Do not apply a heavy load to the equipment.
 - Do not operate the engine at its maximum speed.
- c. The maintenance break-in period will last about 20 hours of use.
 - Change the engine oil after this period.

Under normal operating conditions subsequent maintenance follows the schedule explained in the MAINTENANCE section.

Chipping and Shredding

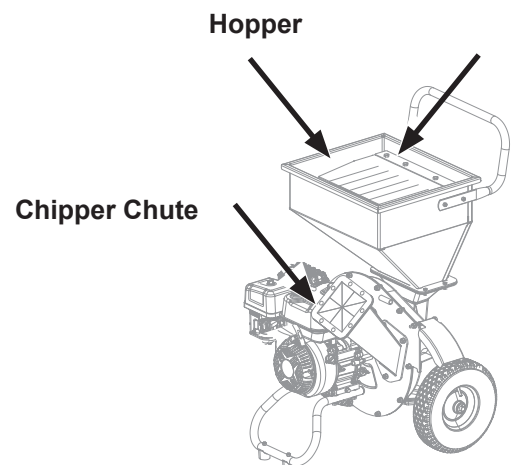
⚠ WARNING

TO PREVENT SERIOUS INJURY: Do not force the Chipper/Shredder. Branches cannot be thicker than 1/2" for Hopper and branches cannot be thicker than 3" for Chipper Chute. Do not force branches into machine. The Chipper/Shredder is designed to draw material at the proper rate.

Never use your hands to feed material directly into the Shredder. If needed, use a stick to push the material into the Shredder.

1. Without putting your hands into Shredder (on top), slowly drop material into the Hopper (one branch at a time). The machine will pull the material in automatically.
2. The Chipper Chute is located on the side of the unit; only feed one branch in at a time, larger end first.
3. Material discharges from the discharge port at high speed. Make sure the Discharge Bag is properly attached before use. Do not operate the Chipper/Shredder without the Discharge Bag in place.
4. Do not allow Discharge Bag to overfill with processed material. This may prevent proper discharge and can result in kickback of material. Empty bag periodically as needed.

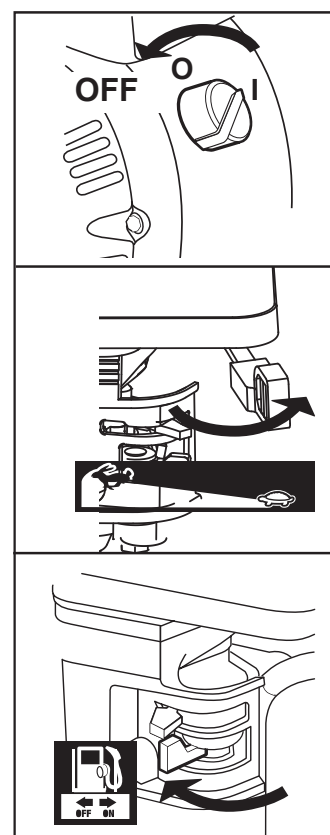
Note: Should Chipper/Shredder jam during use, immediately turn off the Engine. Wait until the machine completely stops. Disconnect the Spark Plug. Clear the jam in the machine by shifting the material with a long stick. Then, resume operation.



Operation

Stopping the Engine

1. To stop the engine in an emergency, turn the Engine Switch off.
2. Under normal conditions, use the following procedure:
 - a. Slide the Throttle or Speed Control Lever to SLOW (the "Turtle").
 - b. Close the Fuel Valve.
 - c. Turn the Engine Switch off.



Cleaning and Storing

1. After every use and before storing, clean debris out of machine:
 - a. Remove spark plug boot from spark plug.
 - b. Allow engine to cool completely.
 - c. Remove the Socket Head Cap Screw and Washers holding the Hopper/outer shell assembly in place. Refer to Figure E.
 - d. Clear all debris out of the outer shell and discharge port.
 - e. Replace the Hopper/outer shell assembly and secure in place using the Washers and Lock Nuts.
2. Before maintenance, you can also check the cutter head and debris through the observation hole. Operation method: Remove the bolt, spring washer, flat washer, and then rotate the viewing panel to the left.
3. Store the Chipper/Shredder in a dry indoor location that does not allow access by children.

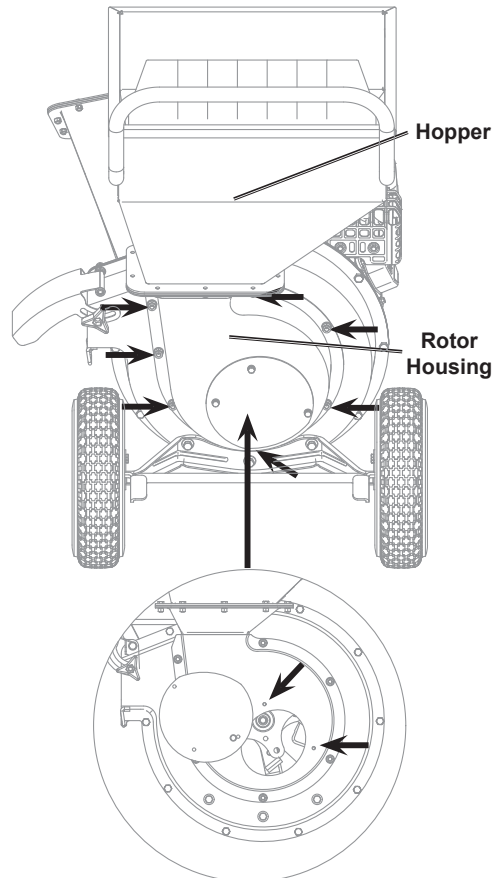


Figure E

NOTICE

See Long-Term Storage on page 16 for complete storage instructions.

Maintenance

WARNING

TO PREVENT SERIOUS INJURY FROM ACCIDENTAL STARTING:

Turn the Power Switch of the equipment to its “OFF” position, wait for the engine to cool, and disconnect the spark plug boot before performing any inspection, maintenance, or cleaning procedures.

TO PREVENT SERIOUS INJURY FROM EQUIPMENT FAILURE:

Do not use damaged equipment. If abnormal noise, vibration, or excess smoking occurs, have the problem corrected before further use.

Follow all service instructions in this manual. The engine may fail critically if not serviced properly.



Many maintenance procedures, including any not detailed in this manual, will need to be performed by a qualified technician for safety. If you have any doubts about your ability to safely service the equipment or engine, have a qualified technician service the equipment instead.

Cleaning, Maintenance, and Lubrication Schedule

Note: This maintenance schedule is intended solely as a general guide. If performance decreases or if equipment operates unusually, check systems immediately. The maintenance needs of each piece of equipment will differ depending on factors such as duty cycle, temperature, air quality, fuel quality, and other factors.

Note: The following procedures are in addition to the regular checks and maintenance explained as part of the regular operation of the engine and equipment.

Procedure	Before Each Use	After Each Use	Every 5 hr. of use	Monthly or every 20 hr. of use	Every 25 hr. of use or as needed	Every 3 mo. or 50 hr. of use	Every 6 mo. or 100 hr. of use	Yearly or every 300 hr. of use	Every 2 Years
Brush off outside of engine	✓			✓		✓	✓	✓	✓
Check engine oil level	✓			✓		✓	✓	✓	✓
Clean debris from chipper/shredder		✓		✓		✓	✓	✓	✓
Check for loose hardware			✓				✓	✓	
Change engine oil				✓			✓	✓	✓
Inspect/replace shredding hammers					✓**				
Inspect/replace chipping blades					✓**				
Check air cleaner						✓	✓	✓	✓
Clean air filter						✓*	✓	✓	✓
Check sediment cup							✓	✓	✓
Check and clean spark plug							✓	✓	✓
Inspect chipper chute, hopper, and discharge port cover							✓	✓	
Clean debris from impeller cooling fins							✓**		
1. Check/adjust idle speed 2. Check/adjust valve clearance 3. Clean fuel tank, strainer and carburetor 4. Clean carbon build-up from combustion chamber								✓**	✓**
Replace fuel line if necessary									✓**

*Service more frequently when used in dusty areas.

**These items should be serviced by a qualified technician.

Maintenance

Checking and Filling Fuel

⚠ WARNING



TO PREVENT SERIOUS INJURY FROM FIRE: Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

1. Clean the Fuel Cap and the area around it.
2. Unscrew and remove the Fuel Cap.
3. Remove the Strainer and remove any dirt and debris. Then replace the Strainer.
4. Then replace the Fuel Cap.
5. Wipe up any spilled fuel and allow excess to evaporate before starting engine. To prevent FIRE, do not start the engine while the smell of fuel hangs in the air.

Note: Do not use gasoline containing more than 10% ethanol (E10). Do not use E85 ethanol. Add fuel stabilizer to the gasoline or the Warranty is VOID.

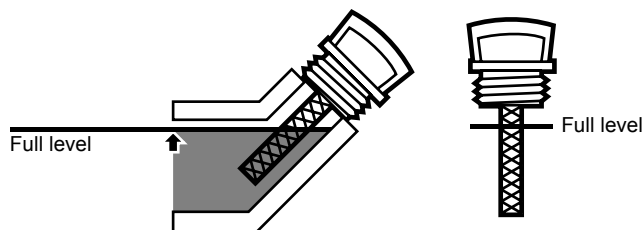
Note: Do not use gasoline that has been stored in a metal fuel container or a dirty fuel container. It can cause particles to enter the carburetor, affecting engine performance and/or causing damage.

Engine Oil Change

⚠ CAUTION

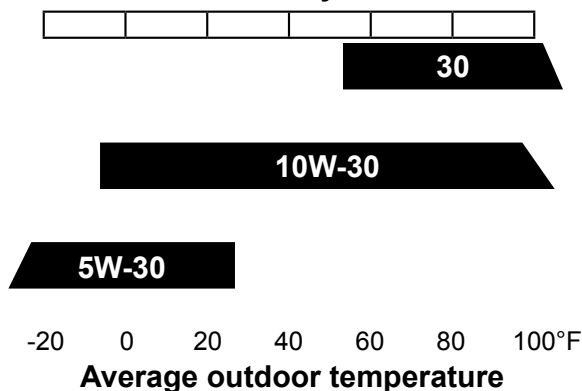
Oil is very hot during operation and can cause burns. Wait for engine to cool before changing oil.

1. Make sure the engine is stopped and is level.
2. Close the Fuel Valve.
3. Place a drain pan (not included) underneath the crankcase's drain plug.
4. Remove the drain plug and, if possible, tilt the crankcase slightly to help drain the oil out. Recycle used oil.
5. Replace the drain plug and tighten it.
6. Clean the top of the Dipstick and the area around it. Remove the Dipstick by turning it counterclockwise, and wipe it off with a clean, lint free rag.



7. Add the appropriate type of oil until the oil level is at the full level. SAE 10W-30 oil is recommended for general use. The SAE Viscosity Grade chart shows other viscosities to use in different average temperatures.
8. Thread the dipstick back in clockwise.

SAE Viscosity Grades



NOTICE

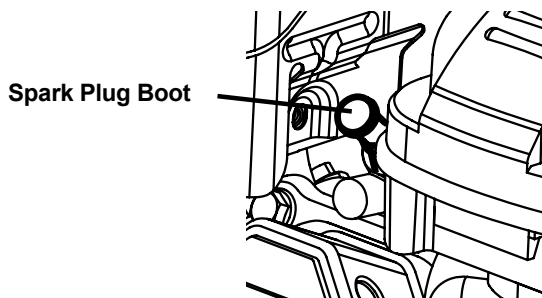
- Do not run the engine with too little oil. Engine will not start with low or no engine oil.

Maintenance

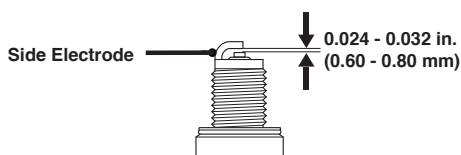
Spark Plug Maintenance

⚠ WARNING

TO PREVENT ACCIDENTAL BRUSH FIRE, secure spark arrestor back in place immediately after cleaning and before further operation.



1. Disconnect the spark plug wire from the spark plug.
2. Use an air compressor (or vacuum cleaner), blow out any debris from around the spark plug, then carefully remove the spark plug boot from the plug.
3. Using the Spark Plug Wrench, unscrew and remove the Spark Plug.
4. Inspect the Spark Plug: If the electrode is oily, clean it using a clean, dry rag. If the electrode has deposits on it, clean it with a brass wire brush. If the white insulator is cracked or chipped, replace the spark plug.
5. Inspect and adjust the spark plug gap. (see below, Note special tools are required.)
6. If spark plug is worn replace only with an equivalent replacement part. Spark plug should be replaced annually.



Spark plug gap: 0.024 – 0.032 in. (0.60 – 0.80 mm)

NOTICE

Use only BPR6ES (NGK) type spark plug or equivalent. Using an incorrect spark plug may damage the engine.

7. When installing a new spark plug, adjust the electrode gap to the specification on the Specifications Chart. Do not pry against the center electrode, the spark plug can be damaged.

8. Apply anti-seize material to Spark Plug threads. Install the new spark plug or the cleaned spark plug into the engine.

- Hand-tighten until the gasket contacts the cylinder head, then tighten about 3/4 turn more.

NOTICE

Tighten the Spark Plug properly. If loose, the Spark Plug will cause the engine to overheat. If overtightened, the threads in the engine block will get damaged.

9. Re-install the Spark Plug Access Cover.

Air Filter Maintenance

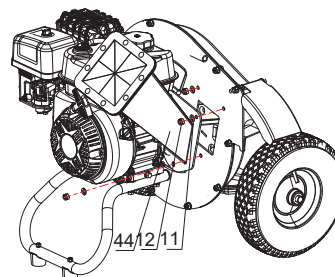
1. Remove the Air Cleaner Cover and the air filter(s) and check for dirt. Clean as described below.
2. **Cleaning:**
 - For paper filters:
To prevent injury from dust and debris, wear ANSI-approved safety goggles, NIOSH-approved dust mask/respirator, and heavy-duty work gloves. In a well-ventilated area away from bystanders, use pressurized air to blow dust out of the filter. If this does not get the filter clean, replace it.
 - For foam filters:
Wash the filter in warm water and mild detergent several times. Rinse. Squeeze out excess water and allow it to dry completely. Apply a few drops of clean engine oil to the foam filter, then squeeze and distribute it thoroughly, and blot up any excess with a rag.
3. Install the cleaned filter(s). Secure the Air Cleaner Cover before use.

Cutterhead Inspection

1. Remove the Spark Plug Boot for safety and then remove the Bolts, Spring Washers, and Flat Washers securing the circular Panel (13) located on the back of the outer shell (10), then remove the Panel.
2. Inspect the cutterhead assembly (39) and L-Hammers on the cutting edges for wear or damage.
3. If necessary, have the cutterhead replaced by a qualified technician.

Chipper Blade Inspection

1. Remove the fastening nut (12) and washer (11) and remove the hopper (44).
2. Slowly pull the starter cover and rotate the cutter head assembly to a position where the blade can be checked for wear or damage to the blade.
3. If necessary, have the Chipper Blades sharpened or replaced by a qualified technician.



Maintenance

Long-Term Storage

When the equipment is to remain idle for longer than 30 days, prepare the engine for storage as follows:

1. **CLEANING:**

Wait for engine to cool, then clean engine with dry cloth.

NOTICE

- Do not clean using water. The water will gradually enter the engine and cause rust damage. Apply a thin coat of rust preventive oil to all metal parts.

2. **FUEL:**

To protect the fuel tank during storage, fill the tank with gasoline that has been treated with a fuel stabilizer additive. Follow fuel stabilizer manufacturer's recommendations for use. Refer to Checking and Filling Fuel on page 13.

⚠ WARNING



TO PREVENT SERIOUS INJURY FROM FIRE:

Fill the fuel tank in a well-ventilated area away from ignition sources. If the engine is hot from use, shut the engine off and wait for it to cool before adding fuel. Do not smoke.

3. **LUBRICATION:**

- a. Change engine oil.
- b. Clean out area around spark plug.
Remove spark plug and pour one tablespoon of engine oil into cylinder through spark plug hole.
- c. Replace spark plug, but leave spark plug boot disconnected.
- d. Pull Starter Handle to distribute oil in cylinder.
Stop after one or two revolutions when you feel the piston start the compression stroke (when you start to feel resistance).

4. **STORAGE AREA:**

Cover and store in a dry, level, well-ventilated area out of reach of children. Storage area should also be away from ignition sources, such as water heaters, clothes dryers, and furnaces.

NOTICE

- During extended storage periods the Engine must be started every 3 months and allowed to run for 15–20 minutes or the Warranty is VOID.

5. **AFTER STORAGE:**

Before starting the engine after storage, keep in mind that untreated gasoline will deteriorate quickly. Drain the fuel tank and change to fresh fuel if untreated gasoline has been sitting for a month, if treated gasoline has been sitting beyond the fuel stabilizer's recommended time period, or if the engine does not start.

Troubleshooting

Problem	Cause	Solution
Engine is running, but AC output is not available	<ol style="list-style-type: none"> 1. Open circuit breaker 2. Poor connection 3. Defective cord set 4. Connected device is faulty 5. Fault in generator 	<ol style="list-style-type: none"> 1. Reset circuit breaker 2. Check and repair 3. Check and repair 4. Connect a device that is working properly 5. Contact service department
Engine runs well without load but bogs down when loads are connected	<ol style="list-style-type: none"> 1. Short circuit in connected device 2. Generator is overloaded 3. Clogged fuel filter 4. Engine speed is too slow 5. Short circuit in generator 	<ol style="list-style-type: none"> 1. Disconnect device 2. See pg 17 "Don't overload generator" 3. Clean or replace fuel filter 4. Contact service department 5. Contact service department
Engine will not start, shuts down during operation, or starts and runs rough.	<ol style="list-style-type: none"> 1. RUN/STOP switch set to "STOP" 2. Dirty Air filter 3. Clogged fuel filter 4. Stale fuel 5. Spark plug wire disconnected from spark plug 6. Bad spark plug 7. Water in fuel 8. Fuel valve is in "OFF" position 9. Over choking 10. Low oil level 11. Rich fuel mixture 12. Intake valve stuck open or closed 13. Loss of engine compression 14. Engine has flooded 15. CO Sensor indicator light turn red 16. CO Sensor indicator light turn yellow 	<ol style="list-style-type: none"> 1. Turn switch to "RUN" 2. Replace Air filter 3. Clean or replace fuel filter 4. Replace fuel 5. Reconnect spark plug wire 6. Replace spark plug 7. Drain fuel tank and replace fuel 8. Turn fuel valve to "ON" position 9. Turn off choke 10. Fill crankcase to proper oil level & place generator on a level surface 11. Contact service department 12. Contact service department 13. Contact service department 14. Wait 5 minutes and crank engine 15. Move the generator to an open, outdoor area 16. Contact service department
Engine lacks power	<ol style="list-style-type: none"> 1. Generator is overloaded 2. Clogged fuel filter 3. Dirty Air filter 4. Engine needs servicing 	<ol style="list-style-type: none"> 1. See pg. 17 "Don't overload generator" 2. Clean or replace fuel filter 3. Replace Air filter 4. Contact service department
Engine "hunts" or falters	<ol style="list-style-type: none"> 1. Choke was opened too soon 2. Clogged fuel filter 3. Carburetor is running too rich or too lean 	<ol style="list-style-type: none"> 1. Move choke to middle position until engine runs smoothly 2. Clean or replace fuel filter 3. Contact service department



Follow all safety precautions whenever diagnosing or servicing the equipment or engine.

Troubleshooting

Problem	Cause	Solution
Chipping action slow, or Engine stalling	<ol style="list-style-type: none"> 1. Branch diameter too thick. 2. Throttle set too low. 3. Bark or vines wrapped around the cutterhead 	<ol style="list-style-type: none"> 1. Do not process branches over 3" diameter.(Forked branches larger than 3" can be pre-treated to 3" size before being chopped) 2. Adjust throttle to increase Engine speed. 3. Have qualified technician service Wood Chipper Shredder.
Branch vibrates and moves excessively when chipping	<ol style="list-style-type: none"> 1.Branches are too hard or dried out. 2.Chipping blades are dull or damaged. 	<ol style="list-style-type: none"> 1. Material is not suitable for chipping. 2. Have qualified technician service Wood Chipper Shredder.
Engine runs but no material is processed	<ol style="list-style-type: none"> 1. Chipper/Shredder is jammed. 2. Throttle set too low. 	<ol style="list-style-type: none"> 1. Clear all debris out of the Main Housing and discharge port. 2. Adjust throttle to increase Engine speed.
Unusual noise and/or vibration during use	<ol style="list-style-type: none"> 1. Rotor Assembly area clogged with material. 2. Cutterhead assembly loose, damaged, or obstructed by debris. 	<ol style="list-style-type: none"> 1. Stop adding material to Hopper/ Chipper Chute–allow Chipper/ Shredder to clear itself before continuing. 2. Have qualified technician service Wood Chipper Shredder.



Follow all safety precautions whenever diagnosing or servicing the equipment or engine.