Operator's Manual
ES-252
Shred 'N' Vac®

⚠ WARNING

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

⚠ WARNING

Read and understand all provided literature before use. Failure to do so could result in serious injury.

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INTRODUCTION

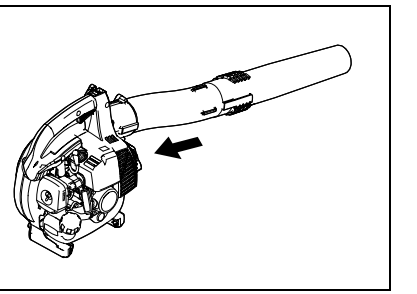
Specifications, descriptions and illustrative material in this literature are as accurate as known at the time of publication, but are subject to change without notice. Illustrations may include optional equipment and accessories, and may not include all standard equipment.

Read and understand all provided literature. Literature contains specifications and information for safety, operation, maintenance, storage and assembly specific to this product.

Additional or Replacement Manuals

Replacement Operator, Safety Manuals, and Parts Catalogs are available from your ECHO dealer or at echo-latinamerica.com.

SERVICING INFORMATION



Parts and Serial Number

Genuine ECHO Parts and Assemblies for your products are available only from an Authorized ECHO Dealer. When you do need to buy parts **always** have the Model Number and Serial Number of the unit with you. You can find these numbers on the engine housing. For future reference, write them in the space provided below.

Model No._____Serial No._____

Warranty Registration

Your bill of sale must be provided to demonstrate proof of warranty.

Service

Service of this product during the warranty period must be performed by an Authorized ECHO Service Dealer. For the name and address of the Authorized ECHO Service Dealer nearest you, visit echo-latinamerica.com.

SAFETY

Manual Safety Symbols and Important Information

Throughout this manual and on the product itself, you will find safety alerts and helpful, informational messages preceded by symbols or key words. The following is an explanation of those symbols and key words and what they mean to you.

DANGER

The safety alert symbol accompanied by the word "DANGER" calls attention to an act or condition which WILL lead to serious personal injury or death if not avoided.

WARNING

The safety alert symbol accompanied by the word "WARNING" calls attention to an act or condition which CAN lead to serious personal injury or death if not avoided.

CAUTION

The safety alert symbol accompanied by the word "CAUTION" calls attention to an act or condition which might lead to minor or moderate personal injury if not avoided.

NOTICE

The enclosed message provides information necessary for the protection of the unit.

Note: This enclosed message provides tips for use, care and maintenance of the unit.

CIRCLE AND SLASH SYMBOL
This symbol means the specific action shown is prohibited. Ignoring these prohibitions can result in serious or fatal injury.

International Symbols

Symbol	Description	Symbol	Description
	Read and Understand the Operator's Manual		Carburetor Adjustment - High Speed Mixture
	Wear Eye, Ear and Head Protection		Carburetor Adjustment - Idle Speed
	Wear Hand Protection		Carburetor Adjustment - Low Speed Mixture
	Safety/Alert		Stop
	Hot Surface		Fuel and Oil Mixture
	Idle speed		Fast speed
	Finger severing		Purge Bulb
	DO NOT Allow Flames or Sparks Near Fuel		Ignition ON / OFF
	DO NOT Smoke Near Fuel		Choke Control "COLD START" Position (Choke Closed)

Symbol	Description	Symbol	Description
	Wear Slip Resistant Footwear		Choke Control “RUN” Position (Choke Open)
		Beware of thrown objects	
		Keep Bystanders and Helpers Away 15 m (50 ft.).	

Personal Condition and Safety Equipment

⚠ WARNING

Cancer and Reproductive Harm
www.P65Warnings.ca.gov

⚠ WARNING

The muffler or catalytic muffler and surrounding cover may become extremely hot. If unit is equipped with muffler, always keep clear of exhaust and muffler area, otherwise serious personal injury might occur.

⚠ WARNING

Users of this product risk injury to themselves and others if the unit is used improperly and/or safety precautions are not followed. Proper clothing and safety gear must be worn when operating unit.

Physical Condition

Your judgment and physical dexterity may not be good:

- If you are tired or sick
- If you are taking medication
- If you have taken alcohol or drugs

Operate unit only if you are physically and mentally well.

Eye Protection

⚠ WARNING

- **Eye protection that meets ANSI Z87.1 or CE requirements must be worn whenever you operate the unit.**
- **For additional safety, a full-face shield can be worn over safety glasses or goggles to provide protection from sharp branches or flying debris.**

Hand Protection

Wear sturdy, no-slip, rubber work gloves to improve your grip on the handles. Gloves also provide protection against cuts and scratches, cold environments, and reduce the transmission of machine vibration to your hands.

Hearing and Ear Protection

ECHO recommends wearing personal protective equipment whenever unit is used.

Breathing Protection

Operators who are sensitive to dust or other common airborne allergens may need to wear a dust mask to prevent inhaling these materials while operating unit. Dust masks can provide protection against dust, plant debris, and other plant matter such as pollen. Make sure the mask does not impair your vision, and replace the mask as needed to prevent air restrictions.

Proper Clothing

Wear snug-fitting, durable clothing:

- Pants should have long legs, shirts should have long sleeves.
- DO NOT WEAR SHORTS.
- DO NOT WEAR TIES, SCARVES, JEWELRY, or clothing with loose or hanging items that could become entangled in moving parts or surrounding growth.
- Keep clothing buttoned or zipped, and keep shirt tails tucked in.

Wear sturdy work shoes with nonskid rubber soles.

- DO NOT WEAR OPEN TOED SHOES.
- DO NOT OPERATE UNIT WITH BARE FEET.

Keep long hair away from engine and air intake. Retain hair with cap or net.

Heavy protective clothing can increase operator fatigue, which may lead to heat stroke. Schedule heavy work for early morning or late afternoon hours when temperatures are cooler.

⚠ WARNING

The components of this machine generate an electromagnetic field during operation, which can interfere with some pacemakers. To reduce the risk of serious or fatal injury, persons with pacemakers should consult with their physician and the pacemaker manufacturer before operating this machine. In the absence of such information, ECHO does not recommend the use of this machine by anyone who has a pacemaker.

Extended Operation and Extreme Conditions

⚠ CAUTION

Prolonged exposure to cold and/or vibration can result in injury. Read and follow all safety and operation instructions to minimize risk of injury. Failure to follow instructions can result in painful wrist/hand/arm injuries.

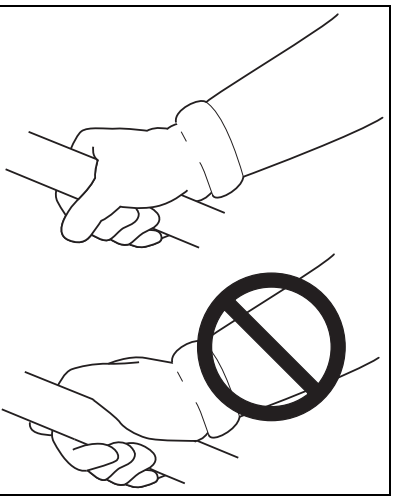
It is believed that a condition called Raynaud's Phenomenon, which affects the fingers of certain individuals, may be brought about by exposure to vibration and cold. Exposure to vibration and cold may cause tingling and burning sensations, followed by loss of color and numbness in the fingers. The following precautions are strongly recommended, because the minimum exposure, which might trigger the ailment, is unknown.

- Keep your body warm, especially the head, neck, feet, ankles, hands, and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks, and also by not smoking.
- Limit the hours of operation. Try to fill each day with jobs where operating the unit or other hand-held power equipment is not required.
- If you experience discomfort, redness, and swelling of the fingers followed by whitening and loss of feeling, consult your physician before further exposing yourself to cold and vibration.

Repetitive Stress Injuries (RSI)

It is believed that overusing the muscles and tendons of the fingers, hands, arms, and shoulders may cause soreness, swelling, numbness, weakness, and extreme pain in those areas. Certain repetitive hand activities may put you at a high risk for developing a Repetitive Stress Injury (RSI). An extreme RSI condition is Carpal Tunnel Syndrome (CTS), which could occur when your wrist swells and squeezes a vital nerve that runs through the area. Some believe that prolonged exposure to vibration may contribute to CTS. CTS can cause severe pain for months or even years.

To reduce the risk of RSI/CTS, do the following



- Avoid using your wrist in a bent, extended, or twisted position. Instead try to maintain a straight wrist position. Also, when grasping, use your whole hand, not just the thumb and index finger.
- Take periodic breaks to minimize repetition and rest your hands.
- Reduce the speed and force with which you do the repetitive movement.
- Do exercises to strengthen the hand and arm muscles.
- Immediately stop using all power equipment and consult a doctor if you feel tingling, numbness, or pain in the fingers, hands, wrists, or arms. The sooner RSI/CTS is diagnosed, the more likely permanent nerve and muscle damage can be prevented.

⚠ DANGER

All over head electrical conductors and communications wires can have electricity flow with high voltages. This unit is not insulated against electrical current. Never touch wires directly or indirectly, otherwise serious injury or death can result.

⚠ DANGER

Do not operate gas-powered products indoors or in inadequately ventilated areas. Engine exhaust contains poisonous emissions and can cause serious injury or death.

Read the Manual

- Provide all users of this equipment with literature for instructions on safe operation.

Clear the Work Area

- Clear the area of children, bystanders, and pets. At a minimum, keep all children, bystanders, and pets outside a 15 m (50 ft.) radius; outside the 15 m (50 ft.) zone, there is still a risk of injury from thrown objects. Bystanders should be encouraged to wear eye protection (not included). If you are approached, stop the engine.
- Avoid blowing debris towards people, pets, open windows, or vehicles when using unit.
- Review area to be cleared. Look for potential hazards such as stones or metal objects.

Keep a Firm Grip

- To prevent from dropping the unit, hold the handle in one hand, with thumb and fingers encircling the handle.

Keep a Solid Stance

- Maintain footing and balance at all times. Do not stand on slippery, uneven or unstable surfaces. Do not work in odd positions or on ladders. Do not over reach.

Avoid Hot Surfaces

- Keep exhaust area clear of flammable debris. Avoid contact during and immediately after operation.

Equipment

⚠ WARNING

Use only approved attachments. Serious injury can result from the use of a non-approved attachment combination. ECHO Incorporated will not be responsible for the failure of cutting devices, attachments or accessories which have not been tested and approved by ECHO. Read and comply with all safety instructions listed in this manual.

- **Do not attempt to modify this product. Serious injury can result from the use of any modified product.**
- **Check unit for loose/missing nuts, bolts, and screws. Tighten and/or replace as needed.**
- **Do not use blower if any part is missing or damaged.**
- **Have repairs done only by an authorized service dealer.**

⚠ WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings.

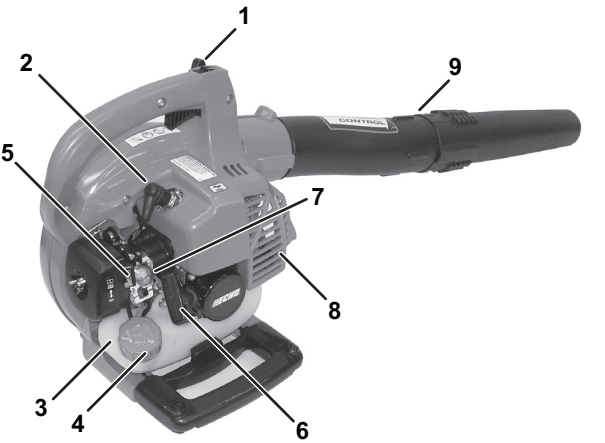
- ***ALWAYS stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit.***
- ***DO NOT start or operate unit unless all guards and protective covers are properly assembled to unit.***
- ***NEVER reach into any opening while the engine is running. Moving parts might not be visible through openings.***

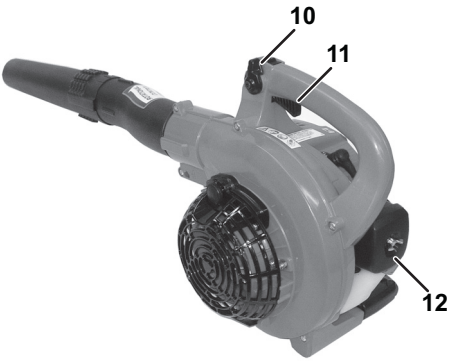
⚠ WARNING

Periodically check fuel system (fuel lines, vent, grommet, fuel tank, and fuel cap) for leaks especially if the unit is dropped. If damage or leaks are found, do not use unit, otherwise serious personal injury or property damage may occur. Have unit repaired by an authorized servicing dealer before using.

DESCRIPTION

Locate the safety decal(s) or etching(s) on your unit. Make sure they are legible, and that you understand and follow the instructions. If any cannot be read, replacements can be ordered from your ECHO dealer. Images shown below are for example only. Those on your unit might appear slightly different.





1. Stop switch
2. Spark plug
3. Fuel tank
4. Fuel tank cap
5. Choke
6. Recoil starter handle
7. Purge bulb
8. Spark arrester muffler/spark arrester muffler with catalyst
9. Blower pipes
10. Throttle position lever
11. Throttle trigger
12. Air filter

CONTENTS

After opening the carton, check for damage. Immediately notify your retailer or ECHO Dealer of damaged or missing parts. Use the contents list to check for missing parts.

1	Power head
1	Blower pipe (upper)
1	Blower pipe (lower)
1	SHRED 'N' VAC® Suction tube
1	Elbow pipe
1	Debris bag
1	Operator's manual

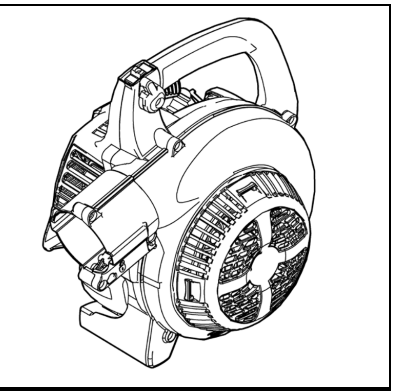
ASSEMBLY

⚠ WARNING

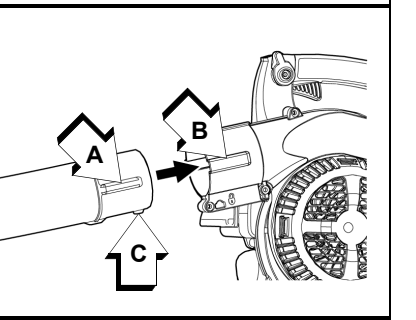
Never perform maintenance or assembly procedures with engine running or serious personal injury may result.

Install Blower Pipes

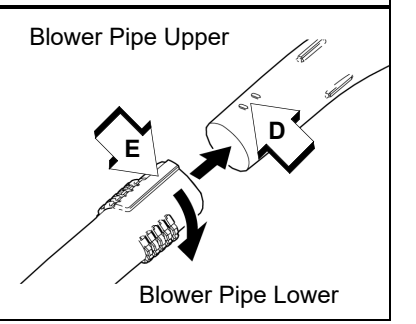
1. Stand unit upright on blower base.



2. Align locking ribs (A) on upper blower pipe with recesses (B) in fan case. Assure short locking rib (C) faces downward. Slide upper blower pipe into fan case until a clicking sound is heard.



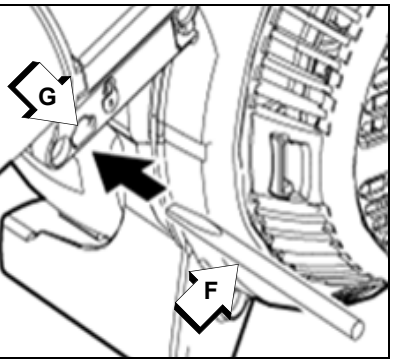
3. Align tabs (D) with grooves (E) and slide lower blower pipe over upper pipe until there is light resistance. Do not force connection.
4. Hold upper pipe, and turn lower pipe clockwise, engaging positive locking channels until connection is firm. Do not force connection.



Note: Blower use will eventually loosen pipe connections. Exclusive positive locking system allows pipes to be tightened. If loosening occurs, remove lower straight pipe, and install according to instructions 3 & 4.

Remove Blower Pipes

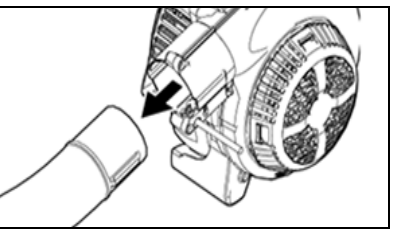
1. Insert screwdriver (F) into hole located near lock symbol (G) to release pipe lock.



⚠ CAUTION

Screwdriver tip may stick out opposite side of locking hole.

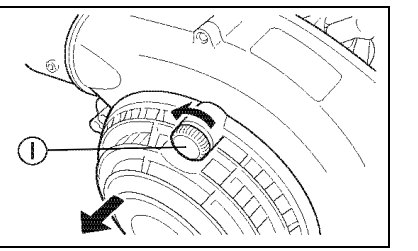
2. Pull pipe out of fan case.
3. Remove screwdriver.



Vacuum/Shredding Application

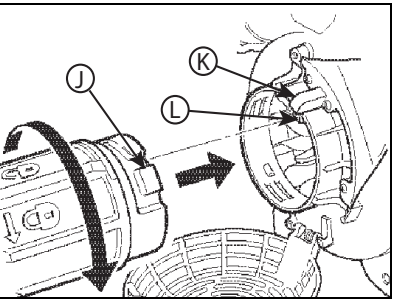
Install Vacuum Tube

1. Turn knob (I) counter clockwise until hinged housing cover is free to open for vacuum tube installation.



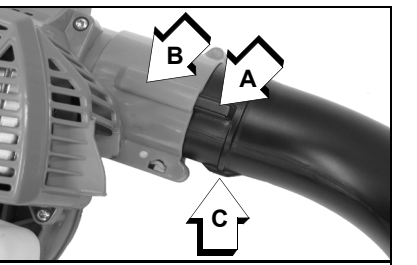
2. Opening housing cover, slide recess (J) on vacuum tube into locking rib (K), and turn the vacuum tube clockwise so that it is locked.

Note: Engine will not start/ operate unless safety interlock switch (L) is activated by the vacuum tube.



Install Bag

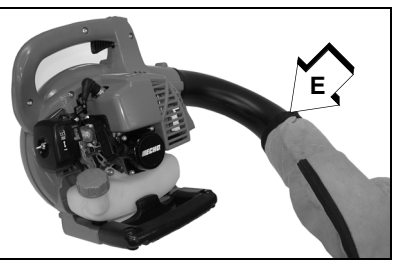
1. Stand unit upright on blower base.
2. Align locking ribs (A) on elbow pipe with recesses (B) in fan case. Assure short locking rib (C) faces downward. Slide elbow pipe into fan case until a clicking sound is heard.
3. Place debris bag opening over flared end of elbow (D), and cinch bag securely with Velcro strap (E).



NOTICE

Reverse vacuum / shredding assembly instructions to return to blower application.

Note: Engine will not start/ operate unless safety interlock switch is activated.



OPERATION

⚠ WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit. Blower housing might contain shredder blades and other sharp edges that can cause serious injuries if touched, even if engine is off and blades are not moving. Wear gloves (not included) to protect hands from sharp edges and hot surfaces.

⚠ WARNING

Operation of this equipment might create sparks that can start fires around dry vegetation. This unit is equipped with a spark arrester to prevent discharge of hot particles from the engine. Contact local fire authorities for laws or regulations regarding fire prevention requirements.

⚠ WARNING

Engine exhaust IS HOT, and contains Carbon Monoxide (CO), a poison gas. Breathing CO can cause unconsciousness, serious injury, or death. Exhaust can cause serious burns. ALWAYS position unit so that exhaust is directed away from your face and body.

⚠ WARNING

- **This blower should be used for clearing leaves, grass, debris, and dust in yards, gardens, driveways, and parking lots only.**
- **Always maintain a direct, clear line of site to the unit and the work being performed.**
- **Always be alert for changes in operation of unit.**
- **Always shut engine off before transporting unit to new location.**
- **Always secure the unit during transportation to prevent turnover, fuel spillage, and damage to the unit.**

Fuel

⚠ WARNING

Diesel fuels and alternative fuels, such as E-15 (15% ethanol), E-85 (85% ethanol) or any fuels not meeting ECHO requirements are NOT approved for use in ECHO 2-stroke gasoline engines. Use of diesel or alternative fuels can cause performance problems, loss of power, overheating, fuel vapor lock, and unintended machine operation, including, but not limited to, improper clutch engagement. Diesel or alternative fuels can also cause premature deterioration of fuel lines, gaskets, carburetors and other engine components.

Fuel Requirements

Gasoline - Use fresh (purchased within the last 30 days from the pump) 89 Octane [R+M/2] (mid grade or higher) gasoline known to be good quality. Gasoline may contain up to 10% Ethanol (grain alcohol) or 15% MTBE (methyl tertiary-butyl ether). Gasoline containing methanol (wood alcohol) is **NOT** approved. Use of ECHO branded fuel (sold separately) is recommended to extend engine life in all air-cooled 2-stroke and 2/4-stroke hybrid engines.

Two Stroke Oil - A two-stroke engine oil, such as ECHO branded 2-stroke oils, meeting ISO-L-EGD (ISO/CD 13738) and J.A.S.O. FD Standards must be used. ECHO branded 2-stroke oil (sold separately) meet these standards. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345-FD certified oil will void the two-stroke engine warranty.

⚠ WARNING

2-Stroke engine oil contains petroleum distillates and other additives that may be harmful if swallowed. Heated oil can release vapors that can cause flash fire, or ignite with explosive force. Read and follow the oil manufacturer's instructions, and observe all safety warnings and precautions for handling flammable liquids. For more detailed safety and first aid information, visit www.echo-latinamerica.com for a copy of the Material Safety Data Sheet.

- **KEEP OUT OF REACH OF CHILDREN.**
- **If swallowed, do not induce vomiting. CALL PHYSICIAN OR A POISON CONTROL CENTER IMMEDIATELY.**

- **WEAR SAFETY GLASSES (not included) when mixing or handling.**
- **AVOID repeated or prolonged skin contact.**
- **AVOID inhaling oil mists or vapors.**

NOTICE

ECHO branded 2-stroke oils may be mixed at 50:1 ratio for application in all ECHO engines sold in the past regardless of ratio specified in those manuals.

Handling Fuel

⚠ DANGER

Fuel is VERY flammable. Use extreme care when mixing, storing or handling, or serious personal injury will result.

- ***Use an approved fuel container. Mark fuel containers as containing 2-stroke mixture fuel.***
- ***DO NOT smoke near fuel.***
- ***DO NOT allow flames or sparks near fuel.***
- ***Fuel tanks/cans may be under pressure. Always loosen fuel caps slowly allowing pressure to equalize.***
- ***NEVER refuel a unit when the engine is HOT or RUNNING!***
- ***DO NOT fill fuel tanks indoors. ALWAYS fill fuel tanks outdoors over bare ground.***
- ***DO NOT overfill fuel tank. Wipe up spills immediately.***
- ***Securely tighten fuel tank cap and close fuel container after refueling.***
- ***Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.***
- ***Move at least 3 m (10 ft.) from refueling location before starting the engine.***

⚠ DANGER

Gasoline vapor is heavier than air, and can travel along the ground to nearby sources of ignition such as electrical motors, pilot lights, and hot or running engines. Vapors ignited by an ignition source can flash back to the fuel container, resulting in an explosion, fire, serious or fatal injuries, and extensive property damage.

Mixing Instructions

NOTICE

Stored fuel ages. Do not mix more fuel than you expect to use in 30 days, 90 days when a fuel stabilizer is added.

1. Fill an approved fuel container (not included) with half of the required amount of gasoline.
2. Add the proper amount of 2-stroke oil to gasoline.
3. Close container and shake to mix oil with gasoline.
4. Add remaining gasoline, close fuel container, and remix.

Fuel to Oil Mix – 50:1 Ratio			
US		Metric	
Gas	Oil	Gas	Oil
gal.	fl.oz.	L	cm^3
1	2.6	5	100
2	5.2	10	200
5	13	25	500

NOTICE

Spilled fuel is a leading cause of hydrocarbon emissions. Some locations may require the use of automatic fuel shut-off containers to reduce fuel spillage.

Storage - Fuel storage laws vary by locality. Contact your local government for the laws affecting your area. As a precaution, store fuel in an approved, airtight container. Store in a well-ventilated, unoccupied building, away from sparks and flames.

- Empty the fuel tank prior to storing the unit. Return unused fuel to an approved fuel storage container.

NOTICE

Stored two-stroke fuel can separate. ALWAYS shake fuel container thoroughly before each use.

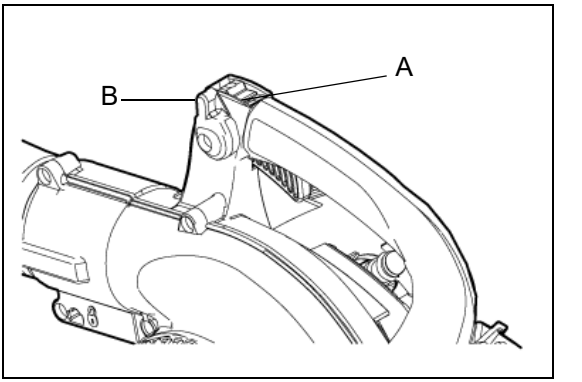
NOTICE

Used oil and gasoline, and soiled towels are hazardous waste materials. Disposal laws vary by locality.

Starting Cold Engine

1. *Stop Switch*

   Move stop switch (A) away from the STOP position.



Note: Engine will not run if safety switch is not activated.

2. *Throttle Position Lever*

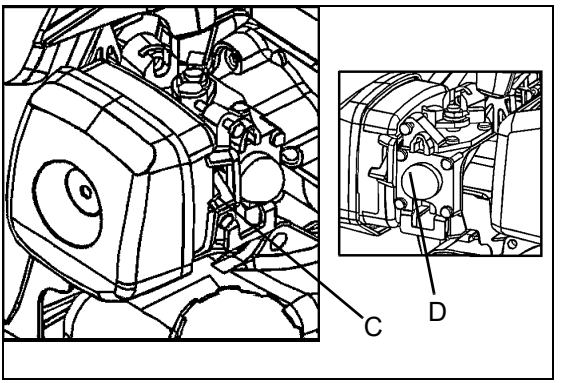
   Move throttle position lever (B) midway between idle and full throttle positions.

3. *Choke*

   Move choke (C) to COLD START ( ) (closed) position.

4. *Purge Bulb*

   Pump purge bulb (D) until fuel is visible and flows freely in the clear fuel tank return line.

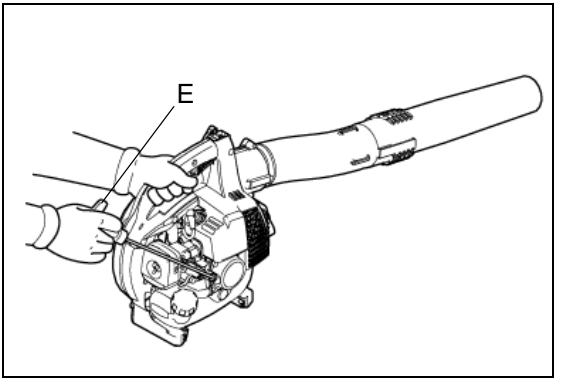


NOTICE

Recoil starter: Use short pulls - only 1/2 ~ 2/3 of rope for starting. Do not allow the rope to snap back in. Always hold the unit firmly.

5. *Recoil Starter*

   Place the unit on a flat, clear area. Firmly grasp throttle handle with left hand and rapidly pull recoil starter handle/ rope (E) until engine fires, or maximum 5 pulls.



6. *Choke*

   Move choke lever (C) to RUN position, and if necessary, restart engine.

Note: If engine does not start with choke in RUN position after 5 pulls, repeat instructions 3 - 6.

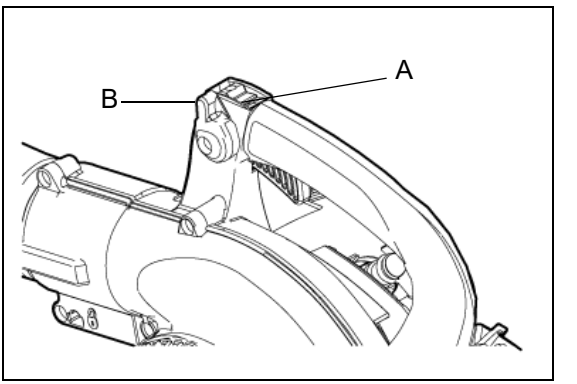
7. *Throttle Trigger*

   After engine warm up, gradually depress throttle trigger to increase engine RPM to operating speed.

Note: Allow engine to warm up 3 minutes before use.

Starting Warm Engine

The starting procedure is the same as Cold Start except DO NOT close the choke.



1. *Stop Switch*

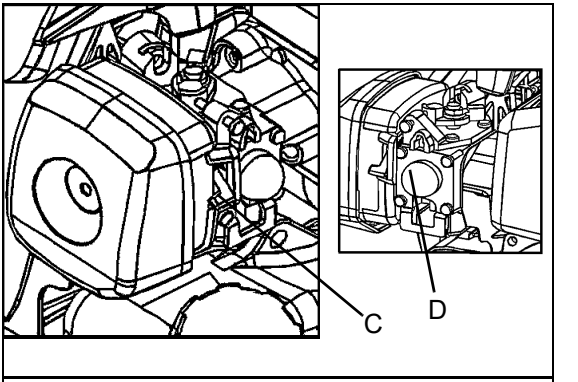
   Move stop switch (A) away from the STOP position.

2. *Throttle Position Lever*

   Move throttle position lever (B) midway between idle and full throttle positions.

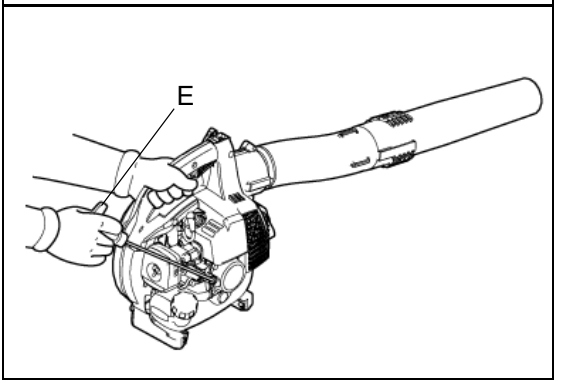
3. *Purge Bulb*

   Pump purge bulb (D) until fuel is visible and flows freely in the clear fuel tank return line.



4. *Recoil Starter*

   Place the unit on a flat, clear area. Firmly grasp throttle handle with left hand and rapidly pull recoil starter handle/ rope (E) until engine fires.

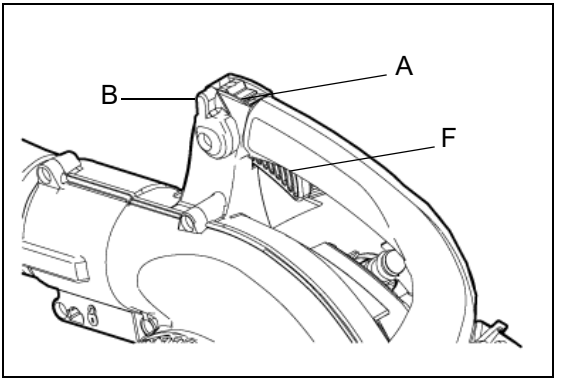


NOTICE

Recoil starter: Use short pulls - only 1/2 ~ 2/3 of rope for starting. Do not allow the rope to snap back in. Always hold the unit firmly.

Note: If engine does not start after 5 pulls, use Cold Start Procedure.

Stopping Engine



1. *Throttle Trigger/ Throttle Position Lever*

   Release throttle trigger (F). Move throttle position lever (B) forward to idle position and allow engine to return to idle before shutting off engine.

2. *Stop Switch*

   Move stop switch (A) to STOP position.

⚠ WARNING

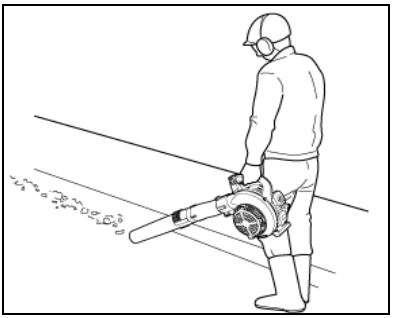
If engine does not stop when stop switch is moved to STOP position, close choke - COLD START position - to stall engine. Have your ECHO dealer repair stop switch before using unit again.

Operating Blower

⚠ WARNING

Always wear safety glasses, hearing protection and a face filter mask or serious personal injury may result. Do not point the blower pipe in the direction of people or pets.

NOTICE



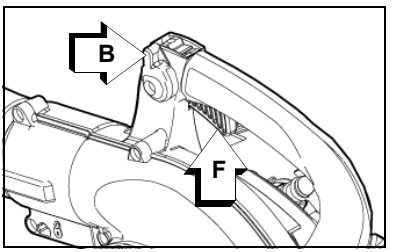
Use reduced speed only when performing light-duty tasks or to comply with local noise regulations. Continuous low speed operation may allow fuel/oil residue to build-up on the piston and cause rapid build-up of carbon on the spark arrester screen, resulting in overheating and engine damage. To reduce harmful build-up, run engine at wide open throttle for at least 5 minutes every hour, and inspect/clean the spark arrestor screen after approximately 40 hours of operation.

Read the Safety Section carefully.

NOTICE

To avoid engine damage due to over-revving, do not block blower pipe.

1. Use only during appropriate hours.
2. Allow the engine to warm up at a fast idle for a few minutes.
3. Control engine speed with throttle trigger (F), or for continuous use, set engine speed with throttle position lever (B). Rotate throttle position lever forward for lower speed, back for higher speed.
4. Use lower speed to blow debris from hard surfaces.



5. Additional speed may be necessary to clean debris, snow, etc. from lawns and flowerbeds.

Note: Never use a higher speed setting than necessary to perform a task. Remember, the higher the engine speed, the louder the blower noise. Minimize dust by using blower at lower speeds. Keep debris on your property. Be Smart - be a good neighbor.

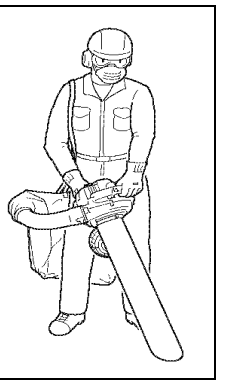
SHRED 'N' VAC® Operation

⚠ WARNING

Flying debris hazard. Never operate unit as a vacuum unless discharge elbow is installed and debris bag is securely cinched to elbow. Failure to follow instructions can result in serious injuries.

⚠ WARNING

Debris bag is flammable and could be ignited if allowed to contact hot muffler cover or exhaust. Keep bag away from hot surfaces at all times.



1. Adjust debris bag strap to support bag on operator's shoulder. Bag must not be folded at intake area, or intake will clog. Further adjustment may be necessary as the debris bag fills and becomes heavier.
2. Grip throttle control handle with left hand, and lower handle/stand with right hand.
3. Operate unit with beveled end of tube facing downward. Keep tube opening close to material being vacuumed for best results.
4. Empty bag when debris level reaches intake opening. To empty bag, move stop switch to "STOP" position, and wait for blower to stop running. Loosen Velcro strap at elbow and slide bag off elbow. Open other end of bag, and empty contents. Close bag, and reattach to blower. Secure bag with Velcro strap.

Note: Vacuum action works best at higher engine speeds. Don't use vacuum to pick up sticks, brush, rocks, etc… or other hard debris. Clear work areas with blower first, blowing light debris into a pile. Use attachment to vacuum pile.

SHRED 'N' VAC® Troubleshooting

Problem	Cause	Remedy
Unit runs, but doesn't vacuum or has poor suction	Elbow or debris bag clogged	Check elbow and debris bag, and clear as needed. Make sure bag is not folded over at intake during use.
	Obstructions in vacuum tube	Check vacuum tube, and remove obstructions. Avoid wet leaves.
Unit stopped suddenly during vacuuming, and now starter won't work	Object stuck in fan housing area	Remove vacuum tube and check fan area. Remove object.
Unit jams repeatedly during use	Material being vacuumed too big or too hard for blades to shred	Use vacuum for leaves and small twigs, maximum 1/4" diameter x 3" long
Vacuum tube difficult to install or remove from unit	Tube/housing fit tight.	Apply small amount of soapy water to end of tube to ease assembly or removal. Turn tube 1/4 turn to loosen for removal.

MAINTENANCE

⚠ WARNING

Moving parts can amputate fingers or cause severe injuries. Keep hands, clothing and loose objects away from all openings. Always stop engine, disconnect spark plug, and make sure all moving parts have come to a complete stop before removing obstructions, clearing debris, or servicing unit. Allow unit to cool before performing service. Wear gloves to protect hands from sharp edges and hot surfaces.

⚠ WARNING

Operating a poorly maintained unit can result in serious injuries to operator or bystanders. Always follow all maintenance instructions as written, otherwise serious personal injury can result.

Your unit is designed to provide many hours of trouble free service. Regular scheduled maintenance will help your unit achieve that goal. If you are unsure or are not equipped with the necessary tools, we recommend that you take your unit to a Servicing Dealer for maintenance. To help you decide whether you want to DO-IT-YOURSELF or have the Dealer do it, each maintenance task has been graded. If the task is not listed, see your Dealer for repairs.

NOTICE

The use of emission control components other than those specifically designed for this unit is a violation of federal law.

Skill Levels

Level 1 = Easy to do. Common tools may be required.

Level 2 = Moderate difficulty. Some specialized tools may be required.

Level 3 = See your dealer.

Maintenance Intervals

COMPONENT/SYSTEM	MAINTENANCE PROCEDURE	SKILL LEVEL
Daily or Before Use		
Air Filter	Inspect/Clean [1]	1
Choke Shutter		
Fuel System	Inspect	
Cooling System	Inspect/Clean	2
Recoil Starter Rope	Inspect/Clean [1]	1
Screws/Nuts/Bolts	Inspect/Tighten/Replace [1]	
Every Refuel		
Fuel System	Inspect [1]	1
Cooling System	Inspect/Clean	2
3 Months		
Air Filter	Replace [1]	1
Fuel Filter	Inspect [1]	
Fuel Cap Gasket		
Spark Plug	Inspect/Clean/Replace [1]	2
Muffler Spark Arrester		
Cylinder Exhaust Port	Inspect/Clean/De-carbon	
Yearly		
Fuel Filter	Inspect/Replace[1]	1
Fuel Cap Gasket	Replace [1]	

IMPORTANT NOTE - Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.

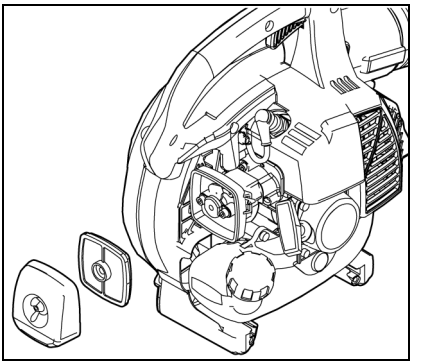
MAINTENANCE PROCEDURE NOTES:

[1]Replacement is recommended based on the finding of damage or wear during inspection.

Air Filter

Level 1.

Parts Required: AIR FILTER



1. Close choke (Cold Start Position [ ]). This prevents dirt from entering the carburetor throat when the air filter is removed. Brush accumulated dirt from air cleaner area.
2. Remove air filter cover. Brush dirt from inside cover.
3. Remove air filter and lightly brush debris from filter. Replace filter if it is damaged, fuel soaked, very dirty, or the rubber sealing edges are deformed.
4. If filter can be reused, be certain it:
   - Fits tightly in he air filter cavity
   - Is installed with the original side out
5. Install air filter cover.

Fuel Filter

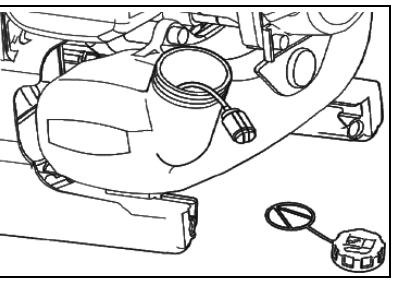
Level 1.

Parts Required: FUEL FILTER

DANGER

Fuel is VERY flammable. Use extreme care when mixing, storing or handling, or serious personal injury may result.

1. Use a clean rag to remove loose dirt from around fuel cap and empty fuel tank.
2. Use the “fuel line hook” to pull the fuel line and filter from the tank.
3. Remove the filter from the line and install the new filter.



Spark Plug

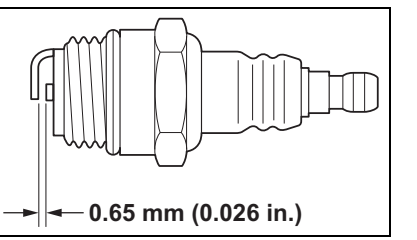
Level 2.

Parts Required: SPARK PLUG

NOTICE

Use only NGK BPM-8Y spark plug (BPMR-8Y in Canada) otherwise severe engine damage may occur.

1. Remove spark plug and check for fouling, worn and rounded center electrode.
2. Clean the plug or replace with a new one. DO NOT sand blast to clean. Remaining sand will damage engine.
3. Adjust spark plug gap by bending outer electrode.



4. Tighten spark plug to 150-170 kgf • cm (130-150 in • lbf).

Cooling System

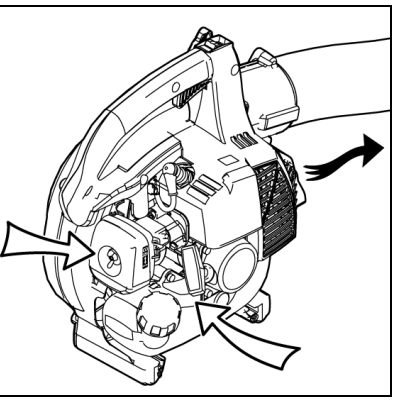
Level 2.

NOTICE

To maintain proper engine operating temperatures, cooling air must pass freely through the cylinder fin area. This flow of air carries combustion heat away from the engine.

Overheating and engine seizure can occur when:

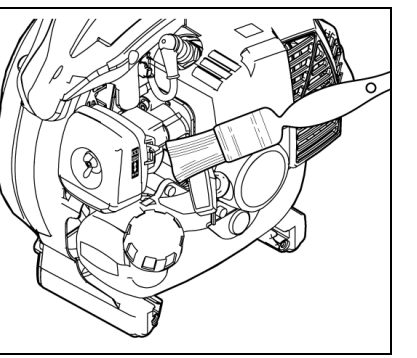
- Air intakes are blocked, preventing cooling air from reaching the cylinder.
- Dust and grass build up on the outside of the cylinder. This build up insulates the engine and prevents the heat from leaving.



Removal of cooling passage blockages or cleaning of cooling fins is considered “Normal Maintenance.” Any failure attributed to lack of maintenance is not warranted.

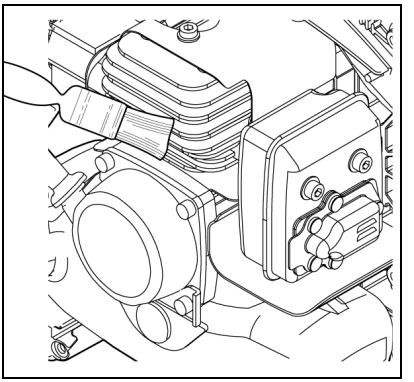
Cleaning Grill

1. Brush accumulated debris from crankcase intake grill above the fuel tank.



Cleaning Cylinder Fins

1. Remove spark plug lead from spark plug, and remove engine cover.
2. Clean cylinder fins to allow cooling air to pass freely.
3. Reassemble parts in reverse order.



Exhaust System

Spark Arrestor Screen

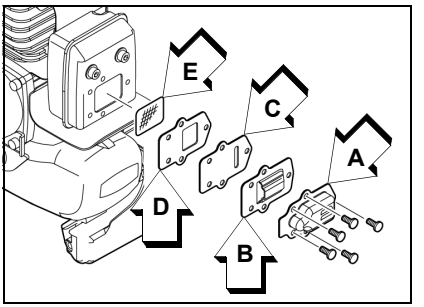
Level 2.

Parts Required: Spark Arrestor Screen, Gasket

NOTICE

Carbon deposits in muffler will cause a drop in engine output and overheating. Spark arrestor screen must be checked periodically.

1. *Remove spark plug lead from spark plug, and remove engine cover.*
2. Remove spark arrestor cover (A), deflector (B), plate (C), gasket (D), and spark arrestor screen (E) from muffler. Replace screen if plugged with carbon deposits.



Note: When cleaning carbon deposits, be careful not to damage the catalytic element inside muffler.

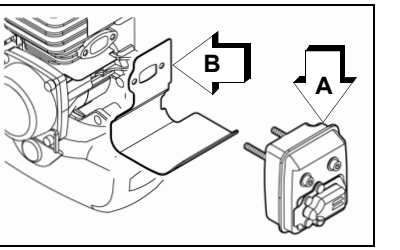
3. Clean carbon deposits from muffler components.
4. Install spark arrestor screen, gasket, plate, deflector, and cover.
5. Loosely reassemble engine cover.
6. Tighten all screws securely.
7. Attach spark plug lead.

Exhaust Port Cleaning

Level 2.

Parts Required: As needed: Heat Shield

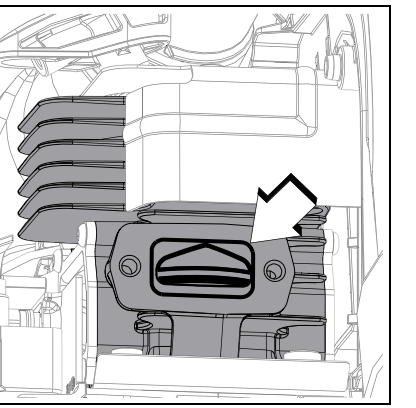
1. Remove spark plug lead from spark plug, and remove engine cover.
2. Place piston at top dead center. Remove muffler (A) and heat shield (B).
3. Use a wood or plastic scraping tool to clean deposits from cylinder exhaust port.



NOTICE

Never use a metal tool to scrape carbon from the exhaust port. Do not scratch the cylinder or piston when cleaning the exhaust port. Do not allow carbon particles to enter the cylinder.

4. Inspect heat shield, and replace if damaged.
5. Install heat shield and muffler.
6. Tighten muffler mounting bolts (or nuts) to 60-70 in•lbf (70-80 kgf•cm).
7. Loosely reassemble engine cover.
8. Tighten all screws securely.
9. Attach spark plug lead.
10. Start engine, and warm to operating temperature.
11. Stop engine, and re-tighten mounting bolts (or nuts) to specifications.



Carburetor Adjustment

Engine Break-In

New engines must be operated a minimum duration of two tanks of fuel break-in before carburetor adjustments can be made. During the break-in period your engine performance will increase and exhaust emissions will stabilize. Idle speed can be adjusted as required.

High Altitude Operation

This engine has been factory adjusted to maintain satisfactory starting, emission, and durability performance up to 1,100 feet above sea level (ASL) (96.0 kPa). To maintain proper engine operation and emission compliance above 1,100 feet ASL the carburetor may need to be adjusted by an authorized ECHO service dealer.

NOTICE

If the engine is adjusted for operation above 1,100 feet ASL, the carburetor must be re-adjusted when operating the engine below 1,100 feet ASL, otherwise severe engine damage may result.

Level 2.

⚠ WARNING

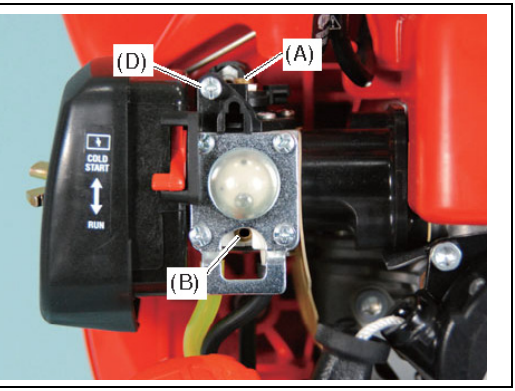
Always operate unit in a clear work area. Keep hands clear of moving parts during adjustmemt otherwise serious bodily injury may occur.

Before adjustment make sure that:

- Check for correct spark plug (BPM-8Y P/N 15901019830) and gap: .026 in (0.65 mm).
- The air filter element is clean and properly installed.
- The muffler spark arrestor screen and exhaust port are clear of carbon.
- The fuel lines, tank vent, and fuel filter are in good condition and clear of debris.
- The fuel is fresh (> 89 octane : RON+MON/2) and properly mixed at 50 : 1 with “ISO L-EGD” or “JASO-FD” 2-stroke oil.
- Blower pipes are installed.

Start and run engine for 3 minutes. Adjust idle speed screw to 2,700 +/- 100 rpm. If engine does not run correctly after this adjustment, adjust carburetor.

1. Turn Hi mixture needle (B) clockwise (CW) until lightly seated. And then turn Hi mixture needle (B) (CCW) 7/8 turns. Turn idle mixture needle (A) (CW) until lightly seated. And then turn idle mixture needle (A) (CCW) 3 7/8 turns.



2. Turn idle adjust screw (D) until the head touches boss. Then turn idle adjust screw (D) (CCW) 5 5/8 turns.
3. Adjust idle mixture needle (A) to achieve 2700 RPM.
4. Adjust Hi mixture needle (B) and obtain 7250 RPM
5. When final adjustment is completed, the engine should idle, accelerate smoothly, and attain (WOT) per above specification.

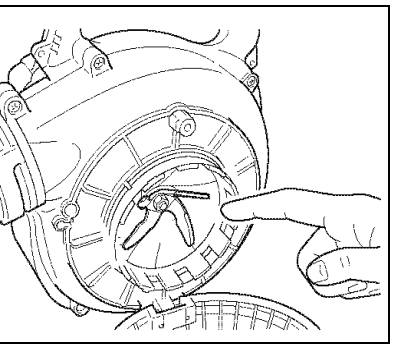
Shredder Blade

Level 1.

WARNING

Never remove vacuum tube or open fan guard when SHRED 'N' VAC® is running or serious personal injury may result. Always wear heavy-duty work gloves when working in shredder blade area.

1. With engine stopped, remove spark plug wire, remove vacuum tube from unit.
2. Remove accumulated debris from blade and inspect for damage.



NOTICE

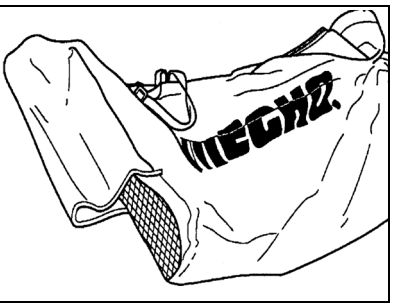
Do not operate SHRED 'N' VAC® if shredder blade is damaged or broken. Return unit to ECHO Dealer for service.

3. Install vacuum tube. Refer to "Install Vacuum Tube and Bag Assembly" in assembly section for correct assembly procedures.

Debris Bag

Level 1.

Shake dust from bag and inspect for hole or tears. Inspect zipper and clean debris from teeth to assure complete closing of zipper.



TROUBLESHOOTING

⚠ DANGER

Fuel vapors are extremely flammable and may cause fire and/or explosion. Never test for ignition spark by grounding spark plug near cylinder plug hole, otherwise serious personal injury may result.

ENGINE PROBLEM TROUBLESHOOTING CHART				
Problem	**Check**	**Status**	**Cause**	**Remedy**
Engine starts hard or Engine does not start	Fuel at carburetor	No fuel at carburetor	Fuel strainer or fuel line obstructed	Clean or replace See your dealer
	Fuel at cylinder	No fuel at cylinder	Carburetor	See your dealer
		Muffler wet with fuel	Fuel mixture too rich	OPEN choke Clean or replace air filter Adjust carburetor See your dealer
Engine starts hard or Engine does not start	Spark at end of plug wire	No spark	Ignition at STOP position Electrical problem Interlock switch	Move ignition away from STOP position. See your dealer
	Spark at plug		Incorrect gap - Covered with carbon - Fouled with fuel - Plug defective	Adjust to 0.65 mm (0.026 in.) Clean or replace plug

ENGINE PROBLEM TROUBLESHOOTING CHART				
Problem	**Check**	**Status**	**Cause**	**Remedy**
Engine runs, but dies or Engine does not acceler-ate properly	Air filter	Air filter dirty	Normal wear	Clean or replace
	Fuel filter	Fuel filter dirty	Contaminants or residue in fuel	Replace filter or replace fuel
	Fuel vent	Fuel vent plugged	Contaminated fuel	Clean or replace
	Spark plug	Plug dirty or worn	Normal wear	Clean and adjust or replace
	Carburetor	Improper adjustment	Vibration	Adjust
	Cooling system	Cooling system dirty or plugged	Extended oper-ation in dirty or dusty locations	Clean
	Spark arrester screen	Spark arrester screen plugged	Normal wear	Replace
Engine does not crank	N/A		Internal engine problem	See your dealer

STORAGE

⚠ WARNING

During operation the muffler or catalytic muffler and surrounding cover become hot. Always keep exhaust area clear of flammable debris during transportation or when storing, otherwise serious property damage or personal injury may result.

Long Term Storage (Over 30 Days)

⚠ DANGER

Do not store in enclosure where fuel fumes may accumulate or reach an open flame or spark.

Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance which includes the following:

1. Store unit in a dry, dust free place, out of the reach of children.
2. Place the stop switch or lever in the “OFF” position.
3. Remove accumulation of grease, oil, dirt and debris from exterior of unit.
4. Perform all periodic lubrication and services that are required.
5. Tighten all the screws and nuts.
6. Drain fuel tank completely. Press purge bulb 6 -7 times to remove remaining fuel from carburetor then drain the tank again. Close choke, start and run the engine until it stops due to lack of fuel.
7. Allow engine to cool. Remove the spark plug lead from the spark plug. Remove the spark plug. Pour 7 cc (0.25 oz.) of fresh, clean, two-stroke engine oil into the cylinder through the spark plug hole.
8. Pull the recoil starter handle 2-3 times to distribute the oil inside the engine.
9. Observe the piston location through the spark plug hole. Pull the recoil handle slowly until the piston reaches the top of its travel and leave it there.
10. Install the spark plug. Connect the spark plug lead to the spark plug.
11. Remove blower pipe assembly from unit.

SPECIFICATIONS

MODEL	ES-252
Length	330 mm (13.0 in.) (without pipes)
Width	280 mm (11.0 in.)
Height	345 mm (13.6 in.)
Weight (dry)	5.6 kg (12.3 lb.)
Engine Type	Air cooled, two-stroke, single cylinder gasoline engine
Bore	34.0 mm (1.34 in.)
Stroke	28.0 mm (1.1 in.)
Displacement	25.4 cc (1.55 cu. in.)
Exhaust	Spark arrester muffler or spark arrester muffler with catalyst
Carburetor	Diaphragm w/purge pump
Ignition System	Flywheel magneto, capacitor discharge ignition type
Spark Plug	NGK BPM-8Y (Gap 0.65 mm (0.026 in.)
Fuel	Mixed (Gasoline and Two-stroke Oil)
Gasoline/Oil Ratio	50:1
Gasoline	Use 89 Octane unleaded. Do not use fuel containing methyl alcohol, or more than 25% ethyl alcohol.
Oil	ISO-L-EGD (ISO/CD 13738) and J.A.S.O. M345-FD, two-stroke, air-cooled engine oil.
Fuel Tank Capacity	0.5 lit. (16.9 US fl. oz.)
Starter System	Automatic Recoil Starter, centrifugal type
Idle Speed	2,700 RPM
Wide Open Throttle Speed	7,250 RPM
Average Air Speed with pipes (MPH)	64.82 m/sec (145 mph)
Maximum Air Speed with pipes (MPH)	77.7 m/sec (174 mph)
Air Volume	11.75 m3/min. (414 cu. ft./min.)
Sound Level at 50 ft. dB(A) scale per ANSI B175.265 dB(A)	75 dB(A)

NOTES

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