



POWER BLOWER

Operator's Manual

MODEL Type 1E PB-24LN

Serial Number 001001 & Up



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



DANGER

Read rules for safe operation and all instructions carefully. ECHO provides this Operator's Manual which must be read and understood for proper and safe operation.

INTRODUCTION

Welcome to the ECHO family. This ECHO product was designed and manufactured to provide long life and on-the-job dependability. Read and understand this manual. You will find it easy to use and full of helpful operating tips and SAFETY messages.

WARNING DANGER

Read rules for safe operation and instructions carefully. ECHO provides this Operator's Manual which must be read and understood for proper and safe operation.

THE OPERATOR'S MANUAL --

contains specifications and information for operation, starting, stopping, maintenance, storage and assembly specific to this product.

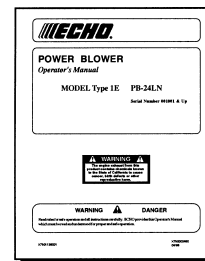


TABLE OF CONTENTS

Introduction	2	Maintenance	16
- The Operator's Manual	2	- Skill Levels	16
Manual Safety Symbols & Important Information	3	- Maintenance Intervals	16
Safety	3	- Air filter	17
- General Description	3	- Fuel Filter	17
- Decals	4	- Spark Plug	18
- International Symbols.....	4	- Cooling System	18
- Equipment	5	- Exhaust System	19
- Fuel	5	- Carburetor Adjustment	19
- Personal Condition and Safety Equipment	6	Troubleshooting	21
- Safe Operation	7	Storage	22
- Extended Operation/Extreme Conditions	8	Servicing Information	24
Description	9	- Parts	24
- Emission Control	9	- Service	24
- Contents	9	- ECHO Consumer Product Support	24
Specifications	11	- Warranty Card	24
Assembly	11	- Additional or Replacement Manuals	24
- Install Blower Pipes	11	- Manual Ordering Instructions	24
Pre-Operation	12		
- Fuel	12		
Operation	13		
- Starting Cold Engine	13		
- Starting Warm Engine	14		
- Stopping Engine	14		
- Operating Blower	15		

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.

MANUAL SAFETY SYMBOLS & IMPORTANT INFORMATION

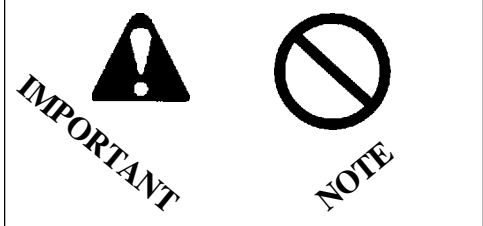
Throughout this manual and on the product itself, you will find safety alerts and helpful, information messages preceded by symbols or key words. The following is an explanation of those symbols and key words and what they mean to you.



This symbol accompanied by the words **WARNING** and **DANGER** calls attention to an act or condition that can lead to serious personal injury to operator and bystanders.



The circle with the slash symbol means whatever is shown within the circle is prohibited.



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

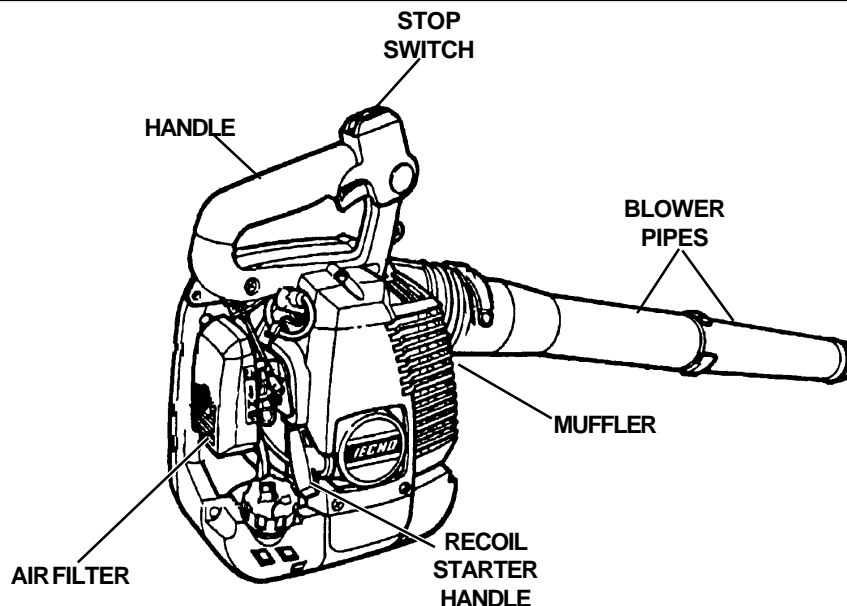
NOTE This enclosed message provides tips for use, care and maintenance of the unit.

SAFETY

GENERAL DESCRIPTION

IMPORTANT

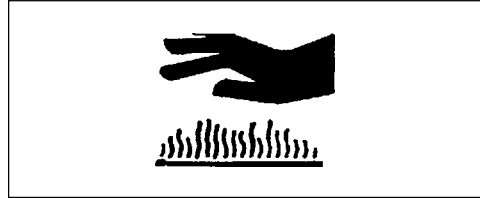
See Description and Specification sections for full description and illustration of power head, and blower assembly.



DECALS

Locate these safety decals on your unit. The complete unit illustration, found in the "DESCRIPTION" section, will help you locate them. Make sure the decals are legible and that you understand and follow the instructions on them. If a decal cannot be read, a new one can be ordered from your ECHO dealer. See PARTS ORDERING instructions for specific information.

HOT DECAL




GENERAL WARNING DECAL

**-WARNING-
-DANGER-** 


Read and follow all safety precautions in the operator's manual. Operators, helpers & bystanders can be severely injured by blown objects and must wear specified ANSI Z87.1 eye protection. Always wear hearing protection when operating.

SPANISH DECAL

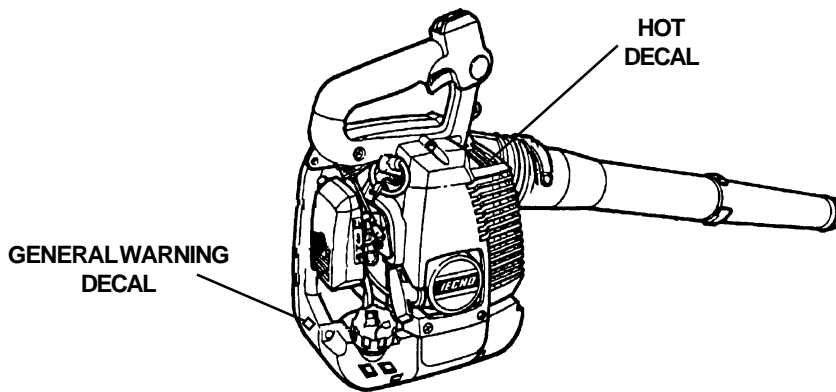
ADVERTENCIA

PELIGRO

Esta unidad puede ser peligrosa y producir lesiones personales graves si no se usa en forma adecuada. Para reducir el riesgo de lesionarse, los operadores, los ayudantes y los espectadores deben leer y comprender el Manual Del Operador que se entrega escrito en español.







ENGLISH TRANSLATION



WARNING

DANGER

This unit can be dangerous and cause serious injury if improperly used. To reduce injury risk to operator, helpers and bystanders, read and understand the Operator's Manual, which is provided in Spanish.



INTERNATIONAL SYMBOLS

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
	"WARNING, SEE OPERATOR'S MANUAL"		Hot Surface
	Wear eyes, ears and head protection		Fuel and oil mixture
	Finger Severing		Emergency stop

Symbol form/shape	Symbol description/application	Symbol form/shape	Symbol description/application
H	Carburetor adjustment - High speed mixture		Primer Bulb
T	Carburetor adjustment - Idle speed	Ignition 	Ignition ON/OFF
L	Carburetor adjustment - Low speed mixture		

EQUIPMENT

Before operation a complete check of the unit must be performed:

- Check unit for loose/missing nuts, bolts and screws. Tighten and/or replace as needed.
- Inspect fuel lines, tank and area around carburetor for fuel leaks. **DO NOT** operate unit if leaks are found.
- Only use attachments and accessories specified by Echo for this unit.


Spark Arrestor Muffler

- The spark arrestor muffler controls the exhaust noise and prevents hot, glowing particles of carbon from leaving the muffler. Make sure the spark arrestor screen is in good repair and properly seated in the muffler. (Refer to Exhaust System Maintenance pg. 19.)

Parts

- Do not use blower if any part is missing or damaged.
- Have repairs done only by an authorized ECHO Service dealer.
- Do not use any attachment, accessory or replacement part unless it is recommended in this Operator's Manual.

FUEL

WARNING  DANGER

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

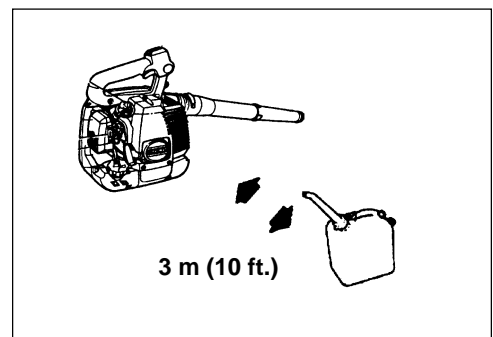
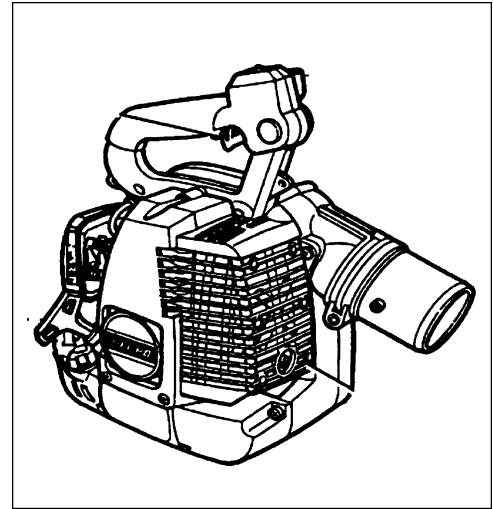
- Use an approved fuel container.
- **DO NOT** smoke near fuel.
- **DO NOT** allow flames or sparks near fuel.
- Fuel tanks/cans may be under pressure. Always loosen fuel caps slowly allowing pressure to equalize.
- **NEVER** refuel a unit when the engine is **HOT!**
- **NEVER** refuel a unit with the engine running.
- **DO NOT** fill fuel tanks indoors. **ALWAYS** fill fuel tanks outdoors over bare ground.
- Securely tighten fuel cap after refueling.
- Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.

After Refueling;

- Wipe any spilled fuel from the unit.
- Move at least 3 M (10 ft.) from refueling location before starting.

After use;

- **DO NOT** store a unit with fuel in its tank. Leaks can occur. Return unused fuel to an approved fuel storage container.



PERSONAL CONDITION AND SAFETY EQUIPMENT

WARNING DANGER

Power Blower users risk injury to themselves and others if the power blower is used improperly and or safety precautions are not followed. Proper clothing and safety gear must be worn when operating a blower.

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.



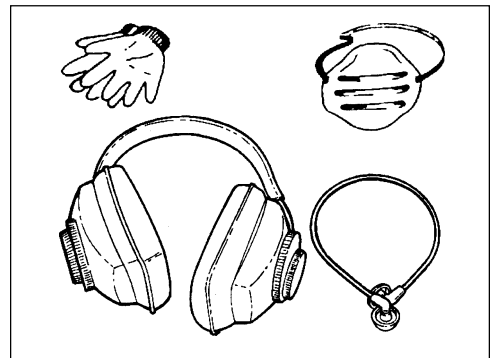
Eye Protection

Wear eye protection that meets ANSI Z87.1 or CE requirements whenever you operate the blower.



Hand Protection

Wear no-slip, heavy duty work gloves to improve your grip on the Blower handles. Gloves also reduce the transmission of machine vibration to your hands.



Breathing Protection --

Wear a face mask to protect against breathing dust.

Hearing Protection

ECHO recommends wearing hearing protection whenever unit is used.

Proper Clothing --

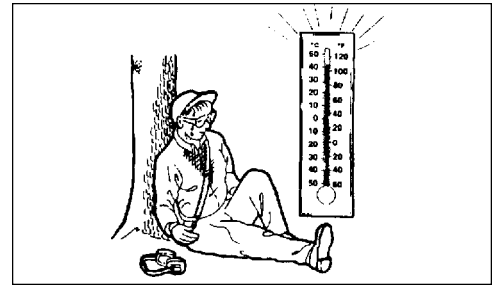
- Wear snug fitting, durable clothing;
- Pants should have long legs, shirts with long sleeves.
 - **DO NOT WEAR SHORTS,**
 - **DO NOT WEAR TIES, SCARVES, JEWELRY.**

- Wear sturdy work shoes with nonskid soles;
- **DO NOT WEAR OPEN TOED SHOES,**
 - **DO NOT OPERATE UNIT BAREFOOTED.**



Hot Humid Weather --

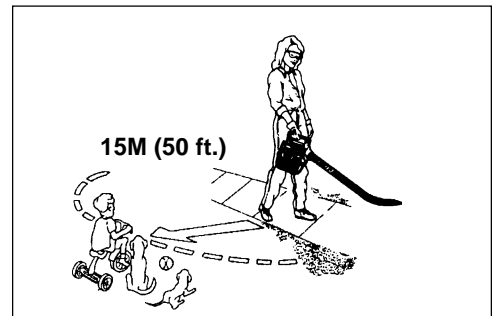
Heavy protective clothing can increase operator fatigue which may lead to heat stroke. Schedule heavy work for early morning or late afternoon hours when temperatures are cooler.



SAFE OPERATION

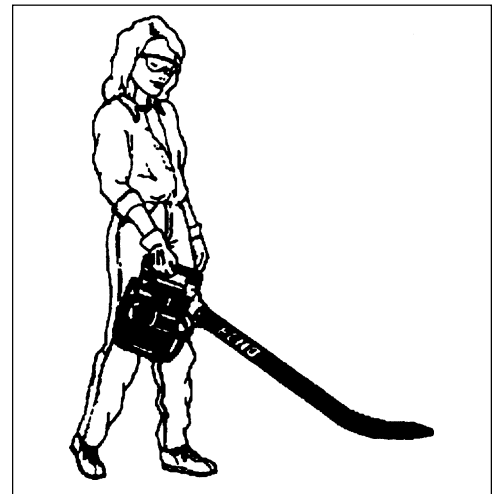
Determine Operation Area --

- Provide all operators of this equipment with the Operator's Manual, and instructions for safe operation.
- Review area to be cleared. Look for potential hazards such as stones or metal objects.
- Spectators and fellow workers must be warned, and children and animals prevented from coming nearer than 15M (50 ft.) while the blower is in use.
- Do not operate this product indoors or in inadequately ventilated areas.
- Take wind conditions into account: avoid open doors and windows.
- Start unit on ground with throttle at idle. Check that blower pipe is not blocked by the ground or by any objects.
- Do not point blower at people or animals.



Use Proper Clothing & Equipment

- Before starting the unit, equip yourself and any other person working within the 15M (50 ft.) Safety Zone with the required Protective Equipment and clothing.



Keep A Firm Grip

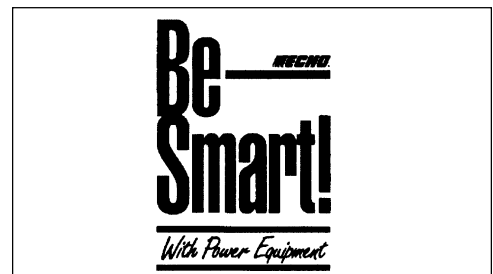
- Hold handle with fingers together encircling the handle.

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 overreach.
- Do not perform Maintenance or Assembly procedures with engine running.

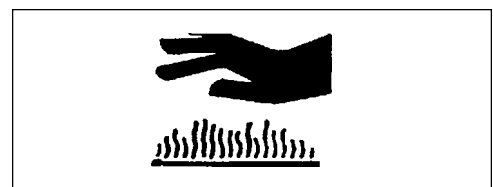
Noise Control

- Follow local noise regulations on sound levels and hours of operations. Use only during appropriate hours.
- Never use a higher speed setting than necessary to perform a task. The higher the engine speed the louder the blower noise.
- Be a good neighbor.



Avoid Hot Surfaces

- During operation, the exhaust area may become very hot, too hot to touch. Avoid contact during and immediately after operation.

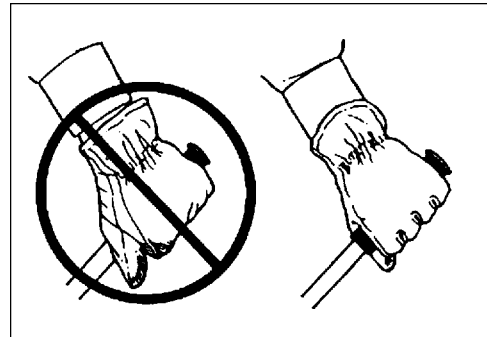
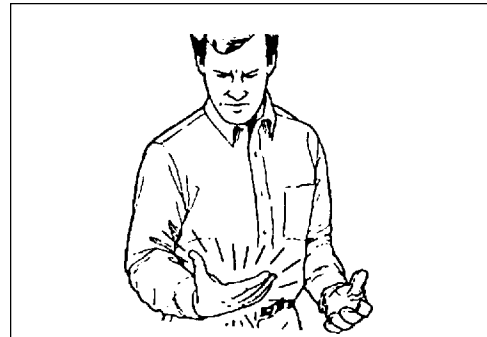
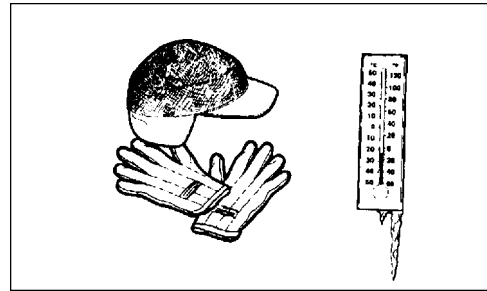


EXTENDED OPERATION/EXTREME CONDITIONS

Vibration and Cold

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.

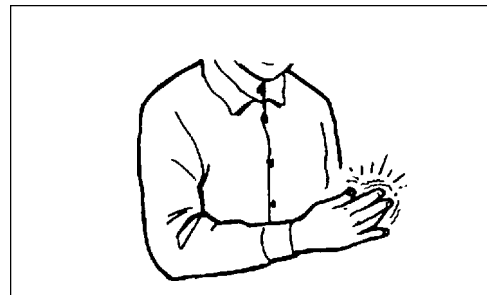
- Keep your body warm, especially the head, neck, feet, ankles, hands and wrists.
- Maintain good blood circulation by performing vigorous arm exercises during frequent work breaks and also by not smoking.
- Limit the hours of operation. Try to fill each day with jobs where operating the blower or other 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

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.



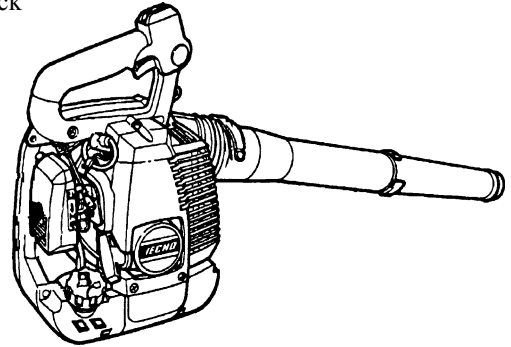
DESCRIPTION

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.

EMISSION CONTROL

The emission control system for this engine is EM (Engine Modification).

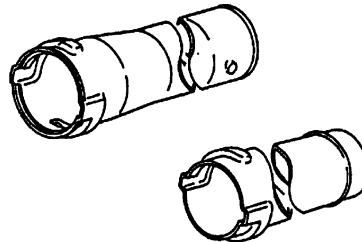
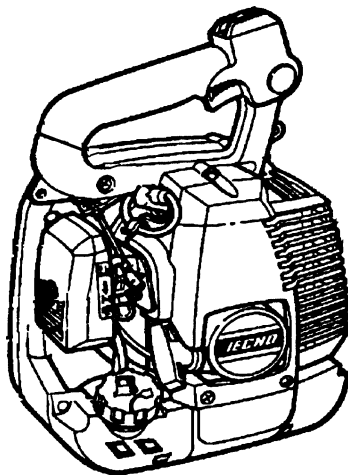
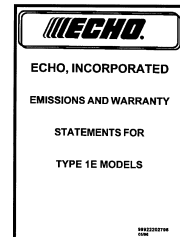
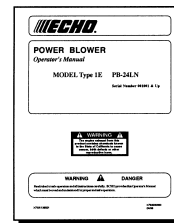
IMPORTANT ENGINE INFORMATION
ENGINE FAMILY : TEH0240824RC
DISPLACEMENT : 23.6cc
THIS ENGINE MEETS U.S. EPA PHI AND 1995 -
1999 CALIFORNIA EMISSION REGULATIONS FOR
ULGE ENGINES. REFER TO OWNER'S MANUAL
FOR MAINTENANCE SPECIFICATIONS AND
ADJUSTMENTS.



Emission Control Label located on the engine. (EXAMPLE ONLY, information on label varies by engine FAMILY).

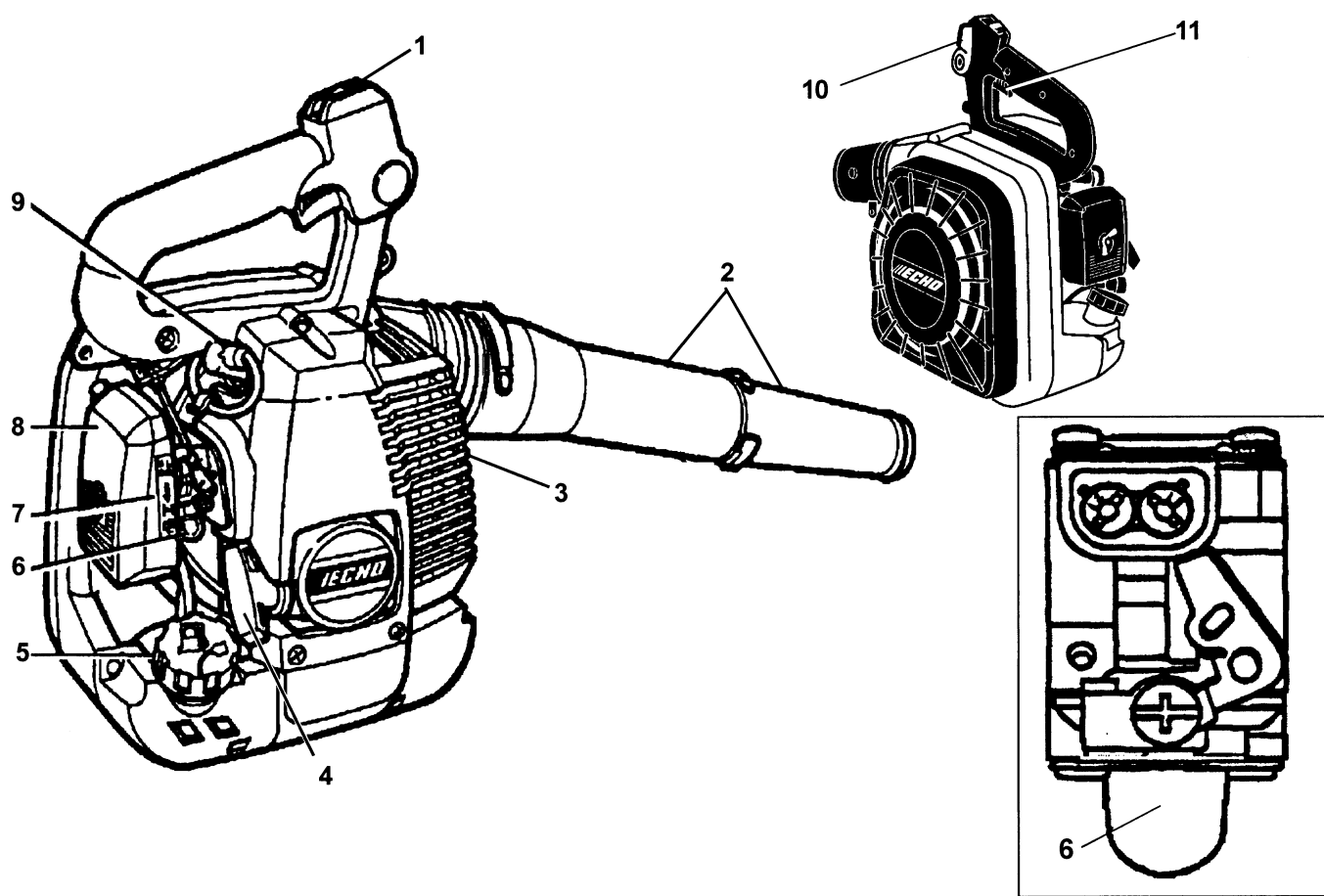
CONTENTS

- 1- Power Head
- 1- Blower Pipe Assembly
- 1- Plastic Bag
 - 1- Operator's Manual
 - 1- Warranty Registration Card
 - 1- ECHO Emissions and Warranty Statement



ECHO LIMITED WARRANTY REGISTRATION CARD / TARJETA DE INSCRIPCIÓN DE GARANTÍA LIMITADA	
Please Print/Imprimir Nombre y Apellido Completo del Cliente	
Purchase's Name / Nombre del Comprador (Indicate the Company/Indicar la Empresa)	
Address/Dirección	
City/Ciudad	
Telephone / Teléfono	
Purchase Location / Lugar de Compra	
Date of Purchase/Fecha de Compra	
Model Name / Nombre del Modelo	Serial Number / Número de Serie
Model Number / Número del Modelo	Serial No. / Número de Serie
Customer Signature / Firma del Cliente	Date of Signature / Fecha de Firma
<p>Important: This product complies with the CANADIAN ICES-002 spark ignition system. This system is not intended for use in areas where there is a risk of explosion.</p> <p>Importante: Este producto cumple con el sistema de encendido de chispa canadiense ICES-002. Este sistema no está diseñado para ser utilizado en áreas donde existe un riesgo de explosión.</p>	
<p>PLEASE READ A COPY OF THE ECHO SAFETY VIDEO INSTRUCTIONS AND THE WARRANTY CARD AND THE OPERATOR'S MANUAL. CONTACT ECHO COMPANY FOR A COPY OF THE VIDEO INSTRUCTIONS. PARA OBTENER UNA COPIA DEL VIDEO DE INSTRUCCIONES, Póngase en contacto con ECHO COMPANY. CONTACTE ECHO COMPANY FOR A COPY OF THE VIDEO INSTRUCTIONS. PARA OBTENER UNA COPIA DEL VIDEO DE INSTRUCCIONES, Póngase en contacto con ECHO COMPANY.</p>	
<p>REGISTRATION CARD / TARJETA DE INSCRIPCIÓN DE GARANTÍA LIMITADA</p> <p>LA GARANTÍA DE ECHO SE APLICARÁ SOLO SI SE LEE Y SE SIGUE EL MANUAL DEL OPERADOR Y EL VIDEO DE INSTRUCCIONES DE SEGURIDAD. PARA OBTENER UNA COPIA DEL VIDEO DE INSTRUCCIONES, Póngase en contacto con ECHO COMPANY.</p>	

Important: This Spark Ignition System complies with Canadian ICES-002



1. **STOP SWITCH** - "SLIDE SWITCH" mounted on top of handle. Push **forward** to **start** and **run**. Slide **back** to stop.
2. **BLOWER PIPES** - Twist lock design.
3. **MUFFLER/SPARK ARRESTOR** - The spark arrestor muffler controls the exhaust noise while the spark arrestor prevents hot, glowing particles of carbon from leaving the muffler where they could possibly start a fire.
4. **RECOIL STARTER HANDLE** - Pull handle slowly until recoil starter engages, then quickly and firmly. When engine starts return handle slowly. **DO NOT** let handle snap back or damage to unit will occur.
5. **FUEL TANK CAP** - Covers and seals fuel tank.
6. **PRIMER BULB** - Pumping primer bulb before starting engine draws fresh fuel from fuel tank priming the carburetor for starting. Pump the bulb 10 times until fuel is visible in clear fuel return line.
7. **CHOKE** - Lever is located on right side of the air filter case. Move lever **DOWN** to close choke (starting position) and for emergency stopping. Move up to open choke (run position).
8. **AIR CLEANER** - Contains replaceable filter element.
9. **SPARK PLUG** - Provides spark to ignite fuel mixture.
10. **THROTTLE POSITION LEVER** - Pull back to increase engine speed. Friction washers maintain throttle lever setting.
11. **THROTTLE TRIGGER** - Spring loaded to return to idle when released. During acceleration, press trigger gradually for best operating technique.

SPECIFICATIONS

Dimensions	Length	340mm (13.4 in.) w/o blower pipe
	Width	215 mm (8.46 in.)
	Height	375 mm (14.75 in.)
Weight w/pipes (dry)		4.3 kg (9.5 lb.)
Engine	Type	Air-cooled, two-stroke, single cylinder gasoline engine
	Bore	34.0 mm (1.34 in.)
	Stroke	26.0 mm (1.024 in.)
	Displacement	23.6 cc (1.44 cu. in.)
Exhaust System		Spark arrestor muffler
Carburetor		WALBRO diaphragm model WT w/purge
Ignition System	Spark Plug	NGK BPM-7Y Gap 0.65 mm (0.026 in.)s
Fuel System	Fuel	Mixed (gasoline and oil)
	Fuel/Oil Ratio	50:1
	Gasoline	89 octane unleaded. Do not use fuel containing methyl alcohol, more than 10% ethyl alcohol or 15% MTBE.
	Oil	50:1 ECHO High Performance 2-stroke engine oil
	Fuel Tank Capacity	0.6 lit. (17.75 U.S. fl. oz.)
Starter System		Automatic rewind starter Centrifugal type
Wide Open Throttle Speed		7300 RPM
Idle Speed		2500 - 3000 RPM
Max Air Volume		295 cu. ft./min
Max Air Speed	w/pipes	145 MPH

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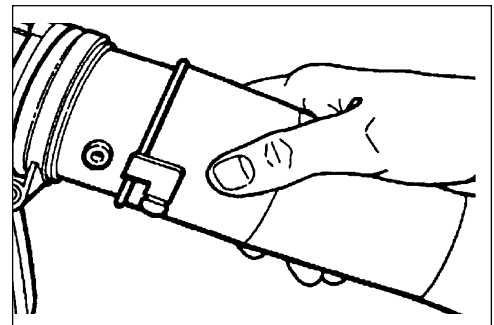
ASSEMBLY

WARNING **DANGER**

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

INSTALL BLOWER PIPES

1. Align grooves in straight pipe with pegs on blower housing and slide pipe onto housing.
2. Turn straight pipe clockwise to lock it into place.



PRE OPERATION

FUEL

Fuel Requirements

Gasoline - Use 89 Octane [$\frac{R+M}{2}$] gasoline or gasohol known to be good quality. Gasohol may contain up to 10% Ethyl (grain) alcohol or 15% MTBE (methyl tertiary-butyl ether). Gasohol containing methyl (wood) alcohol is **NOT** approved.

Two Stroke Oil - A two-stroke engine oil meeting ISO-L-EGD Standard (ISO/CD 13738), must be used. Echo brand Premium 50:1 oil meets this standard. Engine problems due to inadequate lubrication caused by failure to use an ISO-L-EGD approved oil, such as Echo Premium 50:1 Two-stroke Oil, will void the two-stroke engine warranty. (Emission related parts only are covered for two years, regardless of two-stroke oil used, per the statement listed in the EPA Phase I/California Emission Defect Warranty Explanation.)

Mixing - Follow directions on the oil container.

Handling Fuel

WARNING DANGER

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

- Use an approved fuel container.
- 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!
- NEVER refuel a unit with the engine running.
- DO NOT fill fuel tanks indoors. ALWAYS fill fuel tanks outdoors over bare ground.
- Securely tighten fuel cap after refueling.
- Inspect for fuel leakage. If fuel leakage is found, do not start or operate unit until leakage is repaired.

After Refueling;

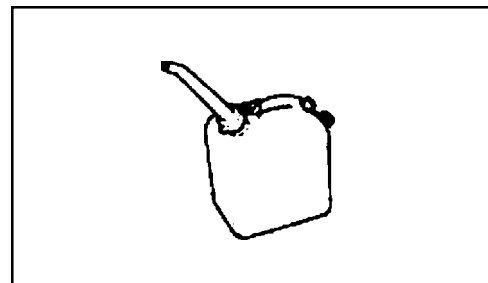
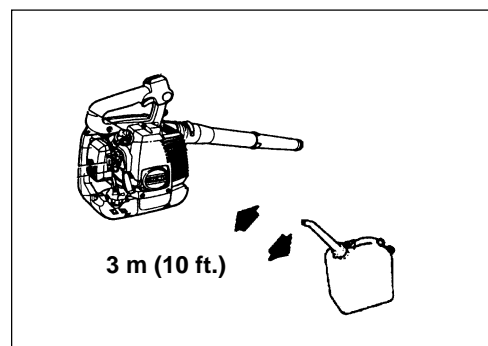
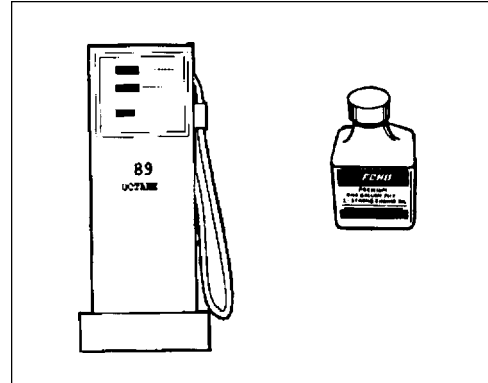
- Wipe any spilled fuel from the unit.
- Move at least 3 M (10 ft.) from refueling location before starting the engine.

After use;

- DO NOT store a unit with fuel in its tank. Leaks can occur. Return unused fuel to an approved fuel storage container.

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, air tight container. Store in a well ventilated, unoccupied building, away from sparks and flames. Do not store fuel longer than 30 days.



IMPORTANT

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

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

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

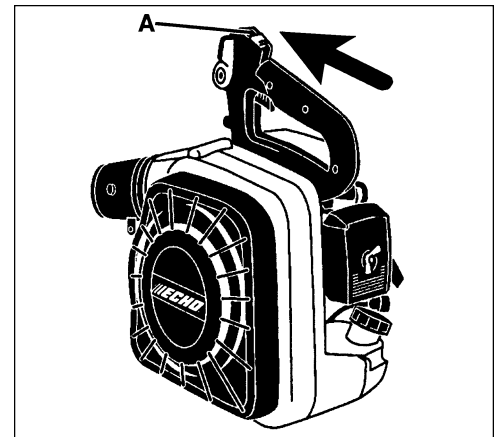
OPERATION

- Provide all operators of this equipment with the Operator's Manual and instructions for safe operation.
- Before starting the unit, equip yourself and any other person working within the 15M (50 ft.) Safety Zone with the required Protective Equipment and clothing.
- Do not operate this product indoors or in inadequately ventilated areas. Engine exhaust contains poisonous emissions which can cause serious injury or death.



STARTING COLD ENGINE

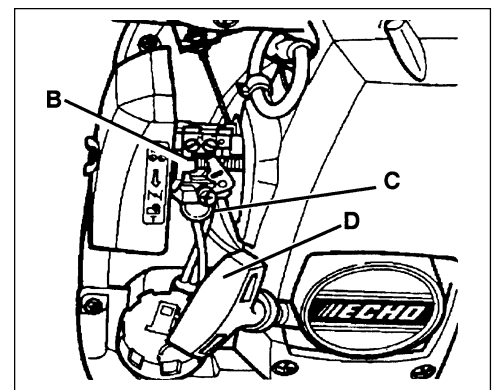
1. *Stop Switch - Start/Run.*
Move stop switch button (A) away from the STOP position.
2. *Close Choke - Cold Start.*
Move choke (B) to "Cold Start" Position.
3. *Primer Bulb -Prime.*
Pump primer bulb (C) 10 times. Fuel will be visible and flow freely in the clear fuel tank return line.



IMPORTANT

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.

4. Lay the blower on a flat clear area. Firmly grasp throttle grip with left hand and rapidly pull starter handle/rope (D) until engine fires.
5. After engine fires, move choke lever to "Run" position and pull starter handle/rope (D) until engine starts and runs. Allow unit to warm up at idle for several minutes.



NOTE

If engine does not start with choke in "Run" position after 4 pulls, repeat instructions.

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

STARTING WARM ENGINE

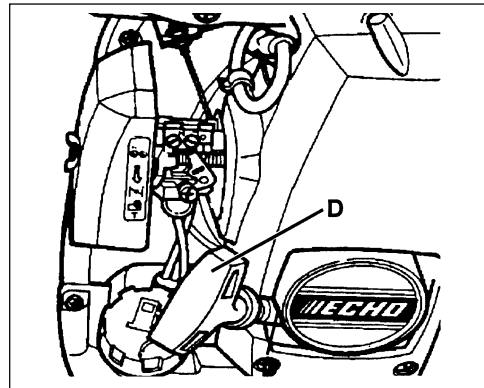
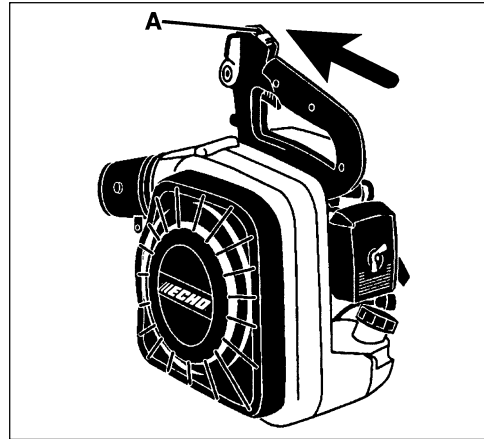
1. *Stop Switch - Start/Run.* Move stop switch button (A) away from the STOP position.
2. Lay the blower on a flat clear area. Firmly grasp throttle grip with left hand and rapidly pull recoil starter handle/rope (D) until engine fires.

IMPORTANT

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 4 pulls, use Cold Start Procedure.

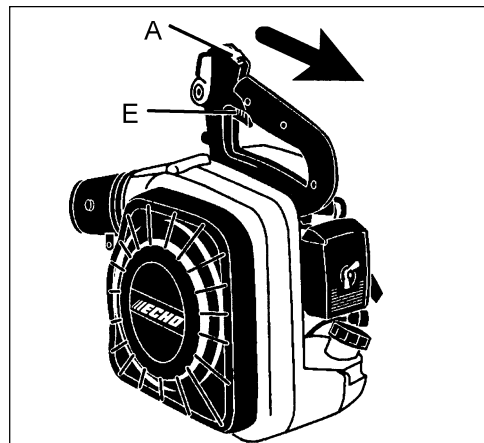


STOPPING ENGINE

1. Release throttle trigger (E) and allow engine to idle for a minute.
2. Move stop switch (A) to "STOP" position.

WARNING DANGER

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 blower again.



OPERATING BLOWER

WARNING **DANGER**

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.

Read the Safety Section carefully.

IMPORTANT

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. Set engine speed with throttle position knob (F). Rotate lever forward for lower speed; back for higher speed.

NOTE

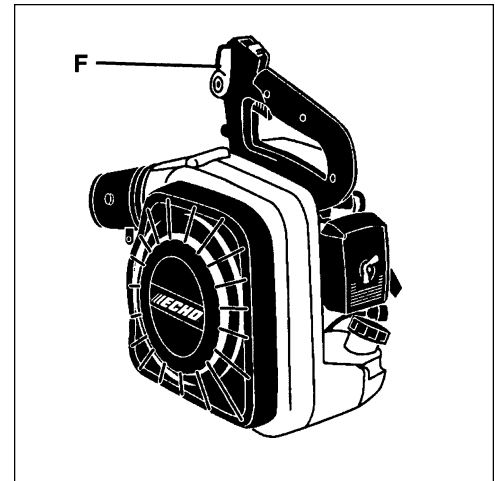
The PB-24LN can be run at any speed between 2500 RPM to 7300 RPM once the engine has broken in (approximately after 3 fuel tanks).

NOTE

Use lower speed to blow dry leaves from a lawn or flower bed. Additional speed may be necessary to clean grass and leaves from walks, patios and drives or to move gravel, dirt, snow, bottles or cans from a driveway, street, parking lot or stadium.

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.



MAINTENANCE

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

SKILL LEVELS

- Level 1** = Easy to do. Most required tools come with unit.
- Level 2** = Moderate difficulty. Some specialized tools may be required.
- Level 3** = Experience required. Specialized tools are required.

ECHO offers **REPOWER** Maintenance Kits and Parts to make your maintenance job easier. Below each task heading are listed the various part numbers required for that task. See your ECHO dealer for these parts.

MAINTENANCE INTERVALS

Component/System	Maintenance Procedure	Before Use	Every Refuel	Daily or Every 4 Hours	3 Months or 100 Hours	6 Months or 300 Hours	Yearly or 600 Hours	Date Maintenance Performed
Air Filter	Clean / Replace	I		I	R			
Fuel Strainer	Clean/Replace				I		R	
Fuel Line	Inspect	I			I			
Carburetor	Inspect/Rebuild					I	R (1)	
Choke System	Inspect/Clean/ Replace		I					
Cooling System	Inspect/Clean	I		I				
Muffler Spark Arrestor	Inspect/Clean				I			
Recoil Starter Rope	Inspect/Clean	I						
Fuel Leaks	Inspect/Replace	I	I					
Spark Plug	Clean / Replace				I	R		
Ignition System	Clean/Replace	No Maintenance required for coil and flywheel						
Screws/Nuts/Bolts	Inspect/Tighten/ Replace	I						

I = Inspect / R = Replace

IMPORTANT

Time intervals shown are maximum. Actual use and your experience will determine the frequency of required maintenance.
(1) Replacement will be required for commercial use after 600 hours. For Consumer use, cleaning every 6 months is required.
Cleaning includes Rebuild Kits.

AIR FILTER

Level 1.

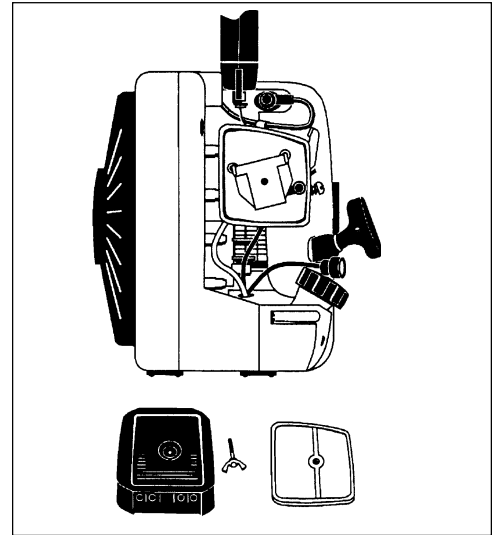
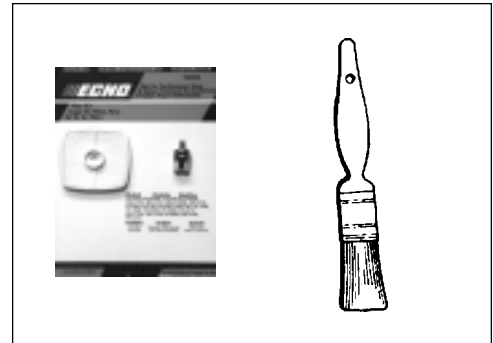
Tools required: 25-50mm (1in. or 2in.) medium bristle paint brush.

Parts required: 90065 REPOWER AIR & FUEL FILTER KIT.

1. Close choke (Cold Start Position). This prevents dirt from entering the carburetor throat when the air filter is removed. Brush accumulated dirt from the air cleaner area.
2. Remove the air cleaner cover. Clean and inspect the element for damage. If element is fuel soaked and very dirty, replace.
3. If element can be cleaned and reused, be certain it:
 - still fits the cavity in the air cleaner cover.
 - is installed with the original side out.

NOTE

Carburetor adjustment may be needed after air filter cleaning/replacement.



FUEL FILTER

Level 1.

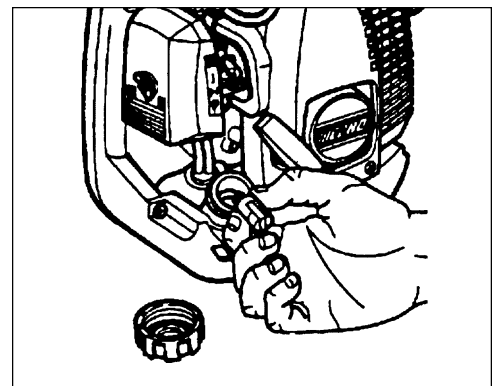
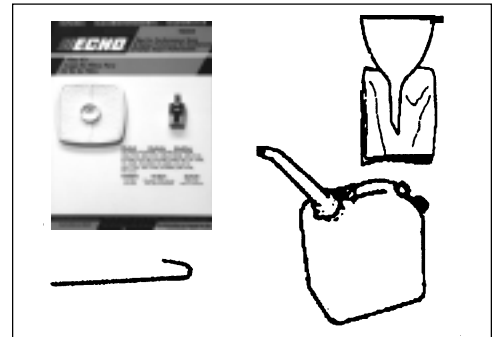
Tools required: Fuel line hook. 203-254mm (8in.-10in.) length of wire with one end bent into a hook. Clean rag, funnel, and an approved fuel container.

Parts required: 90065 REPOWER AIR & FUEL FILTER KIT.

WARNING DANGER

Fuel is **VERY** flammable. Use extreme care when mixing, storing or handling.

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.



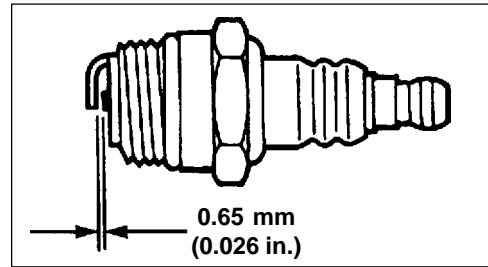
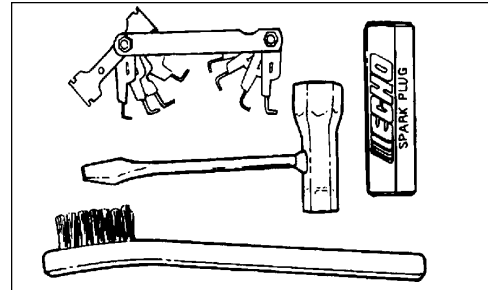
SPARK PLUG

Level 2.

Tools Required: 20mm (3/4in.) Spark Plug deep socket, Feeler gauge, preferably a wire gauge. Brush.

Parts Required: Spark Plug, NGK - BPM-7Y P/N 99944500071

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 145-155 kg/cm (125-135 in. lb.).



COOLING SYSTEMS CLEANING

Level 3.

Tools required: Cross Head Screwdriver, 3 mm Hex Wrench, Pointed Wood Stick, 25-50mm (1in.-2in.) medium bristle paint brush.

Parts Required: None if you are careful.

IMPORTANT

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.

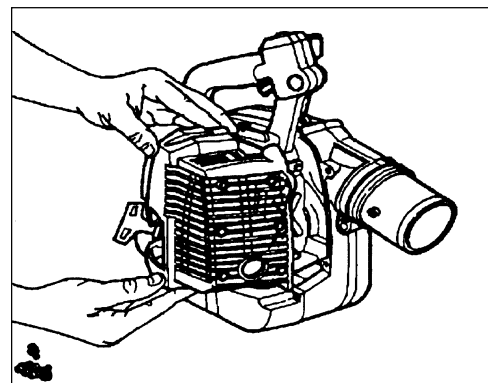
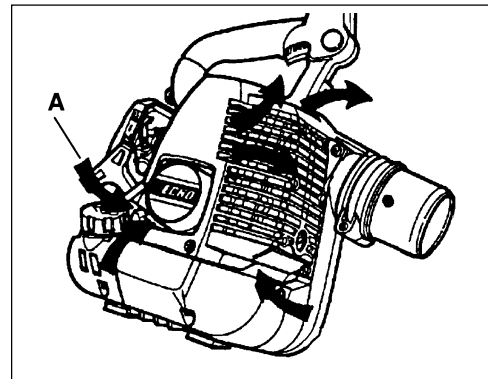
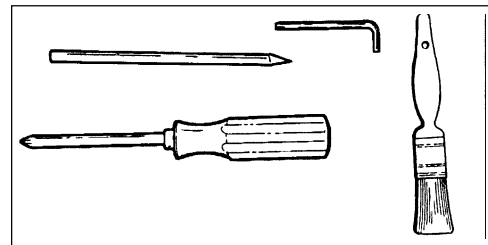
Removal of cooling passage blockages or cleaning of cooling fins is considered "Normal Maintenance". Any failure attributed to lack of maintenance is not warranted.

Cleaning Grill

Remove accumulated debris from crankcase intake grille (A) above the fuel tank.

Cleaning Cylinder Fins

1. Remove spark plug.
2. Remove engine cover (three screws) and clean cylinder fins to allow cooling air to pass freely.



EXHAUST SYSTEM

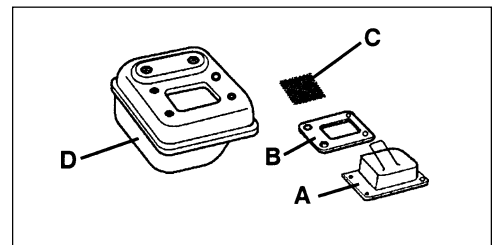
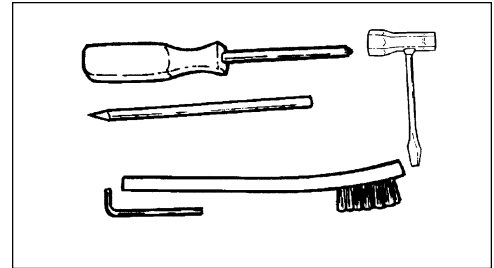
Spark Arrestor Screen

Level 2.

Tools Required: Cross Head Screwdriver. 20mm (3/4in.) spark plug deep socket. Soft metal brush. Wooden carbon scraper.

Parts Required: Spark arrestor screen P/N 14586240630, gasket P/N 14586642031.

1. Remove spark plug and engine cover see "Cooling System Cleaning" page 18.
2. Place piston at Top Dead Center (TDC) to prevent carbon/dirt from entering cylinder.
3. Remove spark arrestor cover (A), gasket (B), spark arrestor screen (C) from muffler. Replace screen if plugged with carbon deposits.
4. Install spark arrestor screen, gasket, diffuser and cover.
5. Be sure gasket seals muffler spark arrestor screen to muffler.
6. Install engine cover and spark plug.



ADJUSTING CARBURETOR - GENERAL

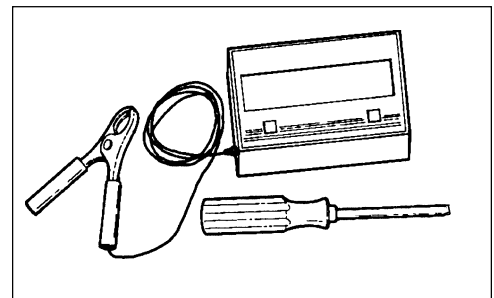
Level 2.

Tools required: Screwdriver, Tachometer (P/N 99051130017).

Parts required: none.

NOTE

Do not adjust carburetor unless necessary. If you have difficulty, see your ECHO dealer.



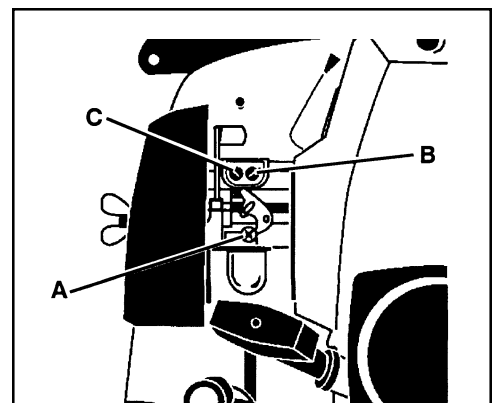
Adjustment Screws

- | | |
|--------------------|---|
| Idle Speed (A) | Control throttle opening at idle. |
| Low (LO) Speed (B) | Controls amount of fuel at low speed and supplementary fuel for smooth progression from idle to high speed. |
| Hi (HI) Speed (C) | Controls amount of fuel at full throttle |

Before Adjustment

Check that:

- Air filter is clean and properly installed.
- Spark arrestor screen and exhaust port are free of carbon
- Blower pipes are installed



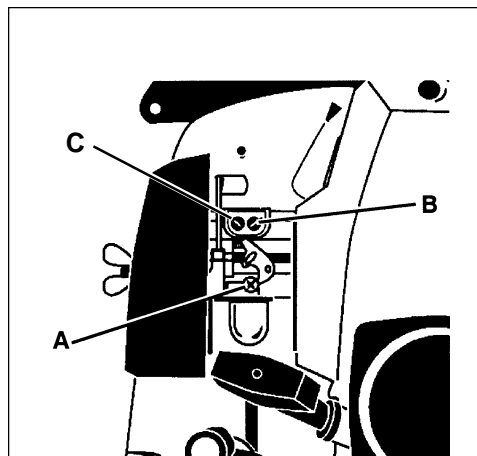
Initial Adjustment

1. With engine off, turn HI speed screw (C) counterclockwise to stop.
2. Turn LO speed screw (B) midway between stops.
3. Turn idle screw (A) until tip of screw just touches throttle plate; then turn three (3) turns clockwise.

Final Adjustment

IMPORTANT

Limiter caps prevent exceeding C.A.R.B. and E.P.A. emission limits and over rich adjustment, but not over lean adjustment, which can cause engine failure: Do not exceed recommended HI speed engine R.P.M. during operation, or for long periods during adjustment.



1. Start engine, run at idle for one minute.
2. Complete warm up by running at full throttle for 5 minutes, operating choke twice to clear air from carburetor chambers.
3. Run at idle and accelerate to check for smooth transition from idle to high speed; if engine hesitates, turn LO speed screw (B) counterclockwise 1/8th of a turn at a time until acceleration is smooth.
4. Adjust idle screw (A) to 3000 R.P.M., using tachometer.

TROUBLESHOOTING

Problem				
Engine - starts hard				
Engine - does not start			Cause	Remedy
Engine Cranks	Fuel at carburetor	No fuel at carburetor	Fuel strainer clogged Fuel line clogged Carburetor	Clean Clean See your ECHO dealer
	Fuel at cylinder	No fuel at cylinder	Carburetor	See your ECHO dealer
		Muffler wet with fuel	Fuel Mixture is too rich	Open choke Clean/replace air filter Adjust carburetor See your ECHO dealer
	Spark at end of plug wire	No spark at end of plug wire	Stop switch off Electrical problem Interlock switch	Turn switch on See your ECHO dealer See your ECHO dealer
	Spark at plug	No spark at plug	Spark gap incorrect Covered with carbon Fouled with fuel Spark plug defective	Adjust 0.65mm (0.026in.) Clean or replace Clean or replace Replace plug
Engine does not crank			Internal engine problem	See your ECHO dealer
Engine runs	Dies or accelerates poorly		Air filter dirty Fuel filter dirty Fuel vent plugged Spark plug Carburetor Cooling system plugged Exhaust port/spark arrestor screen plugged	Clean or replace Replace Replace Clean and adjust/replace Adjust Clean Clean
Engine runs properly	Blower does not work, is weak or uneven		Blower Pipe clogged, loose or damaged	Unclog Tighten Replace

STORAGE

Long Term Storage (Over 30 Days)

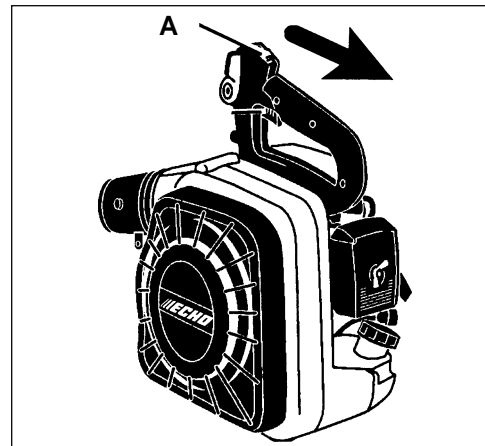
Do not store your unit for a prolonged period of time (30 days or longer) without performing protective storage maintenance which includes the following:

1. Store unit in a dry, dust free place, out of the reach of children.

WARNING **DANGER**

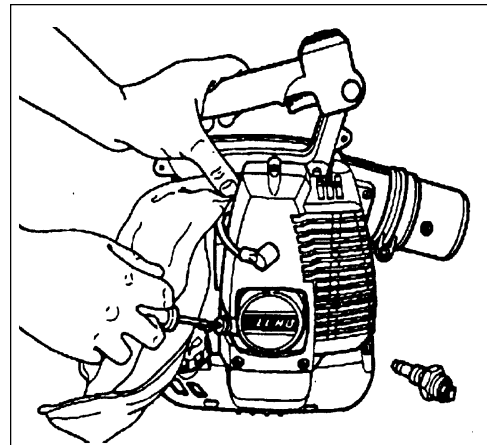
Do not store in enclosure where fuel fumes may accumulate or reach an open flame or spark or serious personal injury may result.

2. Place the stop switch (A) in the "STOP" 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 screws and nuts.
6. **Drain** the fuel tank **completely** and pull the recoil starter handle several times to remove fuel from the carburetor.



7. Remove the spark plug and pour 7cc (1/4 oz., 1/2 tablespoon) of fresh, clean ECHO 2-stroke engine oil into the cylinder through the spark plug hole.

- A. Place a clean cloth over the spark plug hole.
- B. Pull the recoil starter handle 2-3 times to distribute the oil inside the engine.
- C. 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.



8. Install the spark plug (do not connect ignition cable).
9. Remove blower pipe assembly from unit.

NOTES

SERVICING INFORMATION PARTS

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

Model No. _____ Type No. _____ SN. _____

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, ask your retailer or call: 1-800-432-ECHO (3246). When presenting your unit for Warranty service/repairs, proof of purchase is required.

ECHO CONSUMER PRODUCT SUPPORT

If you require assistance or have questions concerning the application, operation or maintenance of this product you may call the ECHO Consumer Product Support Department at 1-800-673-1558 from 8:00 am to 5:00 pm (Central Standard Time) Monday through Friday. Before calling, please know the model and serial number of your unit to help your Consumer Product Support Representative.

WARRANTY CARD

This card is our means of registering all original owners of ECHO equipment. The card plus proof of purchase provides you the assurance that authorized warranty work will be done. It also provides a direct link between you and ECHO if we find it necessary to contact you.

ADDITIONAL OR REPLACEMENT MANUALS

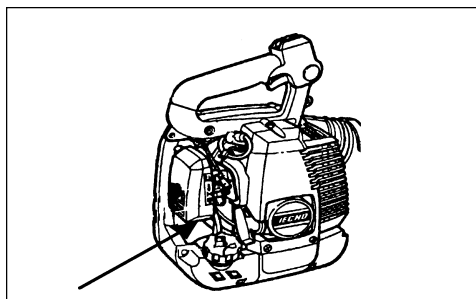
Operator's and Parts Manuals are available for purchase from your ECHO dealer or directly from ECHO. [See ordering instructions at the end of this manual.]

ORDERING INSTRUCTIONS

To obtain a Parts Catalog or Operator's Manual send a check or money order for \$2.00 per Parts Catalog or \$1.50 per Operator's Manual made payable to ECHO, INCORPORATED. State on a sheet of paper model number and serial number of the ECHO unit you have, part number of the manual (if known), your name and address and mail to address above:

Available Parts Lists

PB-24LN Type 1E S/N 001001 & UP Part Number 99922202876



DEALER?
Call
1-800-432-ECHO
1-800-432-3246

CUNSUMER PRODUCT SUPPORT
1-800-673-1558
8 - 5 Mon - Fri C.S.T.

ECHO LIMITED WARRANTY REGISTRATION CARD/TARJETA DE INSCRIPCIÓN DE GARANTÍA LIMITADA	
<small>(Copy of Limited Warranty Statement included with Operator's Manual) (En el Manual del Operador se incluye una copia de la Declaración de la Garantía Limitada)</small>	
Please Print/Por Favor Escriba Claro/Letra de Imprenta	
Purchaser's Name (Homeowner or Business/Nombre del Comprador (Dueño de Casa o Negocio))	
Address/Dirección	
City/Ciudad	
State/Estado	
Zip Code/Código Postal	
Phone/Teléfono	
Date of Purchase/Fecha de Compra	
Street Name Where Purchased / Calle/Nombre/Numero del Distribuidor	
Model Number / Número del Modelo	
Serial No. and/or Type No. / Número de serie Y/o número de tipo	
Customer Signature / Firma del Cliente	
Dealer Signature (If applicable) / Firma del Distribuidor (Si Se Aplica)	
Do not write in this area	
<p>A. Primary use of tool/Usos principales de la herramienta. 1. () Homeowner 2. () Landscaper 3. () Professional Dueño de casa Jardinero Profesional</p> <p>B. Safety/operational information received with product? (¿Qué información de operación/seguridad recibiste con el producto?) 1. () Operator's Manual 2. () Safety glasses Manual del Operador Gafas de seguridad</p> <p>C. Have you received the Brush Cutter/Trimmer Safety Video/overview? (¿Has visto el video de seguridad para información general sobre el cortador de malezas/cortador?) 1. () Yes/ Sí 2. () No No Disponible en cualquier distribuidor autorizado de Echo.</p> <p>TO PURCHASE A COPY OF THE ECHO SAFETY VIDEO/QUIERO UN COPIA DEL VIDEO DE INFORMACIÓN (INCLUYE UNICAMENTE) GENERAL DE ECHO SOBRE EL MANUAL DE SEGURIDAD DEL CORTADOR DE MALEZAS/REGISTRADOR. PONGASE EN CONTACTO CON: ECHO, INCORPORATED ATTN: VIDEO CENTER 400 OAKWOOD RD. LAKE ZURICH, IL 60047-1564</p>	

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