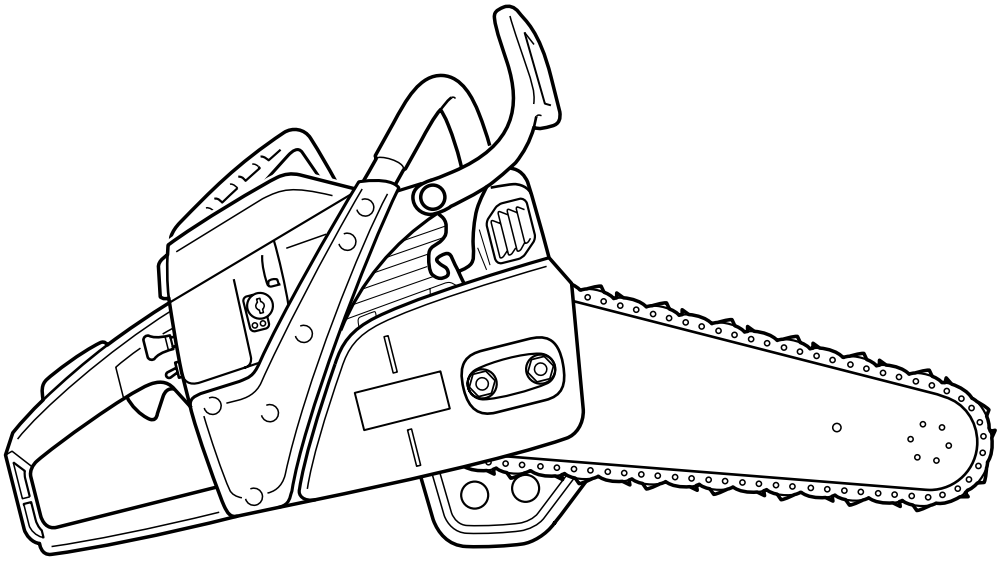


INSTRUCTION MANUAL
QUIKVENT™ SYSTEM
QV-670

⚠ WARNING

Read the instructions carefully and follow the rules for safe operation.
Failure to do so could result in serious injury.

WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints,**
- **Crystalline silica from bricks and cement and other masonry products, and**
- **Arsenic and chromium from chemically treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

WARNING

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

INTRODUCTION

⚠ DANGER

This system is designed for use with a special bar and chain for fire department application. This system should not be used for conventional wood cutting applications.

⚠ DANGER

Review ECHO Safety Chain Saw Manual and note exceptions as listed below.

⚠ DANGER

If the unit is modified for conventional wood cutting operations, read rules for safe operation and instructions carefully in the corresponding CS-670 ECHO Chain Saw Instruction Manual and the ECHO Chain Saw Safety Manual. Use only the guide bar and chain combinations listed in the instruction manual with a Kick Guard installed on the guide bar. A free copy of the Chain Saw Safety Manual can be obtained from your ECHO dealer or by writing ECHO, INCORPORATED, 400 Oakwood Road, Lake Zurich, IL 60047-1564.

The ECHO QuikVent™ System is a chain saw specially designed for use by trained fire fighters to ventilate, trench and breach burning structures. This manual provides the information necessary for operation and maintenance of the saw.

CONTENTS

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.

SAFETY

FOLLOW INSTRUCTIONS IN THIS MANUAL

⚠ DANGER

Although this manual uses safety symbols to highlight the most serious potential hazards, all instructions must be followed to avoid some risk of serious injury or death to yourself and others.

UNDERSTAND SAFETY AND INFORMATION SYMBOLS

This symbol means “DO NOT DO” whatever is shown.

This symbol is used on DANGER signs to attract attention.

This symbol is used on CAUTION signs to attract attention.

THIS EXAMPLE OF A DANGER SIGN CONTAINS THE ECHO DEFINITION OF THE SIGNAL WORD “DANGER”

⚠ DANGER

This attention symbol and signal word DANGER indicate an immediates and grave danger or peril, a hazard producing irreversible damage or injury. To avoid this danger, the operator must heed the recommendation printed in the box.

THIS EXAMPLE OF A CAUTION SIGN CONTAINS THE ECHO DEFINITION OF THE SIGNAL WORD “CAUTION”

⚠ CAUTION

Signs headed CAUTION call attention to a danger or hazard capable of resulting in severe, but not irreversible, injury or damage - not a prohibitive warning, but one stressing certain precautions against a potential hazard.

SAFETY

THIS EXAMPLE OF A NOTE SIGN CONTAINS THE ECHO DEFINITION OF THE SIGNAL WORD "NOTE"

NOTE

Signs headed NOTE concern things other than safety messages, such as potential damage to equipment or information of special importance.

READ AND UNDERSTAND THE ECHO CHAINSAW SAFETY MANUAL BEFORE USING THIS SAW

The Safety Manual included with your QuikVent™ system and this Instruction Manual, covers terminology, safety features, practices and forces at work during cutting.

FOLLOW FIRE DEPARTMENT REGULATIONS

1. This manual covers operation and maintenance of the system only.

2. Follow Fire Department regulations on moving the system from the ground to the cutting site, ventilation techniques, etc.

FOLLOW IFSTA PRACTICES

Follow safe and effective practices developed by The International Fire Service Training Association (IFSTA) for transport, venting and all other fire fighting techniques.

FOLLOW SAFETY DECALS

Part Number 890191-32632

WARNING!!!

This system is capable of severe kickback that could result in serious injury. Read and follow all safety precautions in the instruction and safety manuals. Failure to follow instructions could result in serious personal injury.

For Quickvent System: This system is designed for use with a special bar and chain for fire department applications. The QV bar and chain should not be used for conventional wood cutting applications. Do not operate the system unless you have specialized training in its use for dangerous and hazardous operations. Full fire department turnouts are required when using this system.

For Chain Saw (Woodcutting): Do not operate this chain saw unless you have extra ordinary cutting needs and experience and specialized training for dealing with kickback. ECHO chain saw with significantly reduced kickback potential are available.

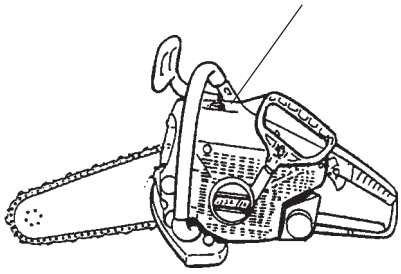
TO AVOID KICKBACK

1) Hold the chain saw firmly with both hands,

2) Tip contact is required (for QuickVent applications only) to complete boring operations. Be aware that kockback could occur.

Locate the safety decals on your QuikVent™ system. Make sure the decals are legible and that you understand them and follow them.

Part Number 890191-32632



SAFETY

FOLLOW ALL MAINTENANCE PROCEDURES

Follow all maintenance procedures outlined in the maintenance section of this manual to ensure that the saw will operate safely and will start and operate when needed.

HANDLE FUEL SAFELY

⚠ DANGER

ALWAYS store gasoline in an approved container.

DO NOT smoke while handling gasoline.

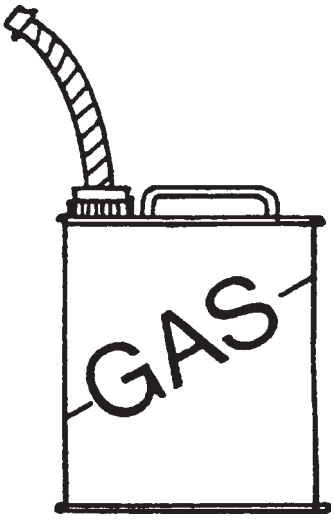
ALWAYS stop the engine before refueling.

DO NOT refuel a hot engine. Wait until it cools.

ALWAYS remove the fuel cap slowly in order to relieve any pressure build-up in tank.

DO NOT overfill the tank and always clean up spilled fuel .

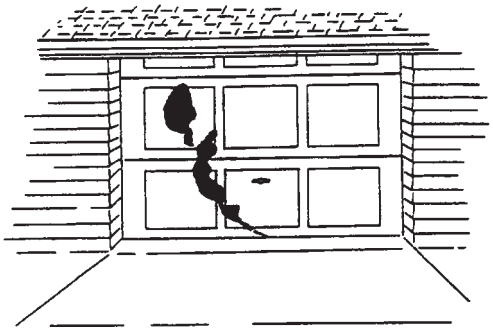
ALWAYS restart the engine at least 3 m (10 feet) away from refueling point.



AVOID CARBON MONOXIDE

⚠ CAUTION

DO NOT operate system in a confined area.



WEAR PROTECTIVE CLOTHING AND EQUIPMENT

Wear full turn-out gear in accordance with your fire department's regulations.

SAFETY

KEEP A SAFE DISTANCE FROM CO-WORKERS

Make sure there is another person nearby when operating the system, but also make sure they are at a safe distance.

CLEAR WORK AREA

Make sure that hazardous debris such as glass or wire is cleared from the area to be ventilated.

OPERATE SAFELY

AVOID operating the system when you are fatigued.
ALWAYS remains alert when operating the system to avoid possible injury to yourself and others.
DO NOT operate the system while under the influence of alcohol or drugs.

AVOID KICKBACK

⚠ DANGER

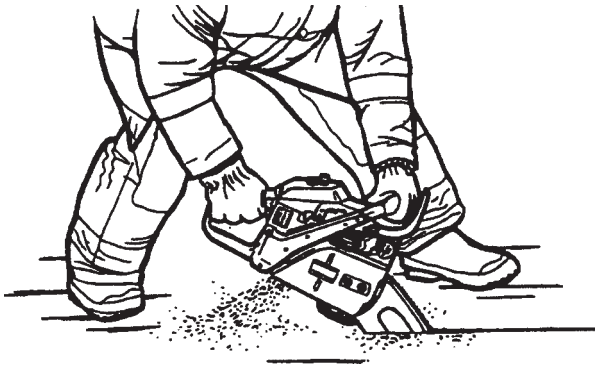
KICKBACK may occur when the nose or tip of the guide bar touches an object, or when the material being cut closes in and pinches the saw chain in the cut.

Tip contact in some cases may cause a lightning-fast reverse REACTION, kicking the guide bar up and back towards the operator. Pinching the saw chain along the top of the guide bar may push the guide bar rapidly back towards the operator. Either of these reactions could result in serious personal injury by causing you to lose control of the system. Do not rely exclusively upon the safety devices built into your saw. As a chain saw user, you should take several steps to keep your cutting jobs free from accident or injury.

IMPORTANT: For free copies of the ECHO Chainsaw Safety Manual, contact ECHO Inc., 400 Oakwood Rd., Lake Zurich, Ill. 60047-1564

SAFETY

USE CORRECT TECHNIQUE



1. With a basic understanding of kickback, you can reduce or eliminate the element of surprise. Sudden surprise contributes to accidents.
2. Keep a good firm grip of the saw with both hands, the right hand on the rear handle, and the left hand on the front handle. When the engine is running, use a firm grip with thumbs and fingers encircling the chain saw handles. A firm grip will help you reduce kickback and maintain control of the saw. Do not let go.
3. Always work upwind.
4. Cut at high engine speeds.
5. Ventilation and breaching use “plunge cutting” which entails boring into a structure. There is always a chance of kickback even when the plunge cut is expertly done.
6. Keep the skid plate touching the cutting surface.

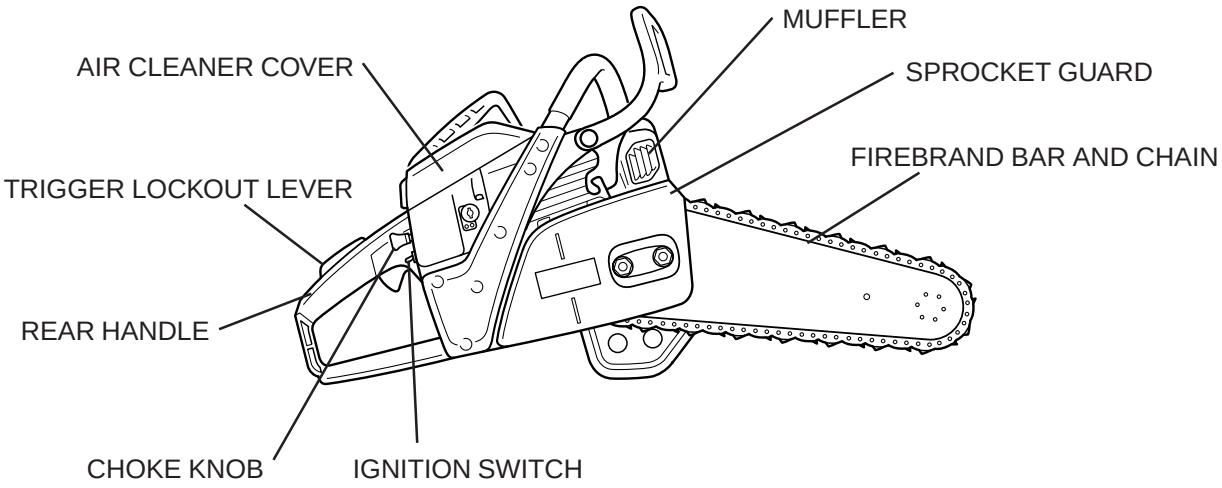
⚠ DANGER

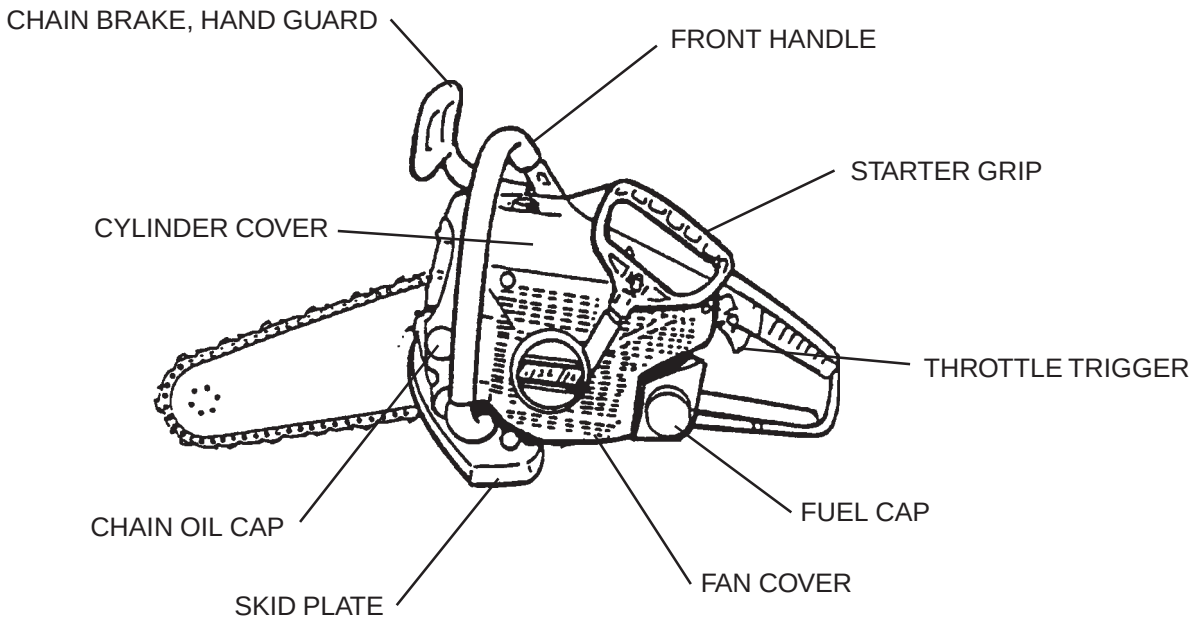
Grasp both handles firmly and bring the saw to full throttle. Using a steady pressure, rock the tip of the saw into the roof surface, using the skid plate as a pivot point between the system and the roof. Keeping the weight of the system against the roof with a firm grip will increase operator comfort and control during this dangerous operation.

7. Avoid cutting joists.
8. Do not overreach or cut above shoulder height.
9. Follow manufacturer’s sharpening and maintenance instructions for the saw chain.
10. Use only replacement bars and chains specified by ECHO, Inc.

DESCRIPTION

CONTROLS





OPERATION (Pre-Ventilation Procedures)

SAFE STARTING TECHNIQUES

1. KNOW HOW TO STOP: Keep hold of the rear handle, but release trigger and flick the switch to "STOP."
2. Hold the saw down securely on a flat surface with bar and chain in the clear. After setting the controls, hold the top of the front handle with your left hand. Slide the toe of your right boot through the rear handle to hold down the rear of the system. Grasp the starter handle with your right hand.

NOTE

Use short pulls, 1/2 to 2/3 rope length, when pulling starting rope.

NOTE

Do not allow the starter handle to snap back against the housing.

NOTE

Always hold the unit firmly.

⚠ CAUTION

Do not wrap starter rope around your hand or wrist (in case of engine backfire). Pull the handle to crank engine.

TRANSPORTING SYSTEM

Transport system to cutting area with blade to rear.

⚠ CAUTION

Follow fire department procedures for transporting power equipment.

OPERATION (Pre-Ventilation Procedures)

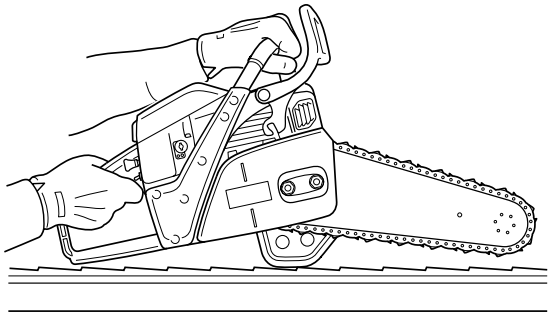
SAFE OPERATION TIPS (Ventilation Procedures)

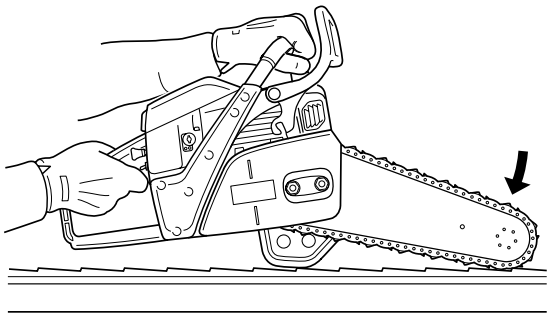
1. Follow all fire department procedures on safe ventilation techniques and on avoidance of cutting near gas and electric services.
2. Keep both hands on handles when engine is running.
3. Always operate the saw at full throttle when making a cut.
4. Always bury the tip of the cutting bar in the cutting surface.
5. Make sure the skid plate is in contact with cutting surface.
6. Avoid cutting above shoulder height and overreaching.

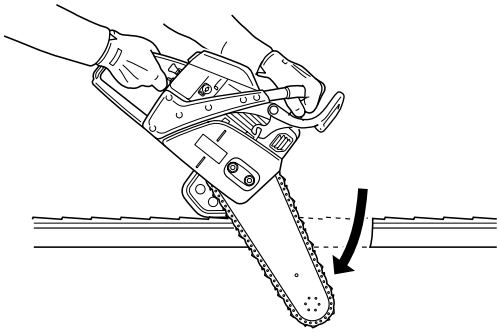
⚠ DANGER

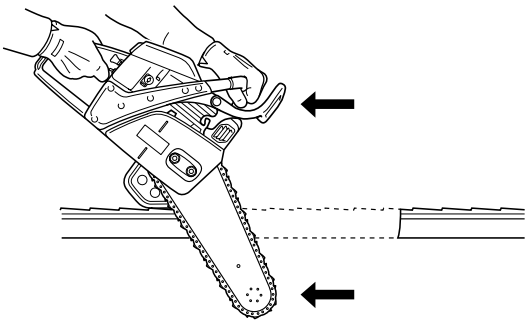
Boring -Ventilation and breaching uses "plunge cutting" which entails boring into a structure. There is always a chance of kickback even when the plunge cut is expertly done. Keep the skid plate touching the surface. Grasp both handles firmly and bring the saw to full throttle. Using a steady pressure, rock the tip of the saw into the surface using the skid plate as a pivot point between the system and the surface. Keeping the weight of the system against the surface with a firm grip will increase operator comfort and control during this dangerous operation.

Cutting - After penetration, follow the contour of the skid plate until the bar has reached the approximate angle illustrated at the right. Position the skid plate on the flat surface, maintaining full throttle and steady pressure while keeping the saw on the surface. Pull the saw back, ripping through the surface. Avoid cutting through joists and rafters.

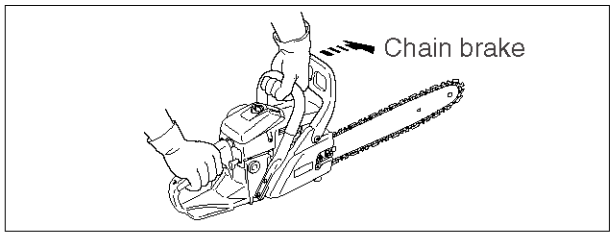


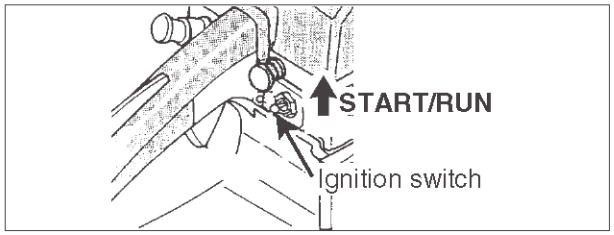


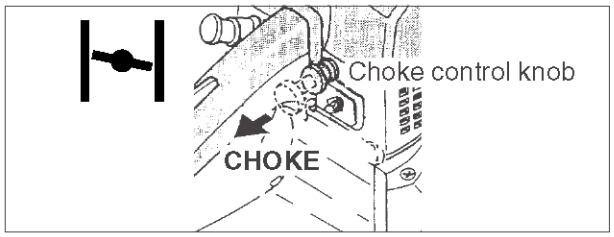


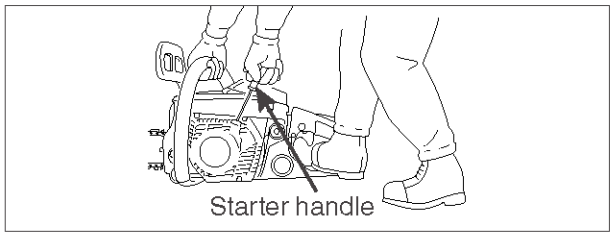


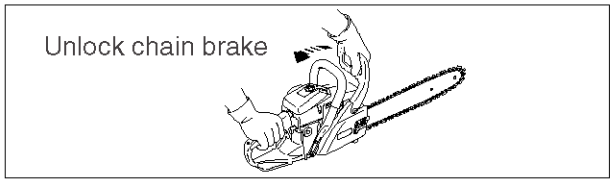
OPERATION









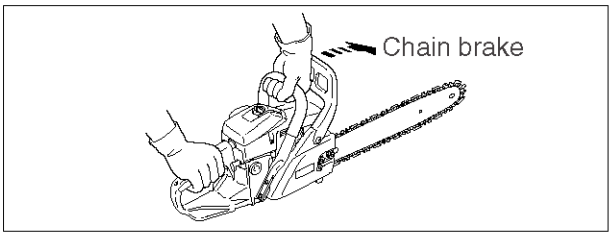


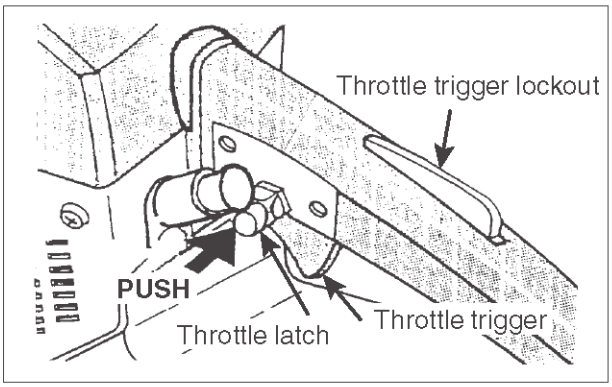
WHEN THE ENGINE IS COLD

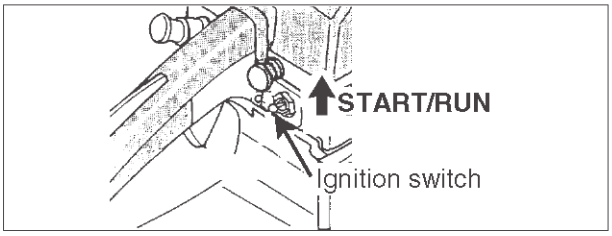
⚠ CAUTION

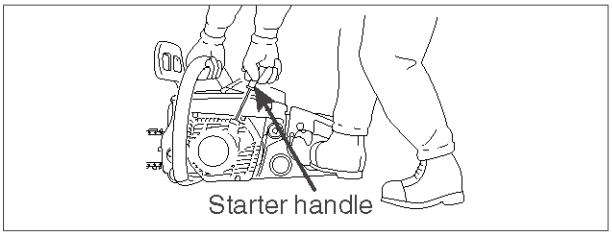
Make sure the bar and chain are free from any obstruction when starting the chain saw.

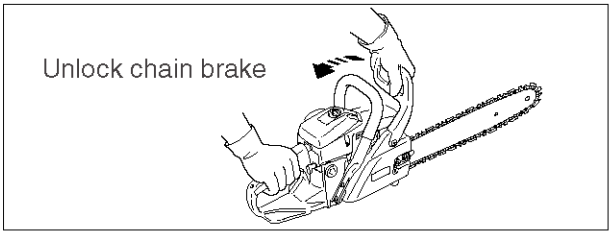
- Move chain brake lever fully forward to lock chain brake before starting.
- Fill the fuel tank with fuel mixture.
  It is not permitted to fill fuel above the shoulder level of fuel tank.
- Fill the chain oil tank with lubricant.
  Do not over fill.
- Move ignition switch to “RUN” position.
- Pull choke control knob all the way out. (Choke position)
- Securely hold the chain saw as shown and pull starter handle several times until first firing sound.
- Push choke control knob all the way in.
- Pull starter handle to start the engine.
- After starting the engine, pull front hand guard towards the operator immediately. (Chain brake unlocked position)

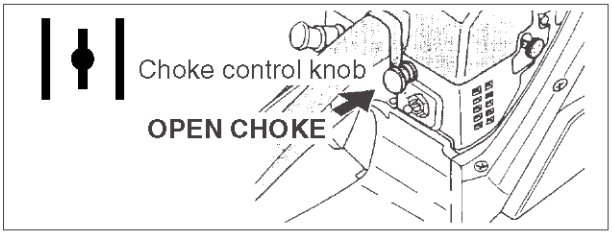


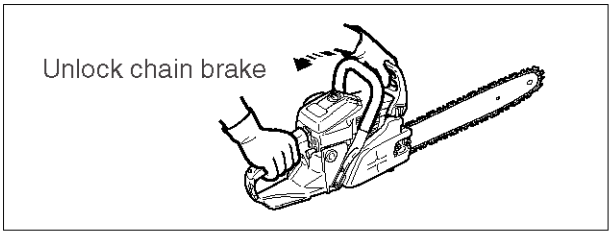












WHEN THE ENGINE IS HARD TO START

⚠ CAUTION

Make sure the bar and chain are free from any obstruction when starting the chain saw.

- Move chain brake lever fully forward to lock chain brake before starting.
- Press throttle trigger lockout down while grasping throttle trigger and push in throttle latch.
- Move ignition switch to "RUN" position.
- Securely hold the chain saw as shown and pull starter handle.
- When engine starts, immediately squeeze throttle trigger, to release throttle latch, and pull front hand guard towards the operator immediately. (Chain brake unlocked position)

⚠ CAUTION

1. **When using throttle latch for starting, keep the brake in lock position.**
2. **After starting the engine, squeeze throttle trigger slightly to release throttle latch and pull front hand guard towards the operator immediately. (Chain brake unlocked position)**
3. **Do not increase engine speed while chain brake is locked.**
4. **Use the chain brake only in starting or in emergencies.**

⚠ CAUTION

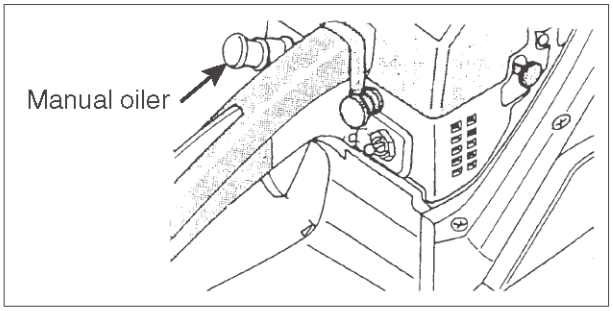
The chain will attempt to rotate when engine is started with throttle latch engaged. After engine starts, release throttle trigger to idle engine, otherwise brake damage may occur. Never use throttle latch for cutting. Use it only when starting the engine.

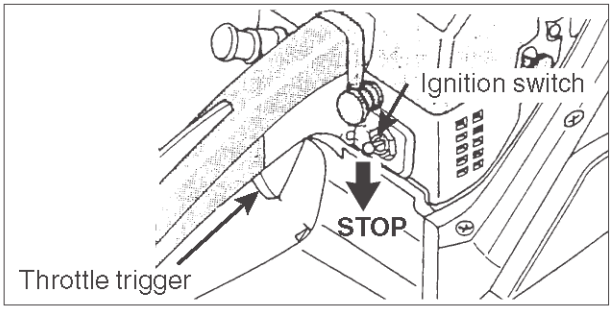
WHEN THE ENGINE IS WARM

- Move chain brake lever fully forward to lock chain brake before starting.
- Confirm there is fuel and chain oil in the tanks.
- Move ignition switch to "RUN" position.
- Securely hold the chain saw as shown and pull starter handle.
- Choke may be used if necessary, but be sure to push it back on first firing sound.
- After starting the engine, pull front hand guard towards the operator immediately. (Chain brake unlocked position)

RUNNING

- When engine starts, keep idling for a few minutes.
- Set the brake lever in the unlocked position before starting to cut.
- Pull throttle trigger gradually and increase revolution of the engine.
- The chain starts running when the engine reaches 3,800 r/min approximately.
- Confirm proper acceleration and lubrication of chain and bar.
- Give several strokes to manual oiler button to confirm extra lubrication.
- Do not run the engine at high speed unnecessarily.
- Be sure that saw chain stops moving when throttle trigger is released.





STOPPING

- Release throttle trigger and move ignition switch down to “STOP” position.

NOTE

If engine does not stop, pull choke control knob out fully to stop engine.

Return the unit to your authorized ECHO dealer to check and repair stop switch before starting the engine again.

TROUBLESHOOTING

TROUBLE	CAUSE	WHAT TO DO
1. Engine fails to start.	No fuel in tank.	Fill tank.
	Fuel filter clogged.	Replace filter.
	Fuel line clogged.	Clean fuel line.
	Spark plug shorted or fouled.	Install new spark plug.
	Spark plug broken (cracked porcelain or electrodes broken).	Replace spark plug.
	Ignition lead wire shorted, broken or disconnected from spark plug.	Replace lead wire or attach to spark plug.
	Ignition inoperative (no spark from lead wire).	Contact your nearest authorized dealer.
2. Engine hard start.	Water in gasoline or stale fuel mixture.	Drain entire system and refill with fresh fuel.
	Too much oil in fuel mixture.	Drain and refill with correct mixture.
	Engine over or under choked.	If flooded by over choking, proceed according to instructions in previous section. If under choked, move choke knob to closed position and crank two or three times.
	Carburetor out of adjustment.	See “Carburetor Adjustment”.
	Gasket leaks (carburetor or cylinder base gasket).	Contact your nearest authorized dealer.
	Weak spark at spark plug.	Contact your nearest authorized dealer.
3. Engine misses.	Dirt in fuel line or carburetor.	Remove and clean.
	Carburetor improperly adjusted.	See “Carburetor Adjustment” in maintenance section.
	Spark plug fouled, broken or incorrect gap setting.	Clean or replace spark plug - set gap to 0.6 - 0.7 mm (0.024 to 0.028 in.).
	Weak or intermittent spark at spark plug.	Contact your nearest authorized dealer.

TROUBLESHOOTING

TROUBLE	CAUSE	WHAT TO DO
4. Engine lacks power.	Air cleaner clogged.	Clean air cleaner.
	Carburetor out of adjustment.	See “Carburetor Adjustment”.
	Muffler clogged.	Clean carbon from muffler.
	Clogged exhaust ports.	Remove muffler, rotate engine until the piston is at bottom of cylinder. With a wooden scraper or blunt tool, remove all carbon from exhaust ports. Be careful not to scratch or damage piston or cylinder walls. Blow out loose carbon with compressed air. Start engine and run briefly to remove all carbon, then install muffler and gasket.
	Poor compression.	Contact your nearest authorized dealer.
5. Engine overheats.	Insufficient oil in fuel mixture.	Mix fuel as shown in starting instructions.
	Airflow obstructed.	Clean flywheel and cylinder fins.
6.Engine noisy or knocking.	Spark plug incorrect heat range.	Replace with plug specified for engine.
	Worn bearings, piston rings or cylinder walls.	Contact your nearest authorized dealer.
7.Engine “stalls” under load.	Carburetor main adjustment too “lean”.	See “Carburetor Adjustment”.
	Engine overheats.	See “Cleaning Cylinder Fins” in maintenance section.
8.No oil on chain.	Empty oil tank.	Fill tank.
	Oil filter clogged.	Replace filter.
	Automatic oiler output set too low.	Adjust oiler output.
9. Chain brake fails to work.	Chain brake adjustment.	Adjust chain brake.
10. Chain binds.	Chain tension too tight.	Adjust chain tension.
11. Chain is loose on bar.	Chain tension is too loose.	Adjust chain tension.

MAINTENANCE

MAINTENANCE SCHEDULE

REQUIRED CARE	AFTER EACH USE	AS NEEDED	WEEKLY	EVERY 60 DAYS	PAGE NO.
Clean Entire System	*				12
Tighten Nuts and Bolts	*				12
Clean Air Filter	*				13
Inspect Chain	*				—
Sharpen Chain		*			13
Adjust Chain Tension	*				13
Adjust Chain Brake	*				14
Refill Fuel Tank	*				15
Test Saw	*		*		15
Mix Fuel		*			16
Check Spark Plug		*			16
Inspect Muffler Assembly		*			17
Drain and Replace Fuel				*	17
Replace Fuel Filter		*			17
Replace Oil Filter		*			17
Clean Cylinder Fins		*			18
Rewind Starter		*			18
Adjust Automatic Oiler		*			19
Refill Chain Oil Tank	*				19

CLEAN ENTIRE SYSTEM (After Each Use)

1. Clean bar and chain with a 50 - 50 mixture of kerosene and machine oil.
2. Remove the guide bar and clean the clutch and brake mechanism with a 50 - 50 mixture of kerosene and machine oil.
3. Clean the exterior of the saw with a non-flammable solvent.

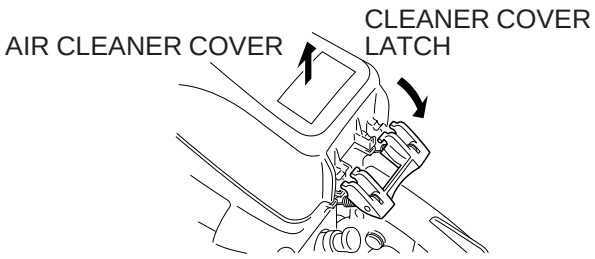
TIGHTEN NUTS AND BOLTS (After Each Use)

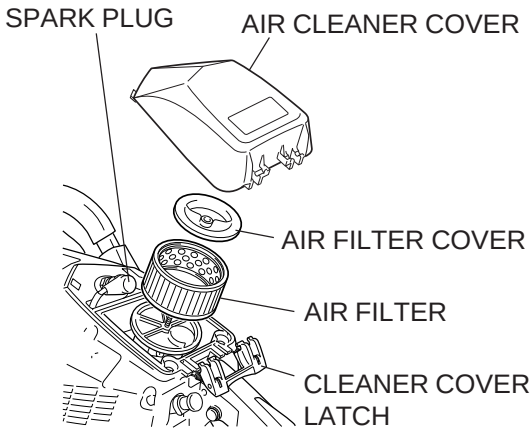
1. Make sure all fasteners on the saw are tight.
2. Replace those found to be faulty.

MAINTENANCE

CLEAN AIR FILTER (After Each Use)

1. Close choke.
2. Off the cleaner cover latch, and remove air filter cover and air filter .
3. Brush off dust lightly, or clean with compressed air, or replace the air filter.
4. Reinstall air filter and cover, engage latch.





SHARPEN CHAIN (As Needed)

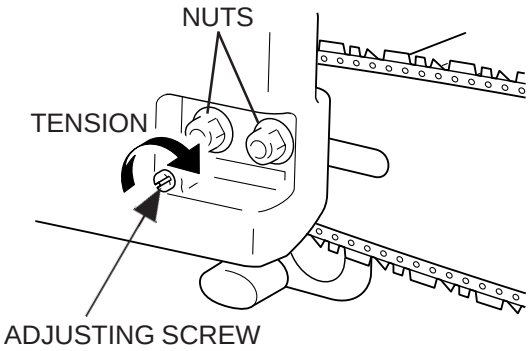
1. Follow instructions included with sharpening kit.
2. Refer to page 19 for ECHO part number.

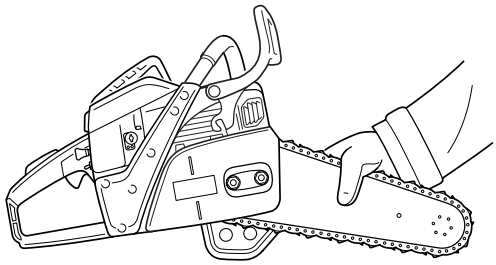
NOTE

Do not sharpen carbide chain with standard file.

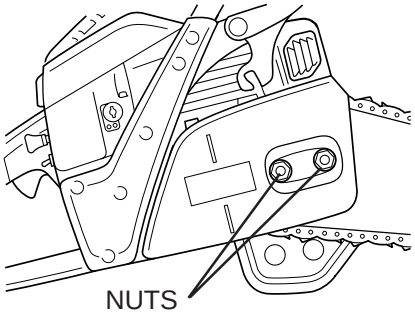
ADJUST CHAIN TENSION (After Each Use)

1. Loosen nuts just enough to allow guide bar to slide when adjusting screw is turned.
2. Turn adjusting screw clockwise to take up chain slack.
3. Hold the nose of the bar up with your gloved hand.
4. Gradually turn adjusting screw clockwise until the drive links are drawn up into the bar.
5. Pull chain along bar with your gloved hand to check for binding.
6. Back off tension screw if necessary.





7. Tighten nuts while holding bar in position.



MAINTENANCE

INSPECT AND ADJUST CHAIN BRAKE (After Each Use)

1. Remove the sprocket guard.
2. Remove the bar and chain.
3. Remove the guide bar plate from the sprocket guard.
4. Turn adjuster position to set its peak to the correct tensioning location.
5. Inspect clutch drum and brake band for wear and replace if necessary.
6. Reinstall the guide bar plate in the sprocket guard.
7. Install sprocket guard.
8. Reinstall bar and chain.
9. Set chain tension. SEE ADJUST TENSION IN THIS SECTION.
10. Activate the chain brake with the guard and with a gloved hand try to pull the chain along the top of the guide bar.

WHAT HAPPENED?	WHAT DO YOU DO?
Chain Moves	Increase Tension
Chain Does Not Move	Go to Next Step

11. Move chain with hand guard in unbraked position.

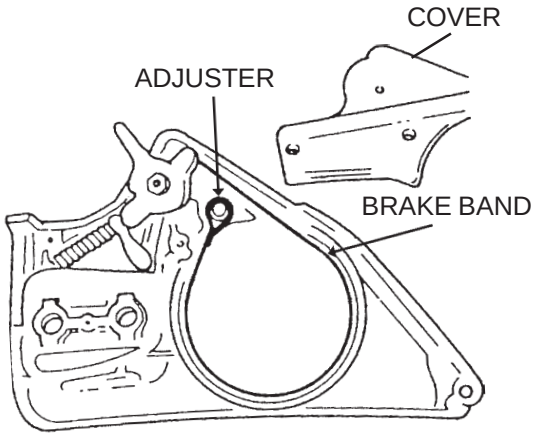
WHAT HAPPENED?	WHAT DO YOU DO?
Brake Spring Rubs on Drum	Decrease Tension and Go to next Step
Chain Rotates Smoothly without Drag	Go to next Step

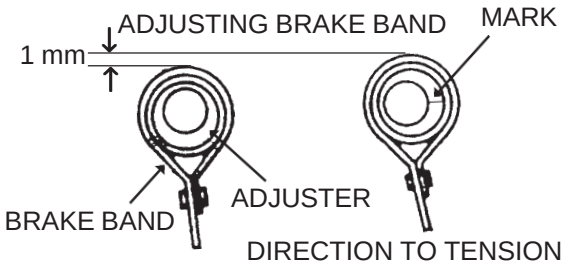
12. Start the engine.
13. Depress throttle fully and activate the brake.

WHAT HAPPENED?	WHAT DO YOU DO?
Chain Slows to a Stop	Increase Tension
Brake Spring Rubs on Drum	Decrease Tension
Chain Stops Immediately	Brake is Adjusted Properly

NOTE

Clean parts as you remove them.





⚠ CAUTION

If proper brake adjustment cannot be obtained, take your unit to your authorized ECHO servicing dealer before further use of system.

MAINTENANCE

REFILL FUEL TANK (After Each Use)

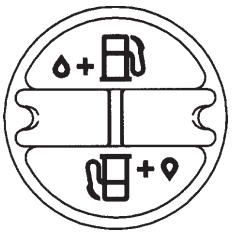
FUEL STATEMENT

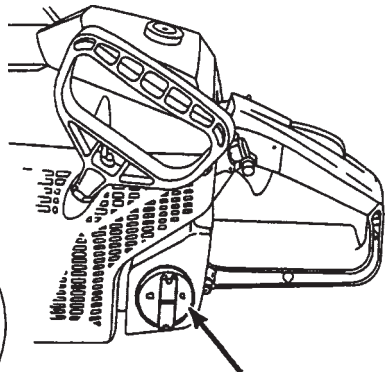
GASOLINE - Use 89 Octane [(R+M)/2] gasoline or gasohol known to be good quality. Gasohol may contain maximum 10 % ethyl (grain) alcohol or 15 % MTBE (methyl tertiary-butyl either). Gasohol containing methyl (wood) alcohol is not approved.

OIL - ECHO brand premium two-stroke 50 : 1 oil is preferred. Mix oil and gasoline/gasohol according to Instructions on the oil container label.

MIXING - Following directions on the oil container.

1. Remove fuel tank cap.
2. Pour fuel/oil mixture into fuel tank.
3. Install fuel cap and wipe up any spilled fuel.





FUEL TANK CAP

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.

TEST SAW (After Each Use/Weekly)

1. Start the engine and make practice cut in a piece of 3/4 inch thick plywood. Make cuts using the ventilating procedure outlined in this manual.
2. Replace faulty parts and make necessary adjustments.

NOTE

For assistance in diagnosing problems, consult the troubleshooting section in this manual.

MAINTENANCE

MIX FUEL (As Needed)

⚠ CAUTION

Follow all safety rules in safety section.

- **50 : 1 Mixture**

  Mix one part, “Specially blended ECHO branded 50 : 1 two cycle engine oil,” with 50 parts unleaded gasoline. (minimum octane-89)

GASOLI NE

Use the branded 89 octane [(R+M)/2] unleaded gasoline or gasohol (maximum 10 % ethyl alcohol, no methyl alcohol).

1. Pour 1/2 of the gasoline into a safe approved container.
2. Add oil to gas and mix thoroughly.
3. Add remaining gasoline and remix thoroughly.
4. Add gas stabilizer to fuel/oil mixture.
5. Install container cap and wipe up any spilled fuel from container and area.

Fuel Mix Chart 50 : 1

(US)		(METRIC)	
GAS	OIL	GAS	OIL
Gal.	US. fl. oz.	L	mL
1	2.6	4	80
2	5.2	8	160
5	12.8	20	400

NOTE

Use of non-recommended oils or failure to follow mixing instructions voids the warranty.

NOTE

Do not mix fuel in engine fuel tank.

CHAIN LUBRICANT

Proper lubrication of the chain while in operation reduces the friction to a minimum between the chain and the guide bar, and assures faster cutting and longer bar and chain life.

- The QuikVent™ system should be used only with special ECHO detergent bar and chain oil. Refer to page 19 for accessory part number.
- When refilling fuel mixture, fill up chain oil at the same time.

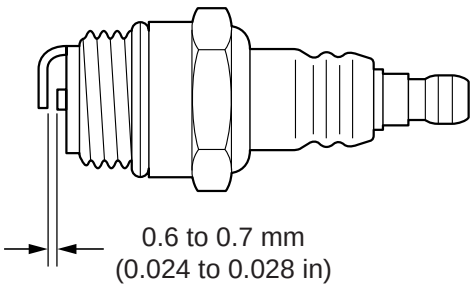
CHECK SPARK PLUG (As Needed)

1. Check plug gap.

NOTE

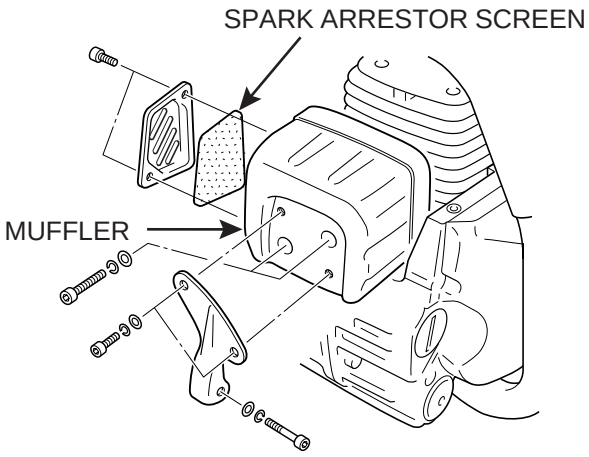
Proper gap is 0.6 to 0.7 mm (0.024 to 0.028 in)

2. Inspect electrode for wear.
3. Inspect insulator for oil or other deposits.
4. Replace plug if needed and torque to 15 - 17 N•m (130 to 145 in lb).



MAINTENANCE

INSPECT MUFFLER ASSEMBLY (As Needed)



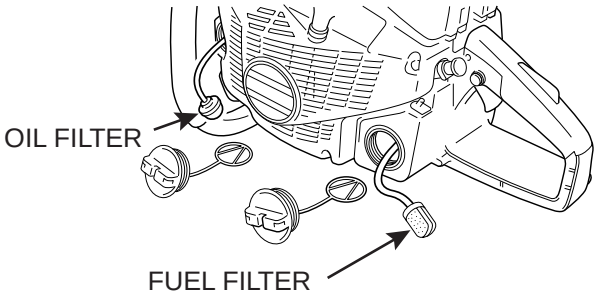
1. Inspect spark arrestor screen for holes or warpage.
2. Inspect muffler body, bolts and screws.
3. Replace damaged parts.

DRAIN AND REPLACE FUEL (Every 30 Days)

NOTE

If the fuel/oil mixture in the fuel tank of the saw has been there for 30 days, it should be dumped and replaced with fresh mixture. See REFILL FUEL TANK in this section.

REPLACE FUEL FILTER (As Needed)



1. Pick up fuel filter through fuel tank opening with a piece of steel wire.
2. Remove filter and install new filter.

REPLACE OIL FILTER (As Needed)

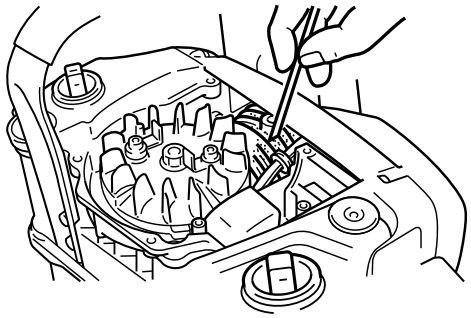
1. Pick up oil filter through oil tank opening with a piece of steel wire.
2. Remove filter and install new filter.

MAINTENANCE

CLEAN CYLINDER FINS (As Needed)

NOTE

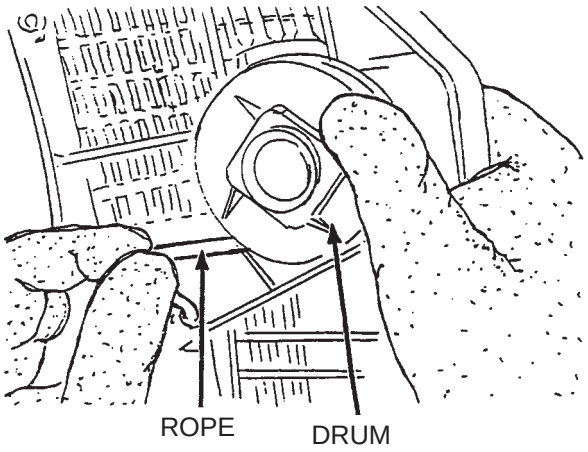
Clogged fins will cause poor engine cooling.



CYLINDER FINS

1. Check periodically.
2. Clogged fins will result in poor engine cooling.
3. Remove dirt and dust from between fins to let cooling air pass easily.

REWIND STARTER (As Needed)



1. Remove screws and remove starter assembly from housing.
2. Pull starter rope out 1 - 1/2 feet and prevent drum from rewinding.
3. Grasp the rope between notch and cover and wind both rope and drum one turn clockwise.
4. Hold drum in place and pull rope straight out through hole in cover.
5. Allow starter to rewind.
6. Repeat above process if more tension is needed.

NOTE

Do not add more tension than required to draw the handle against the cover, or starter trouble may develop.

7. Place starter assembly on powerhead and slowly pull the handle until the ratchets engage properly and the fan cover fits flush against the powerhead.
8. Secure starter assembly with screws.

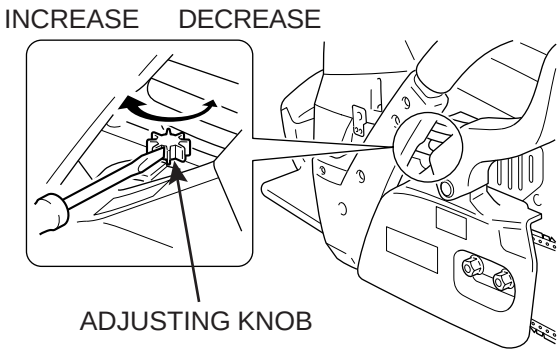
MAINTENANCE

ADJUST AUTOMATIC OILER (As Needed)

NOTE

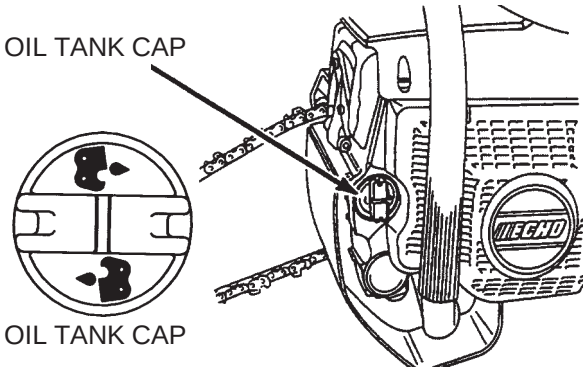
If chain runs dry of oil during operation, it is most likely due to a misadjusted automatic oiler.

Turn automatic oiler clockwise to increase oil output or counterclockwise to decrease output.



REFILL CHAIN OIL TANK (After Each Use)

1. Remove oil tank cap.
2. Add oil : **ECHO HIGH DETERGENT OIL.**
3. Install oil tank cap.



ACCESSORIES

- Special Chain Maintenance Kit
  Part No. 999 440 0003 0
  Includes:
  Bench Grinder
  Special Diamond Grinding Wheel
  Depth Gauge Kit
  Complete Sharpening Instructions
- Special ECHO Detergent Bar and Chain Oil Part No. 36880 (one gal.)
- Special Replacement Bar (12 inch angle bar 0.063 gauge) Part No. 359860
- Special Carbide Replacement Chain (3/8 pitch 0.063 gauge) Part No. 7562505

ASSEMBLY

MOUNTING GUIDE BAR AND CHAIN

- Remove the sprocket guard with outer side plate, leaving the inner side plate in position.
- Mount the guide bar ensuring that the chain tensioner fits in the hole provided.
- Holding the bar in this position, feed the chain around the sprocket and into the guide bar groove.
- Fit sprocket guard and nuts. Secure the nuts hand tight.

NOTE

1. The inner side plate is fitted with a narrow lubricating oil slot at the top.
2. The guide bar must be installed with the droop pointing down.
3. Ensure that the chain is installed with the cutters directed forward on the top of the bar.
4. Refer to page 13 for proper chain tension.

SPECIFICATIONS

			QV-670
Mass	With bar and chain, full fuel and oil	kg	8.7 (19.2 lb.)
	Powerhead only, dry	kg	7.2 (15.9 lb.)
Engine	Type		Air-cooled two-stroke single cylinder
	Displacement	mL (cm^3)	66.7 (4.07 cu. in.)
	Bore × Stroke	mm	50 × 34 (1.97 × 1.34 in.)
	Compression ratio		7.6 : 1
	Bearings		Heavy-duty, ball bearings on crank shaft, matched caged needles on connecting rod and piston pin.
	Maximum engine speed	r/min	13,500 (no load)
	Carburetor		Diaphragm type
	Starter		Recoil starter
	Power transmission		Automatic centrifugal clutch
Ignition system	Type		Electronic: CDI with SAIS (sloped advance ignition timing)
	Spark plug		CHAMPION CJ-6Y
	Spark plug gap	mm	0.6 - 0.7 (0.024 - 0.028 in.)
Fuel and engine lubrication	Gasoline octane rating		Mixture of gasoline (unleaded, 89 octane minimum) and 50 : 1 ECHO Power Blend™ two-stroke, air-cooled engine oil.
	Fuel/oil mix		Use an approved type fuel container. Never mix fuel directly in the saw tank. Do not smoke near fuel. Pour half of the gasoline into the container, then all of the oil. Mix thoroughly before adding the remainder of the gasoline. Then mix thoroughly again. Fill the saw tank with fuel and tighten the fuel cap to prevent leakage. Wipe up any spillage. Always move away a safe distance from the fueling site before starting the engine. **NOTE: Use of non-recommended oils or failure to follow above instructions may result in engine malfunction and will void the warranty.**
	Gasoline capacity	L	0.64 (21.64 US. fl. oz.)
Oil	Bar and chain		ECHO bar and chain oil (or motor oil)
	Tank capacity	L	0.37 (12.5 US. fl. oz.)
Guide bar	Length	mm	305 (12 in.) angle bar with industrial sprocket nose
	Gauge	mm	1 .6 (0.063 in.)
Sprocket	Rim size	mm	9.53 (3/8 in.) 7 teeth
Saw chain	Papco Firebrand Carbide		#75DG-50E, 400-S
	Chain pitch	mm	9.53 (3/8 in.)
	Drive link gauge	mm	1.6 (0.063 in.)
	Chain speed at 9,500 r/min	m/s	21.1 (4,150 f/m)
	Type		Automatic/adjustable and manual override
	Bar lubricant		Detergent bar oil
Other features			Patented skid/stand for safer operation of equipment, Large starter handle for use with gloves, Chain brake, Anti-vibration system, Throttle safety catch, Front and rear handles, Chain catcher.

* Technical data subject to change without notice.

ECHO, INCORPORATED

400 Oakwood Road, Lake Zurich, Illinois 60047-1564
Phone : 847-540-8400

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