



# Electric Chain Saw

## *Operator's Manual*

**MODELS:**            **ECS-2000 12" GUIDE BAR**  
                              **SERIAL NUMBER 200 & UP**  
                              **ECS-3000 16" GUIDE BAR**  
                              **SERIAL NUMBER 300 & UP**

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## WARNING DANGER

Read rules for safe operation and instructions carefully. ECHO provides an Operator's Manual and a Safety Manual. Both must be read and understood for proper and safe operation.

## INFORMATION

Read Instruction Manual

Do Not Expose to Rain or Use in Wet Conditions

Remove Plug Immediately if Cable is Damaged or Cut

Hold Chain Saw with Both Hands

Beware of Kickback

Hearing and Eye Protection Must Be Worn

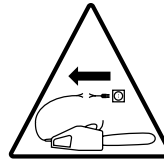
**Safety Information Warnings Appears Throughout This Manual**

Pay close attention to them. Below are definitions for the safety information listed throughout this manual.

**WARNING** indicates a hazard which can cause severe personal injury, death, or substantial property damage if you ignore warning.

**CAUTION** indicates a hazard which will or can cause minor personal injury or property damage if you ignore warning.

## SYMBOLS



## SAFETY WARNINGS

**Read and understand all Safety Warnings on pages 3 and 4. Improper use of this chain saw can cause severe injury or death from fire, electrical shock, body contact with moving chain, or falling wood.**

### BEFORE OPERATING CHAIN SAW

1. Read and understand this owner's manual before operating chain saw.
2. Use chain saw for cutting wood only. Do not use for cutting any non-wood items.
3. Only well-instructed adults should operate chain saw. Never allow children to operate chain saw. First-time user should obtain informed, practical instruction in addition to reading this manual. Practice cutting logs on a saw horse or cradle.
4. Use only electrical voltage noted on model plate of chain saw.
5. Use only extension cords marked for outdoor use. See page 8 for extension cord requirements.
6. Do not operate chain saw
  - while under the influence of alcohol, medication, or drugs
  - in rain or in damp or wet areas
  - where highly flammable liquids or gases are present
  - if saw is damaged, adjusted wrong, or not fully assembled
  - if trigger does not turn saw on and off. Chain must stop moving when you release trigger. Have faulty switch replaced by authorized service person.
  - while tired or in a hurry
  - while in tree or on a ladder unless trained to do so
7. Wear snug-fitting clothes when operating chain saw. Do not wear loose clothing or jewelry. They can get caught in moving saw chain.
8. Wear the following safety gear when operating chain saw:
  - heavy-duty gloves (wear rubber gloves if working outdoors)
  - steel-toed safety footwear with non-skid soles
  - eye protection such as safety glasses, goggles, or face screen
  - safety hard hat
  - ear muffers or ear plugs
  - hair covering to contain long hair
  - face or dust mask (if working in dusty areas)
9. Before cutting, always provide the following:
  - clear work area
  - secure footing
  - planned retreat path from falling tree
10. Inspect tree before cutting down. Make sure there are no dead limbs or branches that may fall on you.
11. To reduce the risk of electric shock, this saw has a polarized plug (one blade is wider than the other). This plug will fit in a polarized outlet only one way. If the plug does not fit fully in the outlet of your extension cord, reverse the plug. If it still does not fit, a polarized extension cord will be necessary. Do not change the plug in any way.

### KICKBACK

#### WARNING

**Avoid Kickback. Kickback can cause you to lose control of chain saw. Kickback can cause severe injury or death.**

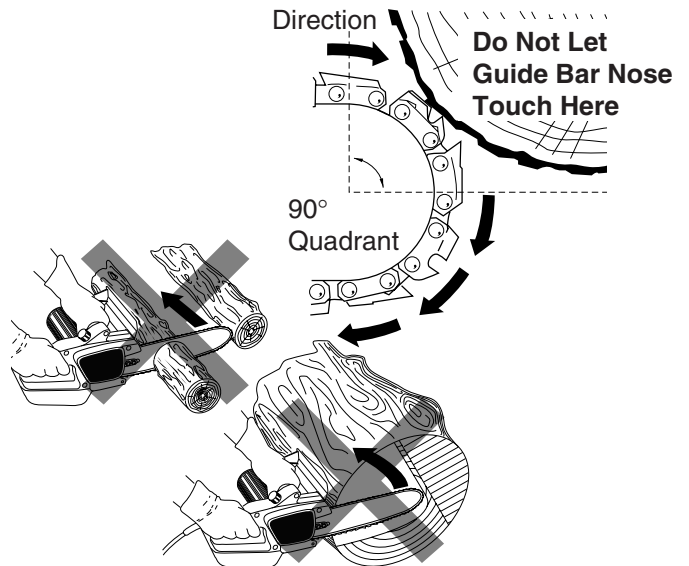
This saw has low-kickback chain, reduced-kickback guide bar and kick guard. These items reduce the chances of kickback. Do not remove kick guard. The kick guard prevents rotational kickback.

This saw has a chain brake. When kickback occurs, the front hand guard is moved forward by the back of operator's left hand. This stops the saw chain quickly, reducing the chance of serious injury.

Never hold the chain saw by the front hand guard.

### Cause Of Kickback

Kickback may occur when nose or tip of guide bar touches an object while chain is moving. If chain cutter catches on object, a sudden reverse action will result. The guide bar will kick up and back towards operator.



**Figure 1 - Kickback Hazard Example. Do Not Let Nose of Guide Bar Touch Object While Chain is Moving**

Kickback may also occur when wood pinches chain at guide bar nose. A sudden reverse action will also result.

The following steps will reduce the risk of kickback:

- Use both hands to grip saw while saw is running. Use firm grip. Thumbs and fingers must wrap around saw handles.
- Keep all safety items in place on saw. Make sure they work properly.
- Do not overreach or cut above shoulder height.
- Keep solid footing and balance.
- Stand slightly to left side of saw. This keeps your body from being in direct line with chain.
- Do not let guide bar nose touch anything when chain is moving (see Figure 1).
- Do not remove kick guard.
- Never try cutting through two logs at same time. Only cut one log at a time.
- Do not bury guide bar nose or try plunge cut (boring into wood using guide bar nose).
- Watch for shifting of wood or other forces that may pinch chain.
- Use extreme caution when re-entering a previous cut.
- Use low-kickback chain and guide bar supplied with this chain saw. Only replace these parts with chains and guide bars listed in this manual or on the chain saw.
- Never use dull or loose chain. Keep chain sharp and tensioned correctly.

# SAFETY WARNINGS

*Continued*

## Saw Maintenance and Kickback Safety

Follow maintenance instructions in this manual. Proper cleaning of saw and chain and guide bar maintenance can reduce chances of kickback. Inspect and maintain saw after each use. This will increase the service life of your saw. *Note:* Even with proper sharpening, risk of kickback can increase with each sharpening.

## PUSHBACK AND PULL-IN

### WARNING

**Avoid pushback and pull-in. These hazards can cause you to lose control of chain saw. Pushback or pull-in can cause severe injury.**

### Cause Of Pushback and Pull-In

Pushback may occur while cutting with top of guide bar. Pushback will force saw back towards you. Pull-in may occur while cutting with bottom of guide bar. Pull-in will force saw in towards wood you are cutting. These hazards can occur if chain is pinched, caught, or contacts a non-wood object.

The following steps will reduce the risk of pushback or pull-in:

- Use both hands to grip saw while saw is running. Use firm grip. Thumbs and fingers must wrap around saw handles.
- Do not overreach or cut above shoulder height.
- Keep solid footing and balance.
- Stand slightly to left side of saw. This keeps your body from being in direct line with chain.
- Have saw running at full speed before starting a cut.
- When cutting, make sure spike of saw is against wood (pull-in only). See *Product Identification*, page 5, to locate spike.
- Never try cutting through two logs at same time. Only cut one log at a time.
- Watch for shifting of log or other forces that may pinch chain.
- Use extreme caution when re-entering a previous cut.
- Do not twist saw when removing guide bar from undercut.
- Use wedges made of plastic, wood, or light alloy (never steel or iron) to hold cut open.

## CHAIN SAW OPERATION

1. Stay alert. Use common sense while operating chain saw.
2. Keep work area clean. Cluttered areas invite injuries.
3. Be aware of extension cord while operating chain saw. Be careful not to trip over cord.
4. Keep children, animals, and bystanders away from chain saw and extension cord. Only chain saw user should be in work area.
5. Do not cut down a tree unless you are trained or have expert help.
6. If two or more persons perform bucking and felling operations at the same time, provide plenty of distance between operations. Provide distance of at least twice the height of tree being felled.
7. Secure wood you are cutting by using clamps or chocks.
8. Grip chain saw firmly with both hands. Never operate chain saw with one hand. Never use hand guard as handle.
9. Keep finger off trigger until ready to make cut.

10. Before starting chain saw, make sure chain is not touching anything.
11. Avoid body contact with grounded objects such as pipes, wire fences, and metal posts.
12. Keep all parts of body away from chain when saw is running.
13. Do not force chain saw while cutting. Apply light pressure.
14. Cut small brush and saplings with extreme care. Slender material may catch in chain and be whipped toward you. This could also pull you off balance.
15. When cutting limb or tree trunk that is under tension, use extreme caution. Be alert for wood springing back. When wood tension is released, limb could spring back and strike operator causing severe injury or death.
16. Do not activate the chain brake to stop saw. Always release trigger to stop saw.
17. Carry chain saw from one place to another
  - with chain saw unplugged
  - by holding front handle (never use front hand guard as handle)
  - with finger off trigger
  - with guide bar and chain to rear
  - with scabbard in place

## MAINTENANCE AND STORAGE OF CHAIN SAW

1. Unplug chain saw from power source
  - when not in use
  - before moving from one place to another
  - before servicing
  - before changing accessories or attachments
2. Inspect chain saw before and after each use. Check saw closely if guard or other part has been damaged. Check for any damage that may affect operator safety or operation of saw. Check for alignment or binding of moving parts. Check that switch turns motor on and off. Check chain brake. Check for broken or damaged parts. Do not use chain saw if damage affects safety or operation. Have damage repaired by authorized service person.
3. Maintain chain saw with care.
  - Never expose saw to rain.
  - Keep chain sharp, clean, and lubricated.
  - Follow steps outlined in this manual to sharpen chain.
  - Keep handles dry, clean, and free of oil.
  - Keep all screws and nuts tight.
  - Inspect power cord often. If damaged, have repaired by authorized service person.
  - Never carry chain saw by power cord.
  - Never yank power cord to unplug it.
  - Keep power cord from heat, oil, and sharp edges.
  - Inspect extension cords often and replace if damaged.
4. When servicing, use only identical replacement parts.
5. Always store chain saw
  - in a high or locked place, out of children's reach
  - in a dry place
  - in a carrying case or with scabbard over guide bar

Keep this manual for reference. It is your guide to safe and proper operation of this chain saw.

## PRODUCT IDENTIFICATION

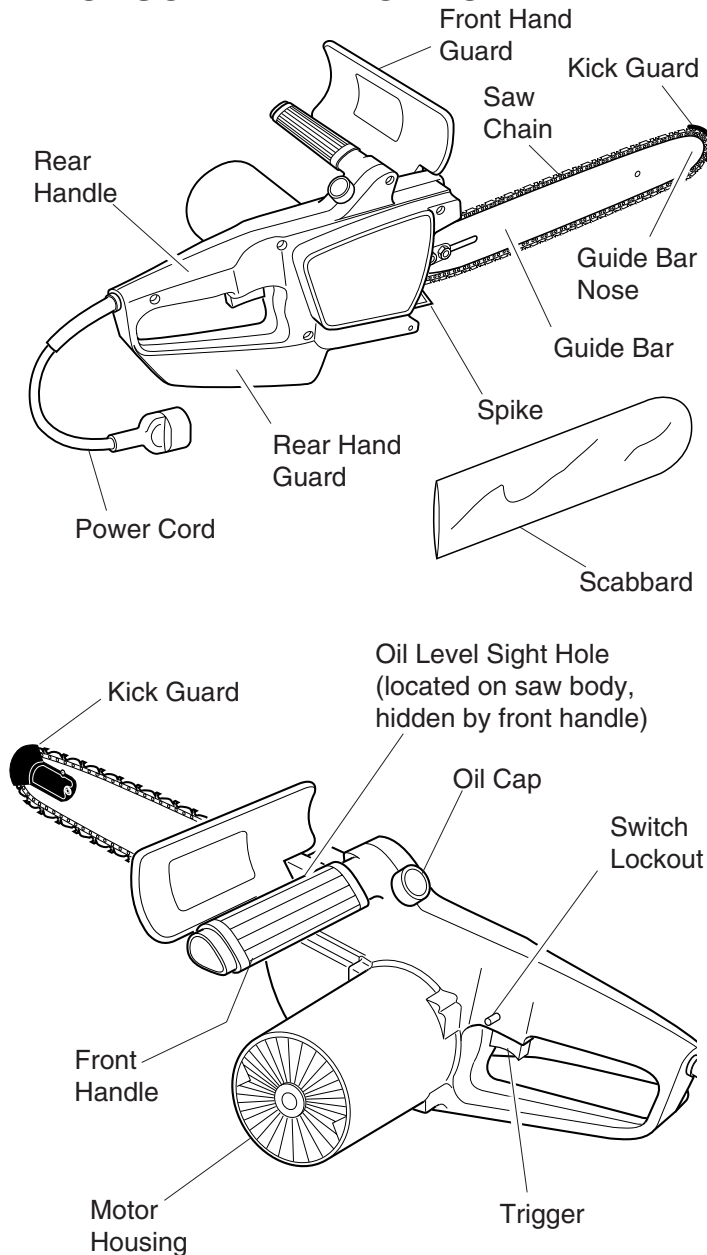


Figure 2 - Electric Chain Saw

## CHAIN SAW NAMES AND TERMS

**Bucking** Process of cutting a felled tree or log into lengths.

**Felling** Process of cutting down a tree.

**Felling Cut** Final cut when felling a tree. Make this cut on opposite side of tree from notching cut.

**Front Hand Guard** Shield between front handle and guide bar. Protects left hand while using saw. When kickback occurs, the front hand guard is moved forward by the back of operator's left hand. This stops the saw chain quickly, reducing the chance of serious injury.

**Front Handle** Located at front of saw body.

**Guide Bar** Metal bar that extends from saw body. The guide bar supports and guides chain.

**Guide Bar Nose** Tip or end of guide bar.

**Kickback** Quick backward and upward motion of guide bar. Kickback may occur when tip of guide bar touches an object while chain is moving. The guide bar will kick up and back towards operator.

**Kick Guard** Covers the nose area of the bar and chain where kickback reaction is generated. No chain contact in this area. No rotational kickback.

**Limbing** Process of cutting limb(s) from a felled tree.

**Low-Kickback Chain** Chain that reduces chance of kickback as required by ANSI B175.1.

**Normal Cutting Position** Stance used while making bucking and felling cuts.

**Notching Cut** Notch cut in tree that directs fall of tree.

**Oiler Control** System for oiling guide bar and chain.

**Power Head** Chain saw without chain and guide bar. Also known as saw body.

**Pushback (Kickback, Pinch)** Rapid pushback of chain saw. Pushback may occur if chain along top of guide bar is pinched, caught, or contacts a foreign object.

**Rear Handle** Handle located at rear of saw body.

**Reduced Kickback Guide Bar** Guide bar that reduces chance of kickback.

**Replacement Chain** Chain that complies with ANSI B175.1 when used with a specific saw. It may not meet ANSI requirements when used with other saws.

**Saw Chain (Chain)** Loop of chain having cutting teeth for cutting wood. The motor drives chain. The guide bar supports chain.

**Spiked Bumper (Spike)** Pointed teeth at front of saw body beside guide bar. Keep spiked bumper in contact with wood when felling or bucking. It helps maintain position of saw while cutting.

**Sprocket** Toothed wheel that drives chain.

**Switch** Device that completes or interrupts electrical circuit to motor of saw.

**Switch Linkage** This device connects switch to trigger. It moves switch when you squeeze trigger.

**Switch Lockout** Device that reduces accidental starting of saw.

**Trigger** Device that turns saw on and off. Squeezing trigger turns saw on. Releasing trigger turns saw off.

**Trimming (Pruning)** Process of cutting limb(s) from a living tree.

**Undercut** An upward cut from underside of log or limb. This is done while in normal cutting position and cutting with top of guide bar.

## UNPACKING

1. Remove all items from carton.
2. Check all items for any shipping damage. If you find any damage or if any parts are missing, promptly inform dealer where you bought chain saw.

## ASSEMBLY

### WARNING

Cutting edges on chain are sharp. Use protective gloves when handling chain.

### IMPORTANT

Do not clamp chain saw in vise during assembly.

1. Lay chain out flat.
2. Remove guide bar nuts from guide bar bolts (see Figure 3).
3. Turn adjusting screw counterclockwise (see Figure 4). Continue to turn adjusting screw until adjusting block is to rear of adjusting plate.
4. Install guide bar onto saw body. Place rear of guide bar between adjusting plate and sprocket support.  
*IMPORTANT:* Make sure to insert adjusting block into oval adjusting hole on guide bar.
5. Attach guide bar nuts to guide bar bolts. *IMPORTANT:* Tighten guide bar nuts finger tight only. Make sure adjusting block is in oval adjusting hole on guide bar.
6. Place chain around drive sprocket, then along top groove of guide bar and around guide bar nose. *Note:* Make sure cutting edges of chain are facing the right direction. Position chain so cutting edges on top of guide bar face guide bar nose (see Figure 3).

### CAUTION

Do not place chain on saw backwards. If chain is backwards, saw will vibrate badly and will not cut.

7. Adjust saw chain tension. Follow steps under *Saw Chain Tension Adjustment*, page 7.
8. If saw has 2-piece side cover, attach sprocket cover.

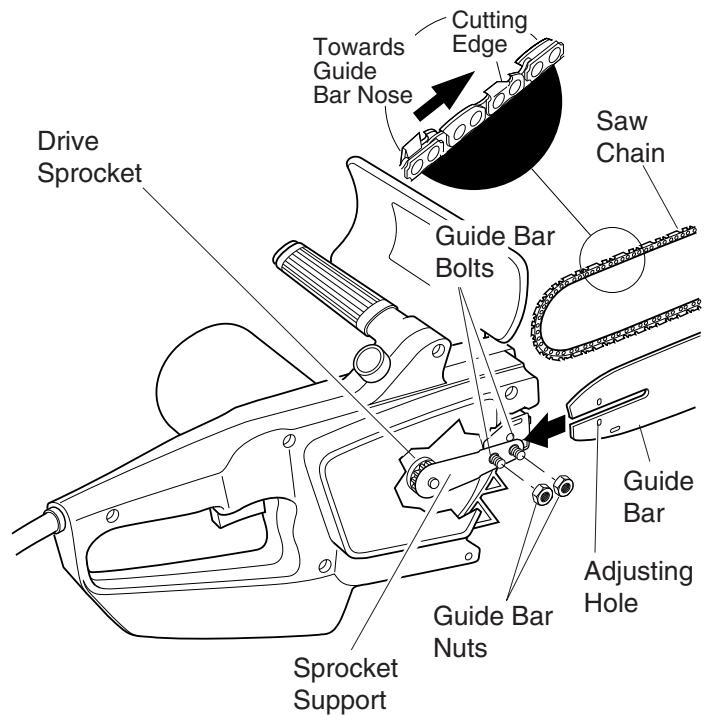


Figure 3 - Assembling Guide Bar, Chain, and Hand Guard

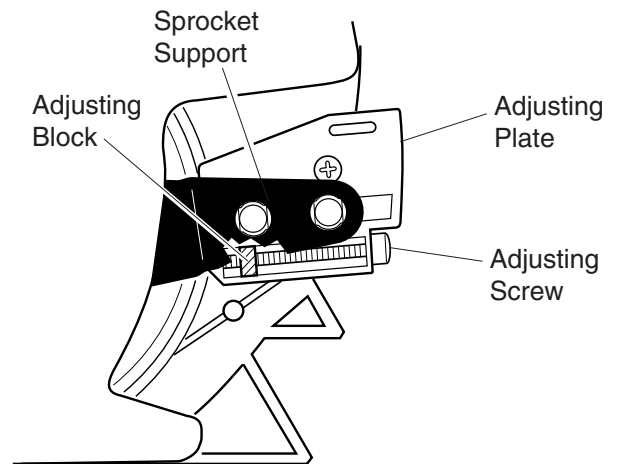


Figure 4 - Part Locations for Assembling Guide Bar

## SAW CHAIN TENSION ADJUSTMENT

### **⚠ WARNING**

Unplug chain saw from power source before adjusting saw chain tension.

### **⚠ WARNING**

Cutting edges on chain are sharp. Use protective gloves when handling chain.

### **⚠ WARNING**

Maintain proper chain tension always. A loose chain will increase the risk of kickback. A loose chain may jump out of guide bar groove. This may injure operator and damage chain. A loose chain will cause chain, guide bar, and sprocket to wear rapidly.

*Note:* A new chain will stretch. Check new chain after first few minutes of operation. Allow chain to cool down. Follow steps below to readjust saw chain tension.

1. Before adjusting chain, make sure guide bar nuts are only finger tight (see Figure 3, page 6). Also make sure adjusting block is in oval adjusting hole on guide bar (see Figure 3 and 4, page 6).
2. Turn adjusting screw clockwise until all slack is out of chain (see Figure 5).  
*Note:* There should be no gap between side links of chain and bottom of guide bar (see Figure 6).

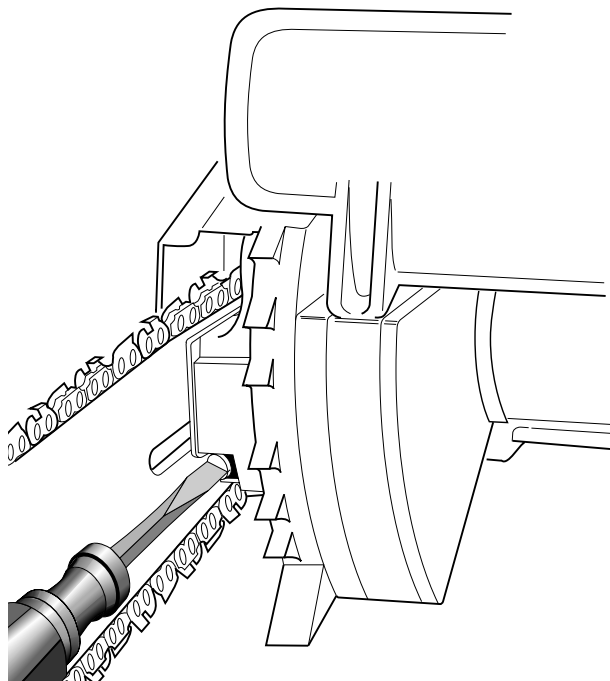


Figure 5 - Turning Adjusting Screw

3. Wearing protective gloves, move chain around guide bar. Chain should move freely. If chain does not move freely, loosen chain by turning adjusting screw counterclockwise.
4. After chain tension is correct, tighten guide bar nuts firmly. If not, guide bar will move and loosen chain tension. This will increase the risk of kickback. This can also damage saw. *Note:* A new chain will stretch. Check new chain after first few minutes of operation. Allow chain to cool down. Readjust chain tension.

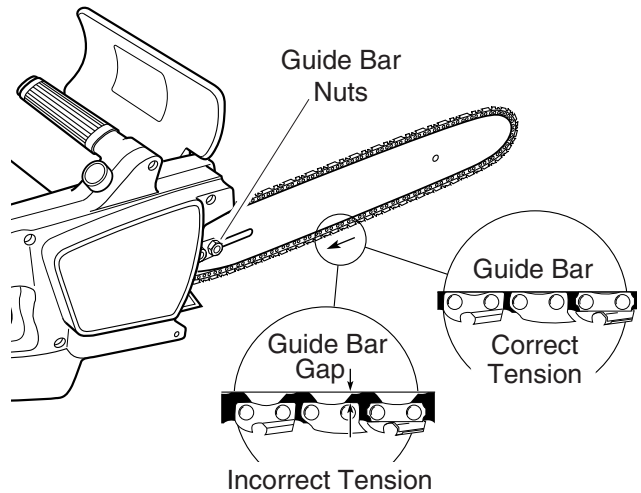


Figure 6 - Saw Chain Adjustment

## FILLING OIL TANK

1. Remove oil cap.
2. Fill oil tank with Echo bar and chain oil.
3. Replace oil cap at once. Tighten oil cap firmly for good seal. This will avoid oil seepage from tank.
4. Wipe off excess oil.

*Note:* It is normal for oil to seep when saw is not in use. Empty oil tank after each use to prevent seepage.

## OPERATING CHAIN SAW

### **⚠ WARNING**

Read and understand this owner's manual before operating this saw. Make certain you read and understand all Safety Warnings. Improper use of this chain saw can cause severe injury or death from fire, electrical shock, or body contact with moving chain, or falling wood.

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# OPERATING CHAIN SAW

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## EXTENSION CORDS

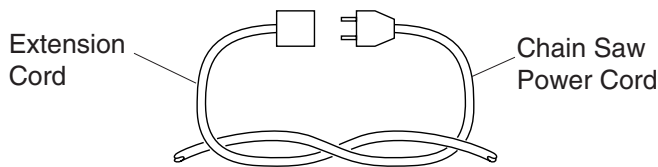
Use proper extension cord with this chain saw. Use only extension cords marked for outdoor use. Use an extension cord no less than 1.5 mm<sup>2</sup> (14SWG) at distances up to 30 meters (100 feet). The cord must be marked with suffix W following the cord type marking. *Example: SJTW*

To reduce the risk of electric shock, this equipment has a polarized plug (one blade is wider than the other). The plug will fit in a polarized extension cord only one way. If the plug does not fit fully in the extension cord, reverse the plug. If it still does not fit, obtain a polarized extension cord. Do not change the plug in any way.

Use an extension cord heavy enough to carry the current your saw will draw. An undersized cord will cause a voltage drop at the saw, loss of power, and overheating.

Keep cord away from cutting area. Make sure cord does not catch on branches or logs during cutting. Inspect cords often. Replace damaged cords.

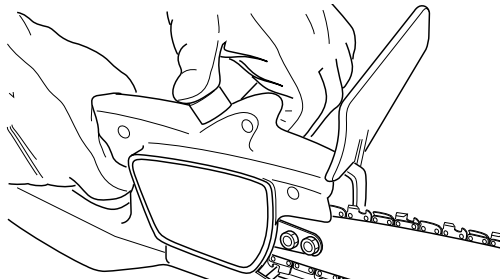
The extension cord may come undone from the power cord during use. To avoid this, make a knot with the two cords as shown in Figure 7 below.



**Figure 7 - Tying Extension Cord and Power Cord in Knot**

## OILING CHAIN

Always check oil level before using saw. To oil chain, press oil cap. Oil will feed onto guide bar and chain. Press oil cap at least once before each cut. Check oil level often by looking at oil sight level hole. Oil sight level hole is on left side of saw, between front handle and front hand guard.

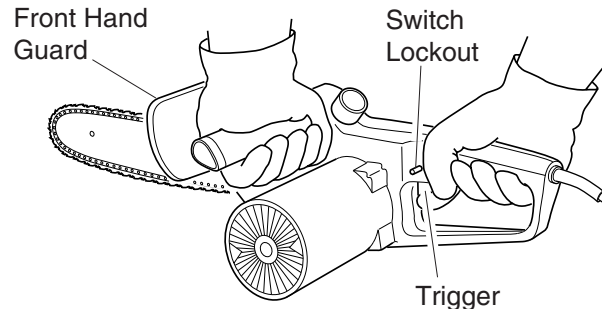


**Figure 8 - Pressing Oil Cap to Oil Chain**

## CUTTING WITH THE CHAIN SAW

1. Connect saw to extension cord. Connect extension cord to power supply.
2. Make sure section of log to be cut is not laying on ground. This will keep chain from touching ground as it cuts through log. Touching ground with moving chain will dull chain.
3. Use both hands to grip saw. Always use left hand to grip front handle and right hand to grip rear handle. Use firm grip. Thumbs and fingers must wrap around saw handles (see Figure 9).

4. Make sure your footing is firm. Keep feet apart. Divide your weight evenly on both feet. Stand slightly to left side of saw. This keeps your body from being in direct line with chain.
5. When ready to make a cut, press in switch lockout with right thumb and squeeze trigger (see Figure 9). This will turn saw on. Releasing trigger will turn saw off. Make sure saw is running at full speed before starting a cut.

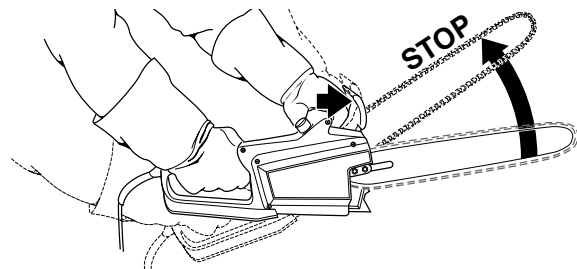


**Figure 9 - Front Hand Guard, Switch Lockout, and Trigger Location**

6. When starting a cut, place moving chain against wood. Hold saw firmly in place to avoid possible bouncing or skating (sideways movement) of saw.
7. Guide saw using light pressure. Do not force saw. The motor will overload and can burn out.
8. Remove saw from a cut with saw running at full speed. Stop saw by releasing trigger. Do not use the chain brake. Make sure chain has stopped before setting saw down.
9. Practice until you can maintain a steady, even cutting rate.

## CHAIN BRAKE

The chain brake quickly stops the saw chain. Kickback causes the back of operator's left hand to contact front hand guard (see Figure 10). When front hand guard moves forward, the saw chain stops. This reduces the chance of serious injury during kickback. When the chain brake activates, release trigger at once.



**Figure 10 - The chain brake quickly stopping the saw chain**

To reset chain brake, release trigger and move front hand guard back into position. You must release trigger first. If not, the saw will start when you reset the front hand guard.

**CAUTION: Do not use the chain brake to stop and start your saw. Quick repeated stops may cause overheating of the chain brake. Damage to the chain brake will occur.**

*Note:* Test chain brake before each use. Firmly grip saw with both hands. With saw running, move front hand guard forward with back of left hand. Keep both hands on the handles. Saw chain should stop. If chain brake does not work, have saw repaired by authorized service person.



# OPERATING CHAIN SAW

Continued

## TRIMMING A TREE (Pruning)

### ⚠️ WARNING

Avoid kickback. Kickback can result in severe injury or death. See *Kickback*, page 3 to avoid risk of kickback.

### ⚠️ WARNING

Do not operate chain saw while

- in a tree
- on a ladder or any other unstable surface
- in any awkward position

You may lose control of saw causing severe injury.

### ⚠️ WARNING

Do not cut limbs higher than your shoulders.

Trimming a tree is the process of cutting limbs from a living tree. Make sure your footing is firm. Keep feet apart. Divide your weight evenly on both feet. Follow directions below to trim a tree.

1. Make first cut 15 centimeters from tree trunk on underside of limb. Use top of guide bar to make this cut. Cut 1/3 through diameter of limb (see Figure 11).
2. Move five to ten centimeters farther out on limb. Make second cut from above limb. Continue cut until you cut limb off.
3. Make third cut as close to tree trunk as possible on underside of limb stub. Use top of guide bar to make this cut. Cut 1/3 through diameter of stub.
4. Make fourth cut directly above third cut. Cut down to meet third cut. This will remove limb stub.

### ⚠️ CAUTION

Seek professional help if facing conditions beyond your ability.

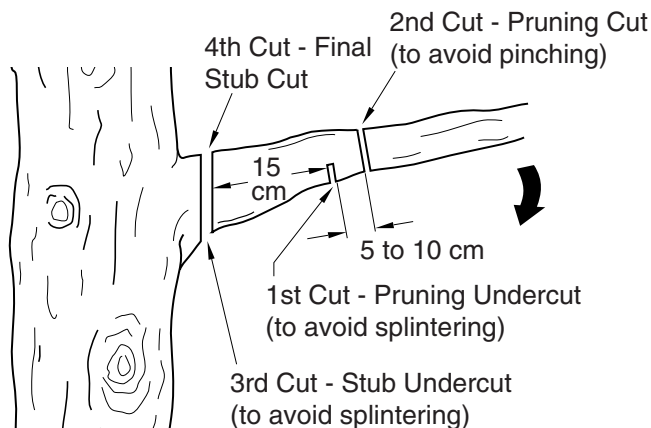


Figure 11 - Cutting A Limb

## FELLING A TREE (Cutting Down a Tree)

### ⚠️ WARNING

- Avoid kickback. Kickback can result in severe injury or death. See *Kickback*, page 3 to avoid risk of kickback.
- Do not fell a tree without ample skill or expert help.
- Keep children, animals, and bystanders away from area when felling a tree.
- If two or more persons perform bucking and felling operations at the same time, provide ample distance between operations. Provide distance of at least twice the height of tree being felled.

### ⚠️ WARNING

When felling a tree, be aware of your surroundings. Do not endanger any person, strike utility lines, or cause property damage. If tree strikes utility lines, contact utility company at once.

### ⚠️ CAUTION

Seek professional help if facing conditions beyond your ability.

Felling is the process of cutting down a tree. Make sure your footing is firm. Keep feet apart. Divide your weight evenly on both feet. Follow directions below to fell a tree.

### Before Felling a Tree

1. Before felling, inspect tree. Make sure there are no dead limbs or branches that may fall on you. Study natural lean of tree, location of larger branches, and wind direction. This will help you judge which way tree will fall.
2. Clear work area around tree.
3. Plan and clear a retreat path before felling. Make retreat path opposite to planned direction of fall of tree and at 45° angle (see Figure 12).

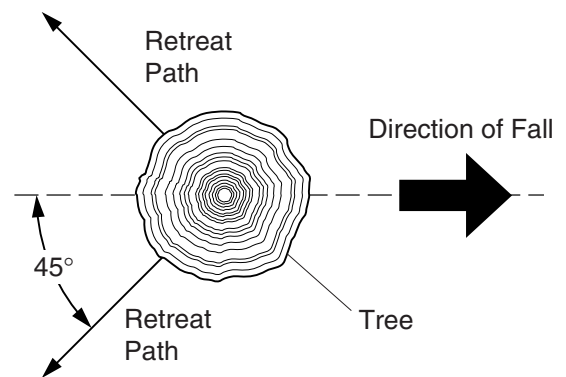


Figure 12 - Retreat Path From Tree

4. Remove dirt, stones, loose bark, nails, staples, and wire from tree where you will make felling cuts.
5. Stay on uphill side when felling tree. Tree could roll or slide downhill after falling.

Continued

# OPERATING CHAIN SAW

Continued

## Felling Procedure

### Felling Notch

A properly placed felling notch will determine direction tree will fall. Place felling notch on side of tree in direction you want tree to fall (see Figure 13). Follow directions below to create a felling notch.

1. Make lower notch cut as close to ground as possible. Hold saw so guide bar is horizontal. Cut 1/3 the diameter of tree trunk (see Figure 13). **Note:** Always make this horizontal lower notch cut first. If you make this cut second, tree can pinch chain or guide bar.
2. Start upper notch cut the same distance above first cut as first cut is deep.  
*Example:* If lower notch cut is 20 centimeters deep, start upper notch cut 20 centimeters above it. Cut downward at 45° angle. The upper notch cut should meet end of lower notch cut (see Figure 13).
3. Remove tree trunk wedge created by notching cuts.

### Felling Cut

1. Make felling cut five centimeters higher than lower notch cut and on opposite side of tree (see Figure 13). Keep felling cut parallel to lower notch cut.
2. Cut towards notch.

### WARNING

Do not cut all the way through tree. Leave about five centimeters of tree diameter uncut directly behind felling notch (see Figure 13). This uncut portion acts as a hinge. The hinge helps keep tree from twisting and falling in wrong direction.

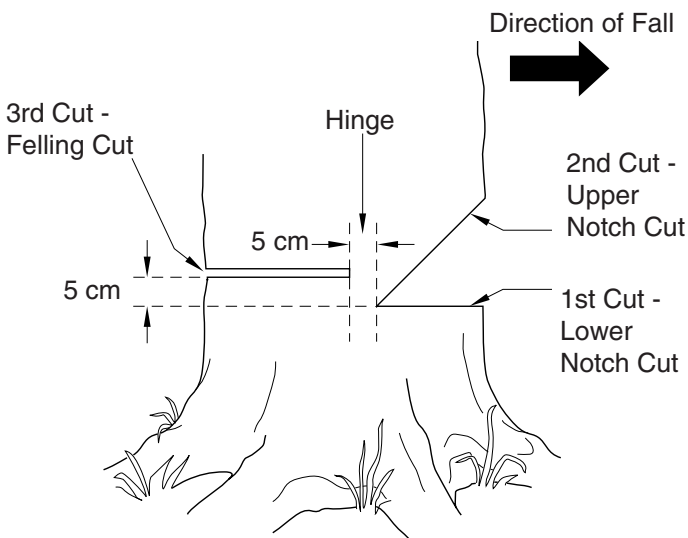


Figure 13 - Felling A Tree

3. As felling cut nears hinge, tree should begin to fall. **Note:** If needed, drive wedges into felling cut to control direction of fall. If tree settles back and pinches chain, drive wedges into felling cut to remove saw. Only use wedges made of wood, plastic, or aluminum. Never use wedge made of steel. This could cause kickback and damage to chain.

4. When tree begins to fall, quickly
  - remove saw from felling cut
  - release trigger to turn saw off
  - put saw down
  - exit area using retreat path

### WARNING

Be alert for falling overhead limbs. Watch your footing while exiting area.

## LIMBING A TREE

### WARNING

Avoid kickback. Kickback can result in severe injury or death. See *Kickback*, page 3 to avoid risk of kickback.

### WARNING

When cutting limb that is under tension, use extreme caution. Be alert for wood springing back. When wood tension is released, limb could spring back and strike operator causing severe injury or death.

### CAUTION

Seek professional help if facing conditions beyond your ability.

Limbing is removing branches from a fallen tree. Make sure your footing is firm. Keep feet apart. Divide your weight evenly on both feet. Do not remove larger limbs under tree that support log off ground. Remove each limb with one cut (see Figure 14). Clear cut limbs from work area often. This will help maintain a safe work area.

Make sure you start your cut where limb will not pinch saw during cutting. To avoid pinching, start cut on freely hanging limbs from above limb. Start cut on limbs under tension from under limb. If pinch occurs, turn saw off, lift limb, and remove saw.

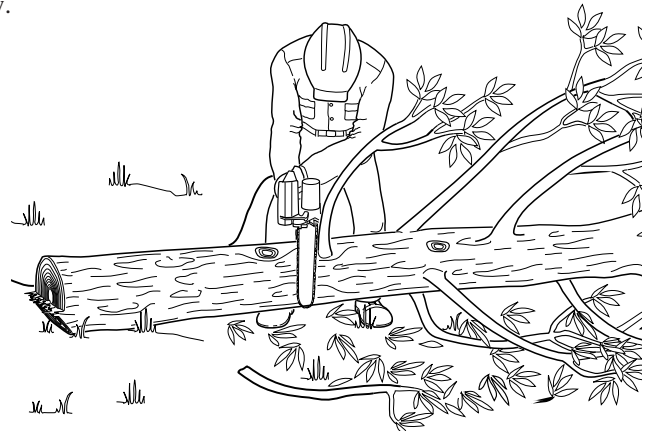


Figure 14 - Limbing A Tree

# OPERATING CHAIN SAW

Continued

## BUCKING A LOG

### WARNING

Avoid kickback. Kickback can result in severe injury or death. See *Kickback*, page 3 to avoid risk of kickback.

### WARNING

- If on slope, make sure log will not roll down hill. Secure log by using wooden stakes. Drive wooden stakes into ground on downhill side of log. Stand on uphill side of log while cutting. Log may roll after cutting.
- Never try cutting through two logs at same time. This could increase the risk of kickback.
- While cutting log, never hold log with your hand, leg, or foot.
- While cutting log, never allow another person to hold log.
- Turn off and unplug saw before moving from one place to another.

### CAUTION

Seek professional help if facing conditions beyond your ability.

Bucking a log is cutting a log into sections. Make sure your footing is firm. Keep feet apart. Divide your weight evenly on both feet. Stand slightly to left of saw. This keeps your body from being in direct line with chain. When possible, raise log or section off ground. Do this by using limbs, logs, chocks, etc.

When cutting through log, maintain control by reducing cutting pressure near end of cut. Do not relax your grip on chain saw handles. Do not let moving chain touch ground. Ground will dull moving chain. After cutting through log, release trigger to turn saw off before moving saw.

Follow directions below to buck a log.

### Entire Length Of Log On Ground

1. Cut log from top two thirds of the diameter (see Figure 15). Roll log over and complete cut.

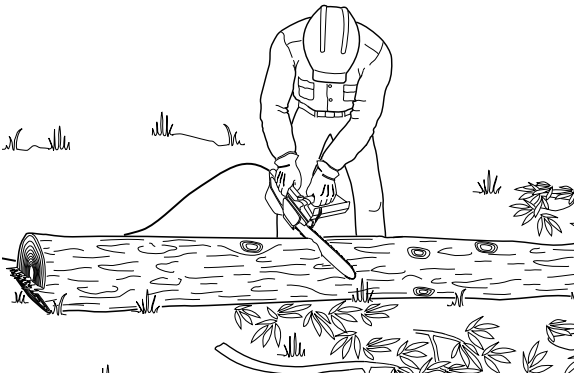


Figure 15 - Bucking Log With Entire Length On Ground

### Log Supported On One End

1. Make first cut on underside of log (see Figure 16). Use top of guide bar to make this cut. Cut 1/3 through diameter of log. This cut will keep section from splintering when cut.
2. Make second cut directly above first cut. Cut down to meet first cut. This cut will keep log from pinching guide bar and chain.

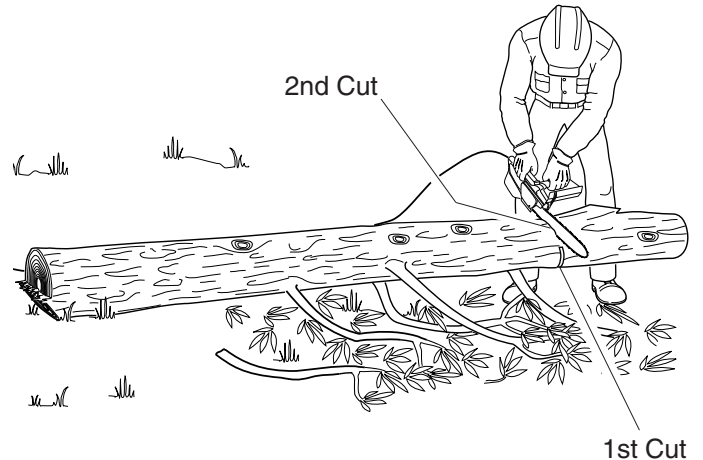


Figure 16 - Bucking Log When Log Is Supported On One End

### Log Supported On Both Ends

1. Make first cut from above log (see Figure 17). Cut 1/3 through diameter of log. This cut will keep section from splintering when cut.
2. Make second cut on underside of log, directly under first cut. Use top of guide bar to make this cut. Cut up to meet first cut. This will keep log from pinching guide bar and chain.

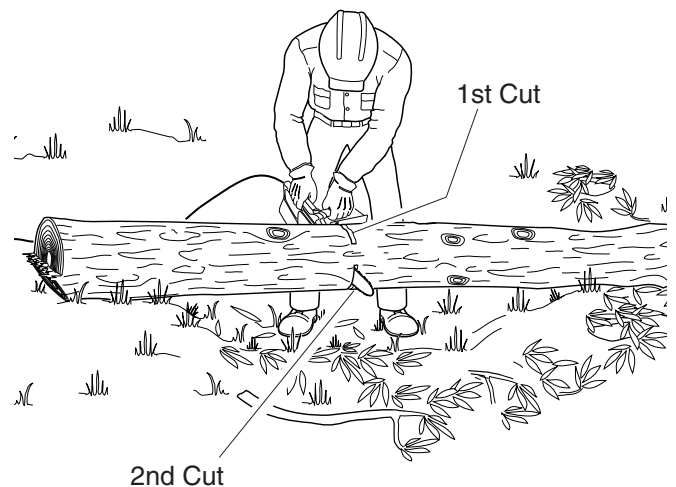


Figure 17 - Bucking Log When Log Is Supported On Both Ends

## CLEANING AND MAINTENANCE

### NOTICE

Below are instructions for servicing your chain saw. Any servicing not mentioned below should be done by an authorized Echo servicing dealer.

### CLEANING SAW BODY

#### ⚠ WARNING

Unplug chain saw from power source before servicing. Severe injury or death could occur from electrical shock or body contact with moving chain.

#### ⚠ WARNING

Cutting edges on chain are sharp. Use protective gloves when handling chain.

#### WARNING

When cleaning saw body,

- do not submerge saw in any liquids
- do not use products that contain ammonia, chlorine, or abrasives
- do not use chlorinated cleaning solvents, carbon tetrachloride, kerosene, or gasoline

Keep saw body clean. Use a soft cloth dampened with a mild soap and water mixture. Wipe saw body to clean. Let dry before using saw.

### CARE OF GUIDE BAR

Uneven bar wear causes most guide bar problems. Incorrect sharpening of chain cutter and depth gauge settings often cause this. When bar wears unevenly, it widens guide bar groove (see Figure 18). This causes chain clatter and rivet popping. Saw will not cut straight. Replace guide bar if this occurs.

Inspect guide bar before sharpening chain. A worn or damaged guide bar is unsafe. A worn or damaged guide bar will damage chain. It will also make cutting harder.

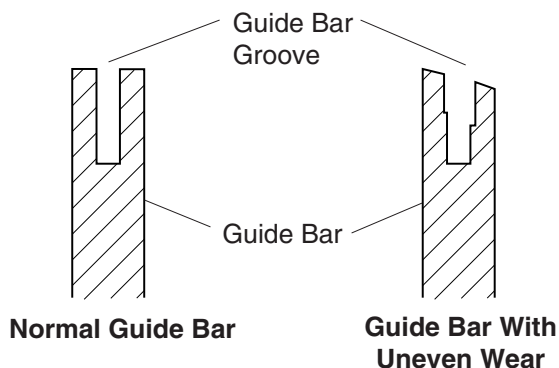


Figure 18 - Guide Bar Cross Section Showing Uneven Bar Wear

### Normal Guide Bar Maintenance

1. Remove guide bar from chain saw.
2. Remove sawdust from guide bar groove periodically. Use putty knife or wire.
3. Clean oil slots after each day of use.
4. Remove burrs from sides of guide bar. Use flat file to make side edges square.

Replace guide bar when

- bar is bent or cracked
- inside groove of bar is badly worn

Note: When replacing guide bar, see *Replacement Parts*, page 14 for proper bar.

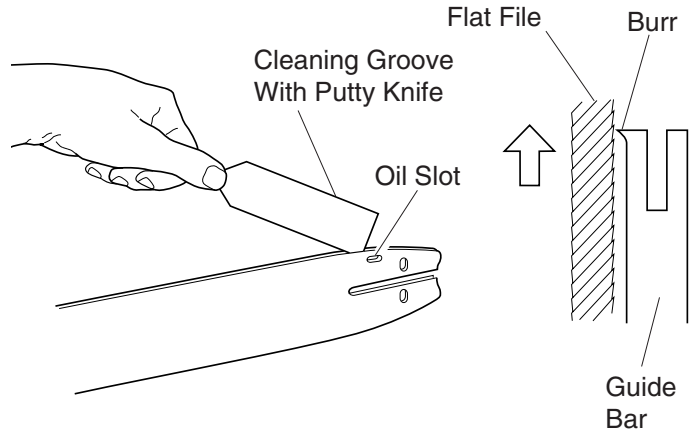


Figure 19 - Guide Bar Maintenance

### SHARPENING YOUR SAW CHAIN

#### ⚠ WARNING

Unplug chain saw from power source before servicing. Severe injury or death could occur from electrical shock or body contact with moving chain.

#### ⚠ WARNING

Cutting edges on chain are sharp. Use protective gloves when handling chain.

Keep chain sharp. Your saw will cut faster and more safely. A dull chain will cause undue sprocket, guide bar, chain, and motor wear. If you must force chain into wood and cutting creates only sawdust with few large chips, chain is dull.

### Items Needed to Sharpen Chain

Purchase these items from your local Echo servicing dealer.

- 4 mm round file
- Depth gauge tool
- File guide
- Vise
- Medium sized flat file

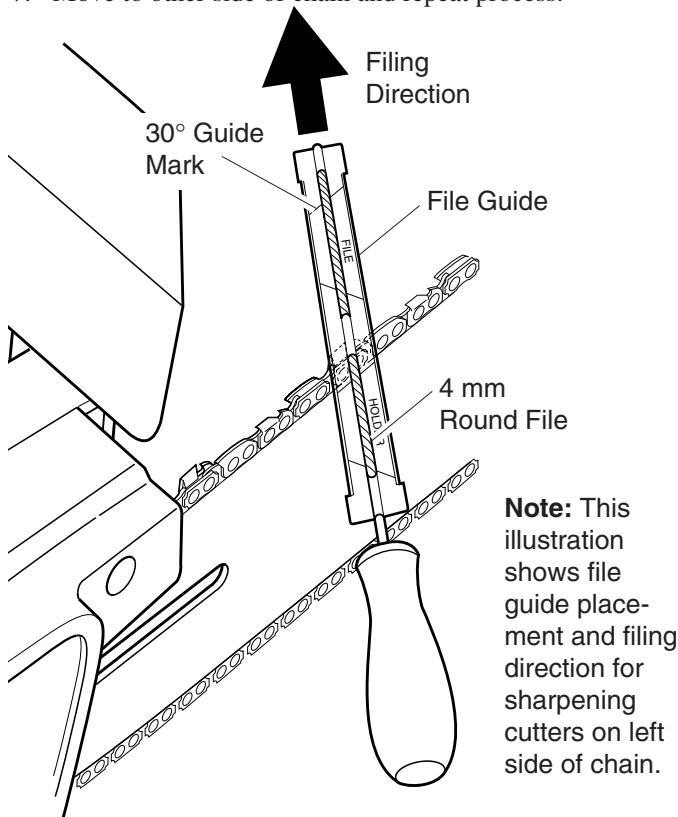
# CLEANING AND MAINTENANCE

*Continued*

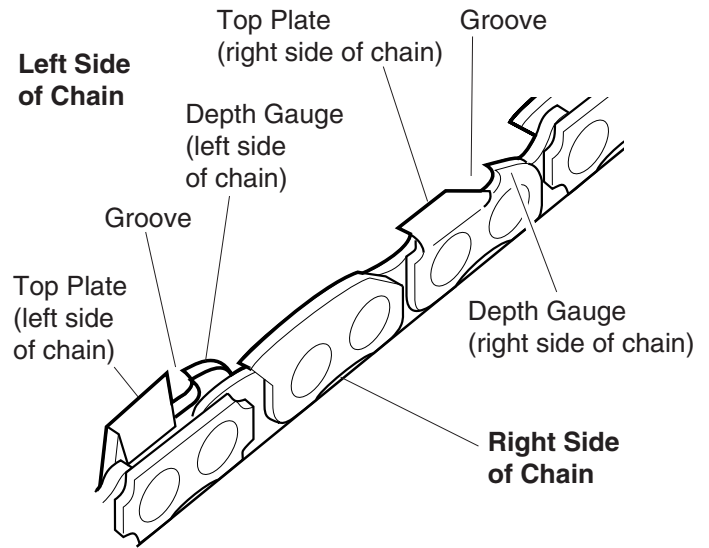
## Sharpening Cutters

Use file guide for 30° filing.

1. Adjust chain for proper tension (see *Saw Chain Tension Adjustment*, page 7).
2. Clamp guide bar in vise to hold saw steady. *Note:* Do not clamp chain.
3. Press four millimeter round file (attached to file guide) into groove between top plate and depth gauge on chain. File guide should rest on both top plate and depth gauge (see Figures 20 and 21). *Note:* File at midpoint of guide bar.
4. Hold file guide level. Make sure 30° mark on file guide is parallel to center of guide bar (see Figure 20). This will insure that you file cutters at 30° angle.
5. File from inside towards outside of cutter until sharp.
6. After each cutter is sharpened, move chain forward to sharpen next cutter. File all cutters on one side of chain.
7. Move to other side of chain and repeat process.



**Figure 20 - File and File Guide Placement On Chain**

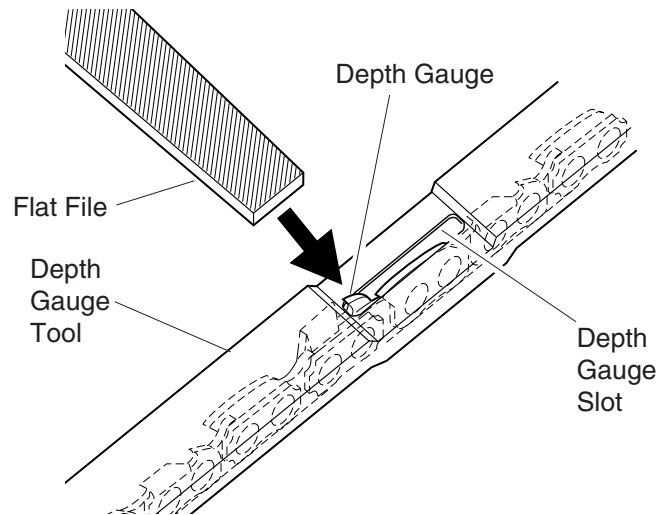


**Figure 21 - Chain Part Locations**

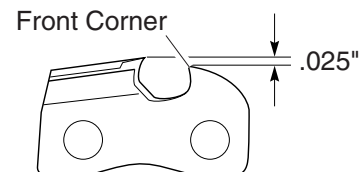
## Filing Cutter Depth Gauges

The cutter depth gauge clearance is reduced as cutters are sharpened. After every second or third sharpening, reset cutter depth gauges.

1. Place depth gauge tool firmly across top of two cutters. Make sure depth gauge enters slot in depth gauge tool (see Figure 22).
2. Use medium flat file. File depth gauge level with depth gauge tool.
3. Remove depth gauge tool. With flat file, round off front corner of cutter depth gauge (see Figure 23).



**Figure 22 - Depth Gauge Tool On Chain**



**Figure 23 - Round Off Front Corner Of Depth Gauge**

After several hand filings, have an authorized Echo servicing dealer sharpen chain. This will insure even filing.

# CLEANING AND MAINTENANCE

*Continued*

## Replacing Saw Chain

Replace chain when cutters are too worn to sharpen. Only use replacement chain noted in this manual. Always include new drive sprocket when replacing chain. This will maintain proper driving of chain.

## STORAGE

If storing saw for more than 30 days, follow steps below.

1. Drain oil tank.
2. Remove and clean guide bar and chain. Clean guide bar and chain by soaking in petroleum based solvent or mild soap and water mixture.
3. Dry guide bar and chain.
4. Place chain in container filled with oil. This will prevent rust.
5. Wipe a thin coating of oil over surface of guide bar.
6. Wipe off outside of saw body. Do this with soft cloth dampened with a mild soap and water mixture.
7. Store chain saw
  - in a high or locked place, out of children's reach
  - in a dry place
  - in a carrying case (part # 999888-00207) or with scabbard over guide bar

## REPLACEMENT PARTS



### WARNING

**Use only replacement parts described in this manual. Use of other parts could damage saw or injure operator.**

Purchase these parts from your local dealer.

<b>Part Number</b>	<b>Description</b>
120374001	12" guide bar with kick guard
917045	91VG chain, 45 drive links
16037500	16" guide bar with kick guard
917056	91VG chain, 56 drive links
9998880016	Kick guard

# TROUBLESHOOTING

## WARNING

**Unplug chain saw from power source before servicing. Severe injury or death could occur from electrical shock or body contact with moving chain.**

OBSERVED FAULT	POSSIBLE CAUSE	REMEDY
Saw runs, but does not cut.	Chain assembled backwards on guide bar.	See <i>Assembly</i> , page 6.
Saw does not cut unless heavily forced. Cutting produces only sawdust with few large chips.	Chain is dull.	See <i>Sharpening Your Saw Chain</i> , page 12.
Saw runs slow. Saw stalls easily.	Low power supply voltage.	Extension cord wire size too small. See <i>Extension Cords</i> , page 8.
Motor of saw does not run when you squeeze trigger.	Switch lockout not pressed in to release trigger.	Press in switch lockout before squeezing trigger.
	Chain brake activated.	Release trigger and move front hand guard back towards rear of saw.
	Extension cord connections loose.	Check cord connections.
	Open line fuse or circuit breaker.	Check line fuse or circuit breaker.
	Bad motor brushes.	Contact authorized service person.
Motor of saw runs, but chain does not move.	Open wiring circuit on saw.	Contact authorized service person.
	Gear train failure.	Contact authorized service person.
Chain does not get oil.	Clogged oil slot in guide bar.	Remove guide bar and clean oil slot.
	Oil is too thick.	Use correct weight of oil. See <i>Filling Oil Tank</i> , page 7.
Chain comes off guide bar.	Chain is loose.	Tighten chain. See <i>Saw Chain Tension Adjustment</i> , page 7.
	Guide bar and chain not assembled right.	See <i>Assembly</i> , page 6.
Saw smokes.	Saw damaged. Do not use saw.	Contact authorized service person.
Saw leaks oil.	Oil cap is not secure.	Tighten oil cap. <i>Note:</i> Empty oil tank when not in use.
Chain brake does not stop saw chain.	Brake failure.	Contact authorized service person.

## SERVICING INFORMATION

### PARTS --

Genuine ECHO 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 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. \_\_\_\_\_ 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. When presenting your unit for Warranty service/repairs, proof of purchase is required.

### 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 --

*Safety Manuals* are available, free of charge, from your ECHO dealer or by contacting Echo Incorporated, 400 Oakwood Road, Lake Zurich, IL 60047

*Operators and Parts Manuals* are available for purchase from your ECHO dealer or directly from ECHO. [See ordering instructions below.]

### 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.

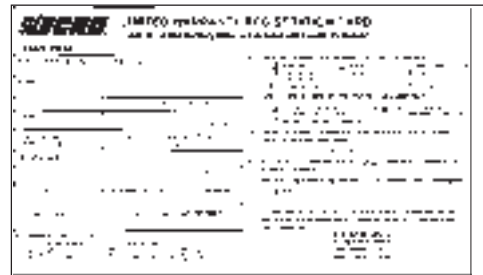
#### Available Parts Lists

ECS-2000	PARTS CATALOGS	P/N 99922202736
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