



# OPERATOR'S MANUAL MANUEL D'UTILISATION MANUAL DEL OPERADOR

## RY3714 / 14 in. 37cc Chain Saw

Scie à chaîne de 37 cc de 35 cm (14 po)

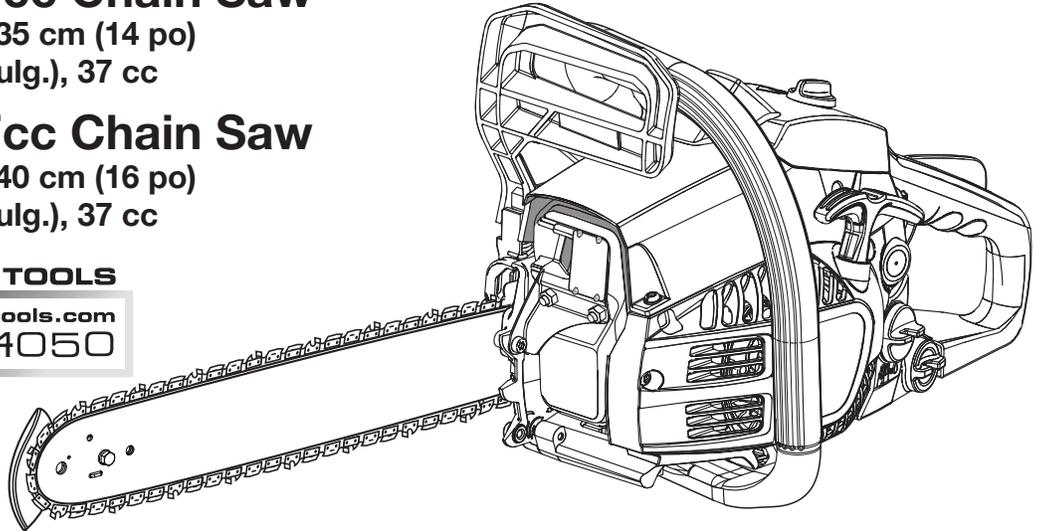
Motosierra de 35 cm (14 pulg.), 37 cc

## RY3716 / 16 in. 37cc Chain Saw

Scie à chaîne de 37 cc de 40 cm (16 po)

Motosierra de 40 cm (16 pulg.), 37 cc

**REGISTER YOUR TOOLS**  
 <http://register.ryobitools.com>  
 1-800-860-4050



### NOTICE AVIS AVISO

Do not use E15 or E85 fuel in this product. It is a violation of federal law and will damage the unit and void your warranty. Only use unleaded gasoline containing up to 10% ethanol.

Ne pas utiliser d'essence E15 ou E85 dans ce produit. Une telle utilisation représente une violation de la loi fédérale et endommagera l'appareil et annulera la garantie. Utiliser seulement de l'essence sans plomb ne contenant pas plus de 10 % d'éthanol.

No utilice combustibles E15 o E85 con este producto. Esto constituye una violación a la ley federal, dañará la unidad y anulará la garantía. Utilice únicamente gasolina sin plomo que contiene hasta 10% de etanol.



Your chain saw has been engineered and manufactured to Ryobi's high standard for dependability, ease of operation, and operator safety. When properly cared for, it will give you years of rugged, trouble-free performance.

**⚠ WARNING:** To reduce the risk of injury, the user must read and understand the operator's manual before using this product.

Thank you for buying a Ryobi product.

## SAVE THIS MANUAL FOR FUTURE REFERENCE

Cette scie à chaîne a été conçue et fabriquée conformément aux strictes normes de fiabilité, simplicité d'emploi et sécurité d'utilisation de Ryobi. Correctement entretenue, elle vous donnera des années de fonctionnement robuste et sans problème.

Su motosierra ha sido diseñada y fabricada de conformidad con las estrictas normas de Ryobi para brindar fiabilidad, facilidad de uso y seguridad para el operador. Con el debido cuidado, le brindará muchos años de sólido y eficiente funcionamiento.

**⚠ AVERTISSEMENT :** Pour réduire les risques de blessures, l'utilisateur doit lire et veiller à bien comprendre le manuel d'utilisation avant d'employer ce produit.

**⚠ ADVERTENCIA:** Para reducir el riesgo de lesiones, el usuario debe leer y comprender el manual del operador antes de usar este producto.

Merci d'avoir acheté un produit Ryobi.

Le agradecemos la compra de un producto Ryobi.

**CONSERVER CE MANUEL POUR  
FUTURE RÉFÉRENCE**

**GUARDE ESTE MANUAL PARA  
FUTURAS CONSULTAS**

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## INTRODUCTION

### INTRODUCTION / INTRODUCCIÓN

This product has many features for making its use more pleasant and enjoyable. Safety, performance, and dependability have been given top priority in the design of this product making it easy to maintain and operate.

\* \* \*

Ce produit offre de nombreuses fonctions destinées à rendre son utilisation plus plaisante et satisfaisante. Lors de la conception de ce produit, l'accent a été mis sur la sécurité, les performances et la fiabilité, afin d'en faire un outil facile à utiliser et à entretenir.

\* \* \*

Este producto ofrece numerosas características para hacer más agradable y placentero su uso. En el diseño de este producto se ha conferido prioridad a la seguridad, el desempeño y la fiabilidad, por lo cual se facilita su manejo y mantenimiento.

# GENERAL SAFETY RULES

## **WARNING:**

**Read and understand all instructions.** Failure to follow all instructions listed below, may result in electric shock, fire and/or serious personal injury.

## **READ ALL INSTRUCTIONS**

- **Know your tool.** Read the operator's manual carefully. Learn the saw's applications and limitations as well as the specific potential hazards related to this tool.
- **Kickback may occur when the nose or tip of the guide bar touches an object,** or when the wood 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 toward the operator. Pinching the saw chain along the top of the guide bar may push the guide bar rapidly back toward the operator. Either of these reactions may cause you to lose control of the saw, which could result in serious personal injury. Do not rely exclusively upon the safety devices built into the saw. As a chain saw user, you should take several steps to keep your cutting jobs free from accident or injury.
  - With a basic understanding of kickback, you can reduce or eliminate the element of surprise. Sudden surprise contributes to accidents.
  - Keep a good firm grip on the saw with both hands when the engine is running. Place your right hand on the rear handle and your left hand on the front handle with your thumbs and fingers encircling the chain saw handles. A firm grip together with a stiff left arm will help you maintain control of the saw if kickback occurs.
  - Make sure that the area in which you are cutting is free from obstructions. **DO NOT** let the nose of the guide bar contact a log, branch, fence, or any other obstruction that could be hit while you are operating the saw.
  - Cut at high engine speeds. Always cut with the engine running at full speed. Fully squeeze the throttle trigger and maintain a steady cutting speed.
- Do not overreach or cut above chest height.
- Follow the manufacturer's sharpening and maintenance instructions for the saw chain.
- Only use replacement bars and chains specified by the manufacturer or the equivalent.
- **Do not operate a chain saw with one hand.** Serious injury to the operator, helpers, bystanders, or any combination of these persons may result from one-handed operation. A chain saw is intended for two-handed use.
- **Do not operate a chain saw when you are fatigued.** Fatigue causes carelessness. Never operate a chain saw when you are tired or under the influence of medication, drugs, or alcohol.
- **Use safety footwear.** Wear snug-fitting clothing, protective gloves, and eye, hearing, and head protection devices.
- **Heavy protective clothing may increase operator fatigue, which could lead to heat stroke.** During weather that is hot and humid, heavy work should be scheduled for early morning or late afternoon hours when temperatures are cooler.
- **Do not stand on any unstable surface** while using the chain saw, such as ladders, scaffolds, trees, etc.
- **Use caution when handling fuel.** Move the chain saw at least 30 feet from the fueling point before starting the engine.
- **Do not allow other persons to be near the chain saw when starting or cutting with the chain saw.** Keep bystanders and animals out of the work area.
- **Do not start cutting until you have a clear work area,** secure footing, and a planned retreat path from the falling tree.
- **Keep all parts of your body away from the saw chain** when the engine is running.
- **Always carry the chain saw with the engine stopped and the brake engaged,** the guide bar and saw chain to the rear, and the muffler away from your body. When transporting the chain saw, use the appropriate guide bar scabbard.

## GENERAL SAFETY RULES

- **Do not operate a chain saw that is damaged**, improperly adjusted, or not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released.
- **Shut off the engine before setting the chain saw down.** Do not leave the engine running unattended. As an additional safety precaution, apply the chain brake prior to setting down the saw.
- **Use extreme caution when cutting small-size brush and saplings** because slender material may catch the saw chain and be whipped toward you or pull you off balance.
- **When cutting a limb that is under tension**, be alert for springback so that you will not be struck when the tension in the wood fibers is released.
- **Keep the handles dry**, clean, and free of oil or fuel mixture.
- **Do not start or operate the engine in a confined space, building, near open windows, or in other unventilated space where dangerous carbon monoxide fumes can collect.** Carbon monoxide, a colorless, odorless, and extremely dangerous gas, can cause unconsciousness or death.
- **Do not operate a chain saw in a tree** unless you have been specifically trained to do so.
- **Do not cut from a ladder;** this is extremely dangerous.
- **All chain saw service**, other than the items listed in the instruction manual and all maintenance, should be performed by competent chain saw service personnel. (For example, if improper tools are used to remove the flywheel or if an improper tool is used to hold the flywheel in order to remove the clutch, structural damage to the flywheel could occur and subsequently could cause the flywheel to burst.)
- **Always have a fire extinguisher available** when using chain saw.
- **Use only the replacement guide bars and low kickback chains** specified for the saw.
- **Do not adapt the powerhead to a bow guide** or use it to power any attachments or devices not listed for the saw.
- **The gas powered saw (or electrically powered saw) is classified by CSA as a Class 1C (or Class 2C) saw.** It is intended for infrequent use by homeowners, cottagers, and campers, and for such general applications as clearing, pruning, cutting firewood, etc. It is not intended for prolonged use. Prolonged periods of operation can cause circulatory problems in the user's hands due to vibration.
- **Save these instructions.** Refer to them frequently and use to instruct other users. If you loan someone this tool, loan them these instructions also.

## SPECIFIC SAFETY RULES

### **WARNING:**

The warnings, labels, and instructions found in this section of the operator's manual are for your safety. Failure to follow all instructions may result in serious personal injury.

- **Do not cut vines** and/or small underbrush (a diameter of less than 3 in.).
- **Muffler surfaces are very hot during and after operation of the chain saw;** keep all body parts

away from the muffler. Serious burns may occur if contact is made with the muffler.

- **Always hold the chain saw with both hands when the engine is running.** Use a firm grip with thumbs and fingers encircling the chain saw handles.
- **Never let anyone use the chain saw who has not received adequate instructions in its proper use.** This applies to rentals as well as privately owned saws.
- **Before you start the engine**, make sure the saw chain is not contacting any object.

## SPECIFIC SAFETY RULES

- **Wear snug-fitting clothing.** Always wear heavy long pants, boots, and gloves. Do not wear jewelry, short pants, sandals, or go barefoot. Do not wear loose fitting clothing, which could be drawn into the engine or catch the chain or underbrush. Wear overalls, jeans, or chaps made of cut-resistant material or ones that contain cut-resistant inserts. Secure hair so that it is above shoulder level.
- **Wear non-slip safety footwear and heavy-duty gloves** to improve your grip and to protect your hands.
- **Wear eye protection with side shields marked to comply with ANSI Z87.1, along with hearing and head protection,** when operating this equipment.
- **Keep bystanders and animals out of the work area.** Do not allow other persons to be nearby during starting or cutting with the chain saw.  
**NOTE:** The size of the work area depends on the job being performed as well as the size tree or workpiece involved. For example, felling a tree requires a larger work area than making other cuts (i.e., bucking cuts, etc.).
- **Keep SAFE-T-TIP™ anti-kickback nose guard properly mounted on the guide bar** to prevent rotational kickback.
- **Follow the sharpening and maintenance instructions** for the saw chain.
- **Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled.** Be sure that the saw chain stops moving when the throttle control trigger is released. If the saw chain moves at idle speed, the carburetor may need adjusting. Refer to **Adjusting the Carburetor** in the *Maintenance* section of this manual. If the saw chain still moves at idle speed after adjustment has been made, contact a qualified service center for adjustment and discontinue use until the repair is made.

- **This product is intended for infrequent use by homeowners and other occasional users** for general applications such as clearing, pruning, cutting firewood, etc. It is not intended for prolonged use. Prolonged periods of operation can cause circulatory problems in the user's hands due to vibration. For such use, it may be appropriate to use a product having an anti-vibration feature.

### REFUELING (DO NOT SMOKE!)

- **To reduce the risk of fire and burn injury,** handle fuel with care. It is highly flammable.
- **Mix and store fuel** in a container approved for gasoline.
- **Mix fuel outdoors** where there are no sparks or flames.
- **Select bare ground, stop the engine, and allow it to cool** before refueling.
- **Loosen the fuel cap slowly** to release pressure and to keep fuel from escaping around the cap.
- **Tighten the fuel cap securely** after refueling.
- **Wipe spilled fuel from the unit.** Move 30 feet away from refueling site before starting engine.
- **Never attempt to burn off spilled fuel** under any circumstances.

### KICKBACK

- **Kickback is a dangerous reaction that can lead to serious injury.** Do not rely only on the safety devices provided with the saw. As a chain saw user, you must take special safety precautions to help keep your cutting jobs free from accident or injury. See the *General Safety Rules* and *Operation* sections of this manual for added information on kickback and how to avoid serious personal injury.
- **CAUTION:** User not to use a replacement saw chain unless it has been designated as meeting the kickback performance requirements in ANSI/OPEI B175.1-2012 on that specific power head, or has been designated as low-kickback replacement saw chain in accordance with ANSI/OPEI B175.1-2012

**SAVE THESE INSTRUCTIONS**

# SYMBOLS

The following signal words and meanings are intended to explain the levels of risk associated with this product.

SYMBOL	SIGNAL	MEANING
	<b>DANGER:</b>	Indicates an imminently hazardous situation, which, if not avoided, will result in death or serious injury.
	<b>WARNING:</b>	Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.
	<b>CAUTION</b>	Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.
	<b>NOTICE:</b>	Indicates important information not related to an injury hazard, such as a situation that may result in property damage.

Some of the following symbols may be used on this tool. Please study them and learn their meaning. Proper interpretation of these symbols will allow you to operate the tool better and safer.

SYMBOL	NAME	DESIGNATION/EXPLANATION
	Safety Alert	Precautions that involve your safety.
	Read The Operator's Manual	To reduce the risk of injury, user must read and understand operator's manual before using this product.
	Wear Eye, Hearing, and Head Protection	Wear eye protection with side shields marked to comply with ANSI Z87.1 as well as hearing and head protection when operating this equipment.
	Keep Tool Away from Electrical Lines/Keep Bystanders Away	DANGER! Risk of electrocution! Keep tool 50 feet away from electrical lines. Keep all bystanders at least 50 ft. away or twice the height of the largest trees in the felling area when felling.
	SAFE-T-TIP™ Nose Guard	The SAFE-T-TIP™ nose guard on the guide bar helps prevent kickback.
	Operate With Two Hands	Hold and operate the saw properly with both hands.
	One Handed	Do not operate the saw using only one hand.
	Bar Nose Contact	Avoid bar nose contact. Tip contact may cause the guide bar to move suddenly upward and backward, which may cause serious injury.

# SÍMBOLOS

	Con una mano	No maneje la motosierra con una sola mano.
	Contacto de la punta de la barra con el material	Evite el contacto del material con la punta de la barra. El contacto con la punta puede hacer que la barra guía se mueva repentinamente hacia arriba y atrás; esto puede causar lesiones graves.
	Superficie caliente	Para reducir el riesgo de lesiones corporales o daños materiales evite tocar toda superficie caliente.
	Contragolpe	¡PELIGRO! ESTÉ ALERTA DE UN POSIBLE CONTRAGOLPE.
	Póngase guantes	Al manejar la motosierra póngase guantes protectores antideslizantes de uso pesado.
	Póngase calzado de seguridad	Cuando utilice este equipo póngase zapatos de seguridad antideslizantes.
	Se prohíbe fumar	Se prohíbe fumar, causar chispas y tener llamas abiertas.
	Monóxido de carbono	Los motores generan monóxido de carbono, el cual es un gas inodoro tóxico y mortal. No los ponga a funcionar en espacios encerrados.
	Gasolina y lubricante	Use gasolina sin plomo para vehículos con un octanaje mínimo de 87 [(R + M)/2]. Este producto está impulsado por un motor de dos tiempos y utiliza una mezcla de gasolina y lubricante para motor de dos tiempos.

# GLOSSARY OF TERMS

## **AUTOMATIC OILER SYSTEM**

Lubrication is provided by the automatic oiler system. The oiler is driven by the sprocket and adds lubrication only when the chain is moving.

## **BUCKING**

The process of cross cutting a felled tree or log into lengths.

## **CHAIN BRAKE**

A device used to stop the saw chain.

## **CHAIN SAW POWERHEAD**

A chain saw without the saw chain and guide bar.

## **CLUTCH**

A mechanism for connecting and disconnecting a driven member to and from a rotating source of power.

## **DRIVE SPROCKET OR SPROCKET**

The toothed part that drives the saw chain.

## **FELLING**

The process of cutting down a tree.

## **FELLING BACK CUT**

The final cut in a tree felling operation made on the opposite side of the tree from the notching undercut.

## **FRONT HANDLE**

The support handle located at or toward the front of the chain saw. This handle is for the left hand.

## **FRONT HANDLE GUARD**

A structural barrier between the front handle of a chain saw and the guide bar, typically located close to the hand position on the front handle, and sometimes employed as an activating lever for a chain brake.

## **GUIDE BAR**

A solid railed structure that supports and guides the saw chain.

## **KICKBACK**

The backward or upward motion, or both, of the guide bar occurring when the saw chain near the nose of the top area of the guide bar contacts any object such as a log or branch, or when the wood closes in and pinches the saw chain in the cut.

## **KICKBACK (PINCH)**

The rapid pushback of the saw which can occur when the wood closes in and pinches the moving saw chain in the cut along the top of the guide bar.

## **KICKBACK (ROTATIONAL)**

The rapid upward and backward motion of the saw which can occur when the moving saw chain near the upper portion of the tip of the guide bar contacts an object, such as a log or branch.

## **LOW-KICKBACK CHAIN**

A low kickback saw chain is a chain that has met the kickback performance requirements of ANSI/OPEI B175.1-2012 when tested according to the provisions specified in ANSI/OPEI B175.1-2012.

## **NORMAL CUTTING POSITION**

Those positions assumed in performing the bucking and felling cuts.

## **NOTCHING UNDERCUT**

A notch cut in a tree that directs the tree's fall.

## **REAR HANDLE**

The support handle located at or toward the rear of the saw. It normally contains the throttle. This handle is for the right hand.

## **REDUCED KICKBACK GUIDE BAR**

A guide bar which has been demonstrated to reduce kickback significantly.

## **REPLACEMENT SAW CHAIN**

A chain that complies with the kickback performance requirements of ANSI B175.1 when tested with specific chain saws.

## **SAFE-T-TIP™ ANTI-KICKBACK NOSE GUARD**

An attachment that may be provided on the end of the guide bar to prevent the chain at the end of the guide bar from contacting the wood.

## **SAW CHAIN**

A loop of chain having cutting teeth that cut the wood, and that is driven by the sprocket and is supported by the guide bar.

## **SPRINGPOLE**

A small tree (sapling) or limb that is bent or trapped under tension. It may "spring back" rapidly when cut, causing a dangerous situation.

# FEATURES

## PRODUCT SPECIFICATIONS

Bar length		Chain drive links	
RY3714 .....	14 in.	RY3714 .....	52
RY3716 .....	16 in.	RY3716 .....	56
Chain pitch .....	3/8 in.	Drive sprocket .....	6-tooth
Chain gauge .....	.050 in.	Engine displacement .....	37cc
Chain type .....	Low Profile Skip Tooth	Idle engine speed .....	2,700 ± 200 r/min. (RPM)
		Fuel tank capacity .....	10.4 oz.
		Chain lubricant tank capacity .....	7.1 oz.

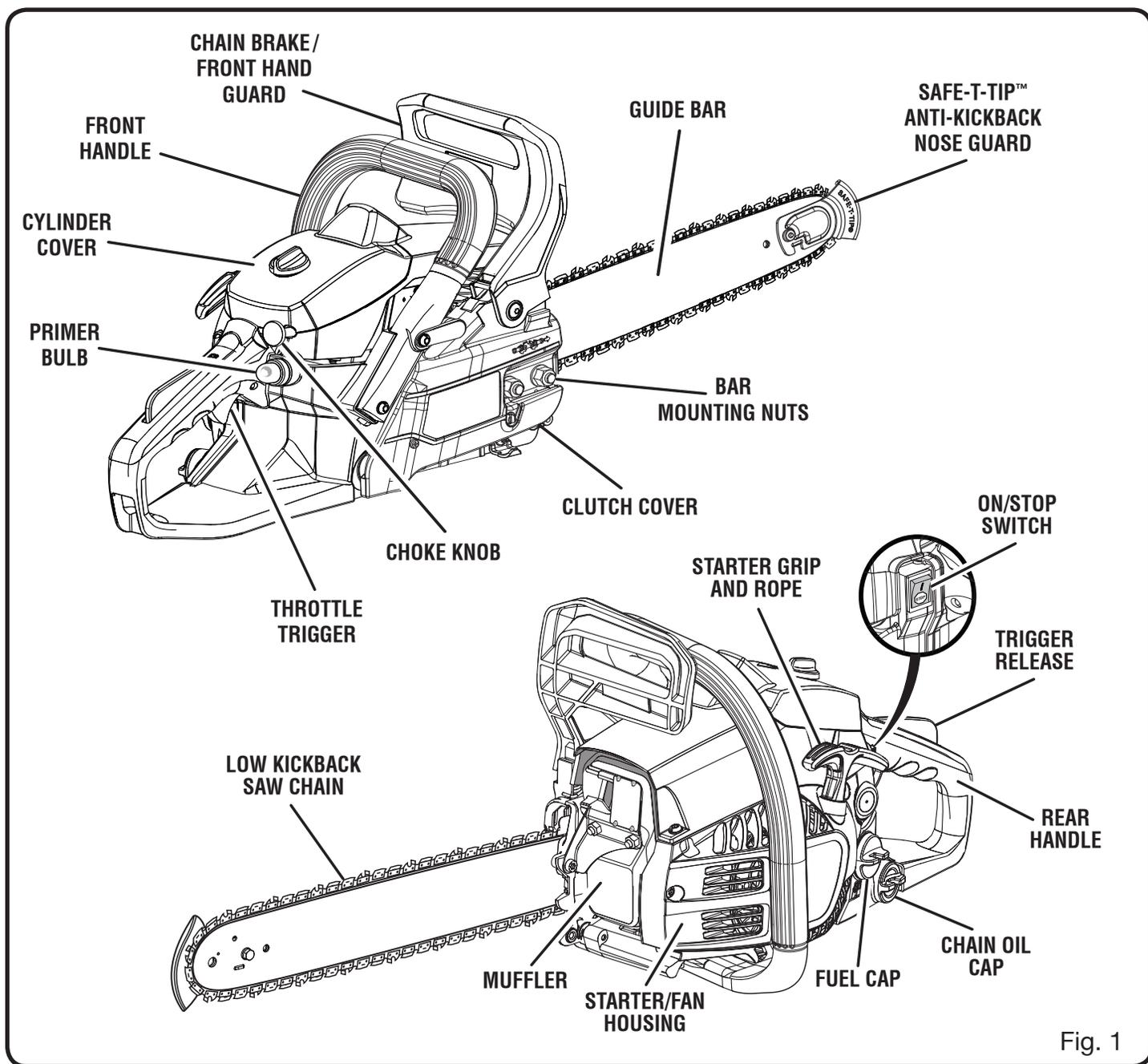


Fig. 1

# FEATURES

## KNOW YOUR CHAIN SAW

See *Figure 1*.

The safe use of this product requires an understanding of the information on the tool and in this operator's manual as well as a knowledge of the project you are attempting. Before use of this product, familiarize yourself with all operating features and safety rules.

## CHOKE KNOB

The choke knob opens and closes the choke valve in the carburetor. Positions available include FULL CHOKE, HALF CHOKE, and RUN.

## COMBINATION WRENCH

A combination wrench tool is provided for use when performing various maintenance procedures.

## CHAIN BRAKE / FRONT HAND GUARD

The chain brake is designed to quickly stop the chain from rotating. When the chain brake/front hand guard is pushed toward the bar, the chain should stop immediately. The chain brake does not prevent kickback.

## GUIDE BAR

The factory-equipped guide bar has a small radius tip that offers somewhat lower kickback potential.

## LOW KICKBACK SAW CHAIN

The low kickback saw chain helps minimize the force of a kickback reaction by preventing the cutters from digging in too deeply at the kickback zone.

## PRIMER BULB

The primer bulb pumps fuel from the fuel tank to the carburetor.

## SAFE-T-TIP™ ANTI-KICKBACK NOSE GUARD

The SAFE-T-TIP™ Anti-Kickback Nose Guard is an attachment provided on the end of the guide bar to prevent the chain on the end of the guide bar from contacting the wood.

## THROTTLE TRIGGER

The throttle trigger is used for starting the chain saw, and also for controlling chain rotation.

# ASSEMBLY

## UNPACKING

This product has been shipped completely assembled.

- Carefully remove the tool and any accessories from the box. Make sure that all items listed in the packing list are included.

### **WARNING:**

Do not use this product if it is not completely assembled or if any parts appear to be missing or damaged. Use of a product that is not properly and completely assembled could result in serious personal injury.

- Inspect the tool carefully to make sure no breakage or damage occurred during shipping.

- Do not discard the packing material until you have carefully inspected and satisfactorily operated the tool.
- If any parts are damaged or missing, please call 1-800-860-4050 for assistance.

## PACKING LIST

Chain Saw  
Scabbard  
Combination Wrench  
2-Cycle Engine Lubricant  
Operator's Manual  
Case (RY3716 only)

## ASSEMBLY

### **WARNING:**

If any parts are damaged or missing do not operate this tool until the parts are replaced. Failure to heed this warning could result in serious personal injury.

### **WARNING:**

Do not attempt to modify this tool or create accessories not recommended for use with this tool. Any such alteration or modification is misuse and could result in a hazardous condition leading to possible serious personal injury.

**NOTE:** The chain saw has been fully factory tested. It is normal to find some slight lubricant residue on the saw. Read and remove all hang tags and store with the Operator's Manual.

## OPERATION

### **DANGER:**

Never cut near power lines, electric cords, or other electric sources. If bar and chain jams on any electrical cord or line, **DO NOT TOUCH THE BAR OR CHAIN! THEY CAN BECOME ELECTRICALLY LIVE AND VERY DANGEROUS.** Continue to hold the chain saw by the insulated rear handle or lay it down and away from you in a safe manner. Disconnect the electrical service to the damaged line or cord before attempting to free the bar and chain from the line or cord. Contact with the bar, chain, other conductive parts of the chain saw, or live electric cords or lines will result in death by electrocution, electric shock, or serious personal injury.

### **WARNING:**

Do not allow familiarity with tools to make you careless. Remember that a careless fraction of a second is sufficient to inflict serious injury.

### **WARNING:**

Muffler surfaces are very hot during and after operation of the chain saw; keep all body parts away from the muffler. Serious burns can occur if contact is made with the muffler.

### **WARNING:**

Always wear eye protection with side shields marked to comply with ANSI Z87.1, along with hearing and head protection. Failure to do so could result in objects being thrown into your eyes and other possible serious injuries.

### **WARNING:**

Do not use any attachments or accessories not recommended by the manufacturer of this tool. The use of attachments or accessories not recommended can result in serious personal injury.

### **WARNING:**

This product is equipped with a spark arrestor that has been evaluated by the USDA Forest Service; however, product users must comply with Federal, State, and local fire prevention regulations. Check with appropriate authorities. Contact customer service or a qualified service center to purchase a replacement spark arrestor.

# OPERATION

## **WARNING:**

Never fell a tree or cut a log or limb that has a diameter greater than the length of the guide bar. Only properly trained professionals should perform these cuts. Performing these types of cuts can cause an accident and result in death or serious personal injury.

## **NOTICE:**

Before each use, inspect the entire product for damaged, missing, or loose parts such as screws, nuts, bolts, caps, etc. Tighten securely all fasteners and caps and do not operate this product until all missing or damaged parts are replaced. Please contact customer service or a qualified service center for assistance.

## **APPLICATIONS**

You may use this tool for the purposes listed below:

- Basic limbing, felling, and woodcutting
- Removing buttress roots

## **FUEL AND REFUELING**

### **HANDLING THE FUEL SAFELY**

## **WARNING:**

Check for fuel leaks. A leaking fuel cap, tank, or line is a fire hazard and must be replaced immediately. If you find any leaks, correct the problem before using the product. Failure to do so could result in a fire that could cause serious personal injury.

- Always handle fuel with care; it is highly flammable.
- Always refuel outdoors and do not inhale fuel vapors.
- Do not let gasoline or lubricant come in contact with skin.
- Keep gasoline and lubricant away from the eyes. If gasoline or lubricant comes in contact with the eyes, wash them immediately with clean water. If irritation is still present, see a doctor immediately.
- Clean up spilled fuel immediately.

Refer to **Refueling** in the *Specific Safety Rules* section of this manual for additional safety information.

## **ETHANOL BLENDED FUELS**

### **NOTICE:**

**Do not use E15 or E85 fuel in this product. It is a violation of federal law and will damage the unit and void your warranty. Only use unleaded gasoline containing up to 10% ethanol.**

**NOTE:** To improve performance when using ethanol-blended fuels, we recommend the use of Ethanol Shield 2-cycle lubricant.

## **MIXING THE FUEL**

This product is powered by a 2-cycle engine and requires pre-mixing gasoline and 2-cycle lubricant. Pre-mix unleaded gasoline and 2-cycle engine lubricant in a clean container approved for gasoline. DO NOT mix quantities larger than usable in a 30-day period.

Recommended fuel: This engine is certified to operate on unleaded gasoline intended for automotive use.

**NOTE:** We recommend you use Ethanol Shield 2-cycle lubricant or an equivalent high-quality synthetic 2-cycle lubricant in this product. Mix at 2.6 oz. per gallon (US).

Do not use automotive lubricant or 2-cycle outboard lubricant.

### **HIGH QUALITY 2-CYCLE ENGINE LUBRICANT (50:1)**



<b>GASOLINE</b>	<b>LUBRICANT</b>
1 Gallon (US)	2.6 oz.
1 Liter	20 cc (20 ml)

## **FILLING THE FUEL TANK**

See *Figure 2*.

## **WARNING:**

Gasoline and its vapors are highly flammable and explosive. To prevent serious personal injury and property damage, handle it with care. Keep away from ignition sources and open flames, handle outdoors only, do not smoke, and wipe up spills immediately.

# OPERATION

- Clean the surface around the fuel cap to prevent contamination.
- Loosen the fuel cap slowly.
- Carefully pour the fuel mixture into the tank. Avoid spillage.
- Prior to replacing the fuel cap, clean and inspect the o-ring.
- Immediately replace the fuel cap and hand tighten. Wipe up any fuel spillage.

**NOTE:** It is normal for the engine to emit smoke during and after the first use.

## **⚠ WARNING:**

Always shut off engine before fueling. Never remove fuel cap or add fuel to a machine with a running or hot engine. Make sure unit is sitting on a flat, level surface and only add fuel outdoors. If the engine is hot, allow to cool for at least five minutes before adding fuel. Immediately replace fuel cap after fueling and tighten securely. Move at least 30 ft. from refueling site before starting the engine. Do not smoke and stay away from open flames and sparks. Failure to heed this warning can result in possible personal injury.

## BAR AND CHAIN LUBRICATION

See Figure 3.

The bar and chain require continuous lubrication. Lubrication is provided by the automatic oiler system when the oil tank is kept filled. Lack of lubricant will quickly ruin the bar and chain. Too little lubricant will cause overheating shown by smoke coming from the chain and/or discoloration of the bar. Lubrication can be increased or decreased by turning (up to 1/4 turn maximum) the adjustment screw located on the bottom of the crankcase with the screwdriver end of the included combination wrench.

## **⚠ WARNING:**

NEVER adjust the automatic oiler system when the engine is running. Failure to do so could cause serious personal injury.

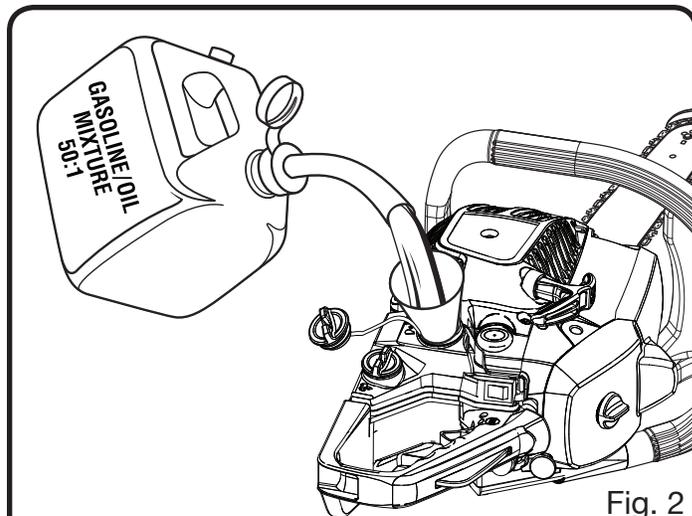


Fig. 2

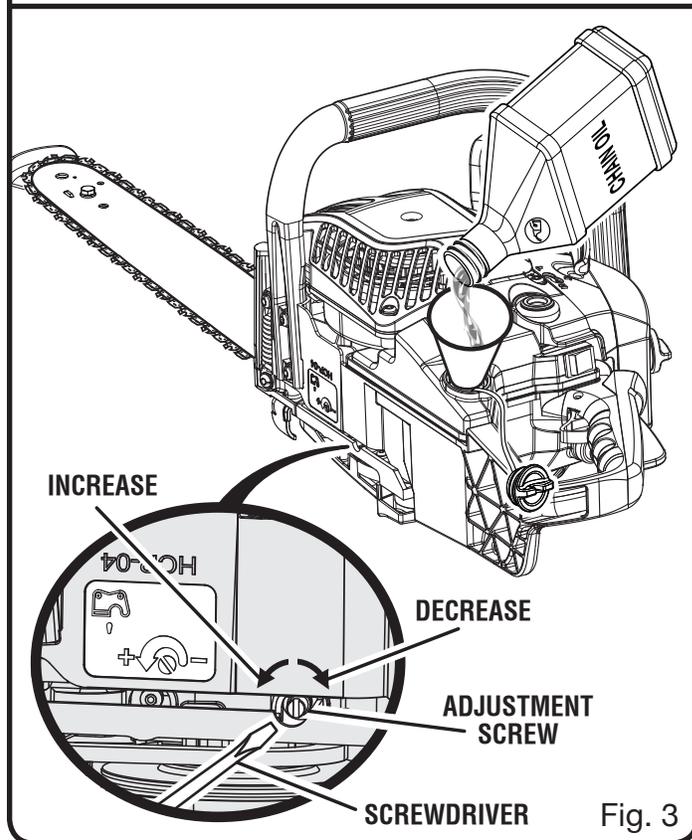


Fig. 3

## ADDING BAR AND CHAIN LUBRICANT

See Figure 3.

Use a bar and chain lubricant designed for lubricating chain saw chains. They are formulated to extend bar and chain life by protecting against wear and reducing friction and heat. Chain saw should use approximately one tank of lubricant per tank of fuel.

# OPERATION

**NOTE:** Do not use dirty, used, or otherwise contaminated lubricants. Damage may occur to the oil pump, bar, or chain.

- Carefully pour the bar and chain lubricant into the oil tank.
- Fill the oil tank every time you fuel the engine.

## OPERATING THE CHAIN BRAKE

See Figures 4 - 5.

Check the operating condition of the chain brake prior to each use.

- Using the back of your left hand, engage the chain brake by pushing the chain brake lever/hand guard toward the bar while the chain is rotating rapidly.
- Reset the chain brake back into the RUN position by grasping the top of the chain brake lever/hand guard and pulling toward the front handle until you hear a click.

### **⚠ WARNING:**

If the chain brake does not stop the chain immediately, or if the chain brake will not stay in the run position without assistance, take the saw to a qualified service center for repair prior to use.

## STARTING THE ENGINE

See Figures 6 - 10.

The starting method differs depending on whether the engine is cold or warm.

### **⚠ WARNING:**

Keep your body to the left of the chain line. Never straddle the saw or chain, or lean over past the chain line.

- Place the chain saw on level ground and ensure that no objects or obstructions are in the immediate vicinity that could come in contact with the bar and chain. To prevent rapid dulling of the chain, do not allow the bar and chain to contact dirt on the ground.
- Hold the front handle firmly with your left hand and put your right foot onto the base of the rear handle.

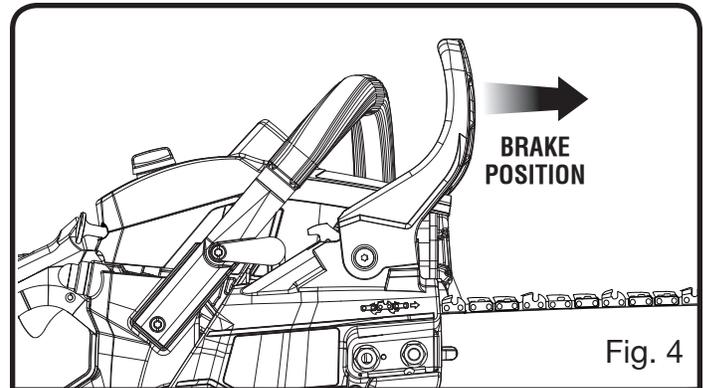


Fig. 4

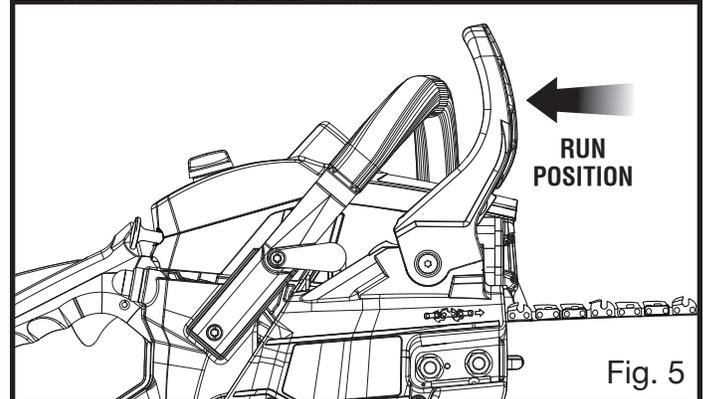


Fig. 5

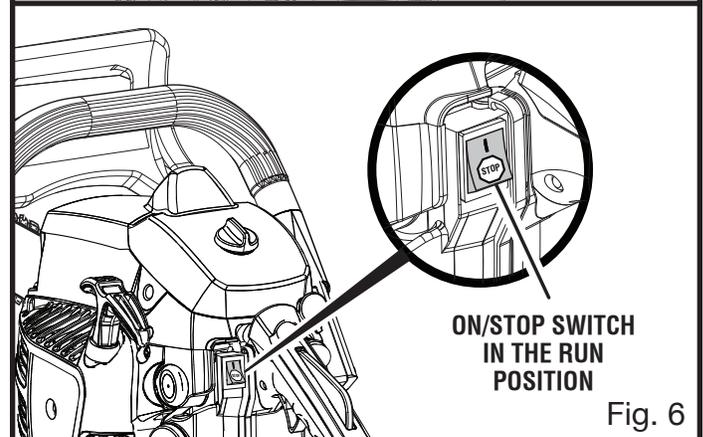


Fig. 6

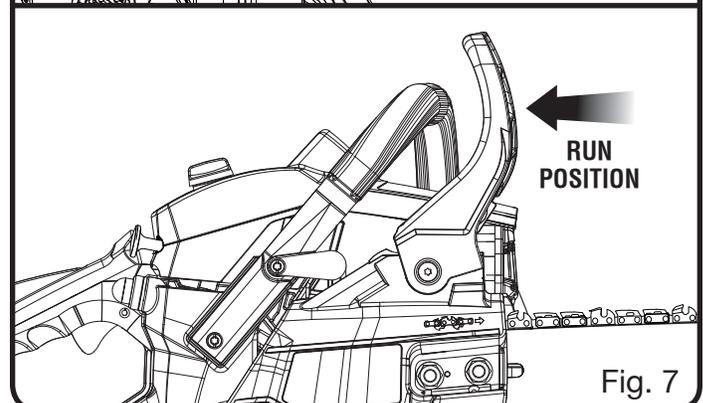


Fig. 7

# OPERATION

## To start a cold engine:

- Set the on/stop switch to the **RUN ( I )** position.
- Make sure the chain brake is in the run position by pulling back on the lever/hand guard.
- Fully press and release the primer bulb 10 times.
- Pull choke knob all the way out to **FULL CHOKE ( I→I )** position.
- Pull the starter grip and rope until the engine attempts to start, but no more than 5 times.
- Push choke knob to **HALF CHOKE ( I↔I )** position.
- Pull starter grip and rope until engine runs.

**NOTE:** Allow the saw to run in this position 15–30 seconds, depending upon the temperature.

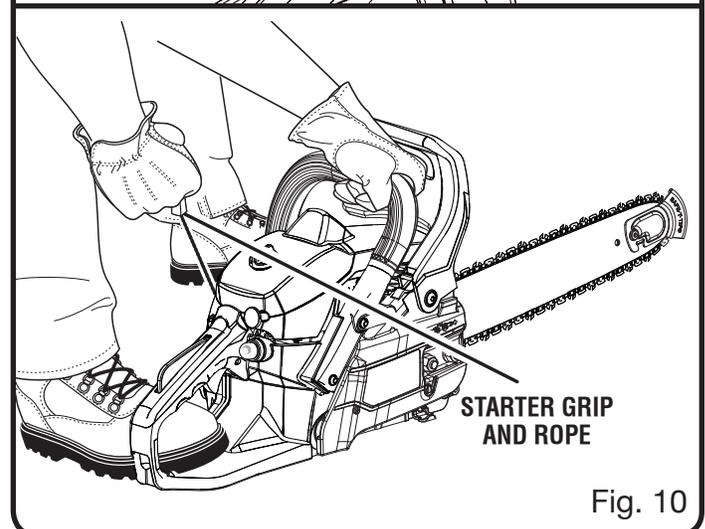
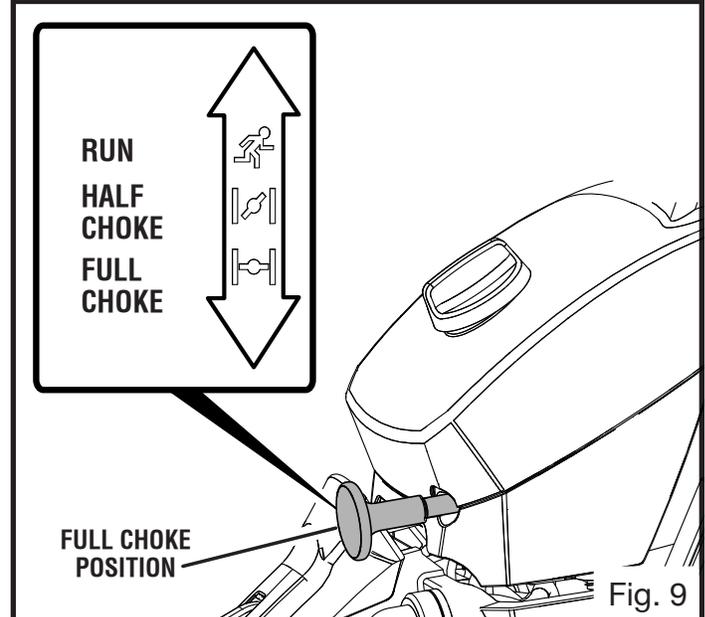
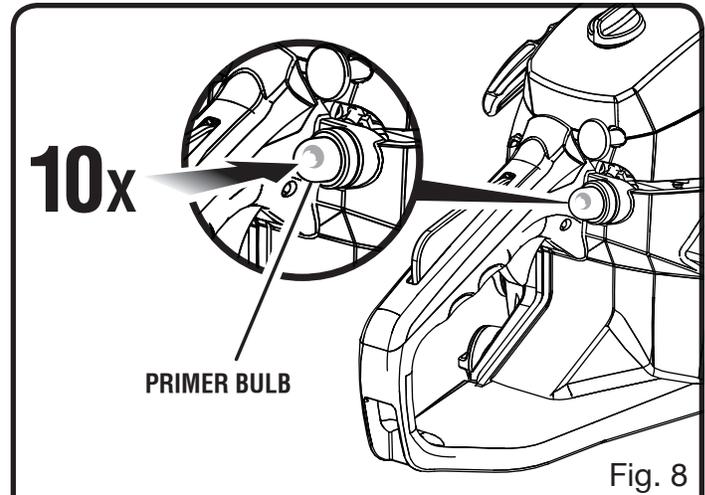
- Push the choke knob in to the **RUN ( I↔I )** position.

### **NOTICE:**

Failure to release partial throttle when chain brake lever is in the brake position will result in serious damage to the unit. Never squeeze and hold the throttle trigger while the chain brake is in the brake position.

## To start a warm engine:

- Set the on/stop switch to the **RUN ( I )** position.
- Make sure the chain brake is in the run position by pulling back on the lever/hand guard.
- Pull starter grip and rope until engine runs.



# OPERATION

## STOPPING THE ENGINE

See Figures 11 - 12.

Release the throttle trigger and let the engine return to idle. To stop the engine, move the on/stop switch to the **STOP** (STOP) position. Do not put the chain saw on the ground when the chain is still moving. For additional safety, set the chain brake when the saw is not in use.

In the event that the on/stop switch will not stop the saw, pull the choke knob out to the fully extended position (**FULL CHOKE** / |←|) and engage chain brake to stop the engine. If the on/stop switch will not stop the saw when set to the **STOP** position, have the on/stop switch repaired before using the chain saw again to prevent unsafe conditions or serious injury.

**NOTE:** When you are finished using the saw, always relieve tank pressure by loosening, then retightening, the chain oil and fuel mix caps. Allow the engine to cool before storing.

## ADJUSTING IDLE SPEED

See Figure 13.

### **⚠ WARNING:**

The chain will move around the guide bar when adjusting the idle speed. Wear all protective clothing and keep all bystanders, children, and pets at least 50 ft. away. Make adjustments with the unit supported on a stable surface so that the chain/guide bar does not contact the ground or any object. Keep all parts of your body away from the chain/guide bar and muffler. Failure to follow these instructions could result in serious personal injury.

- If the engine starts, runs, and accelerates, but will not idle, turn the idle speed screw "T" clockwise to increase idle speed.
- If the chain turns at idle, turn the idle speed screw "T" counterclockwise to reduce the idle RPM and stop the chain movement. If the saw chain still moves at idle speed, contact a qualified service center for adjustment and discontinue use until the repair is made.

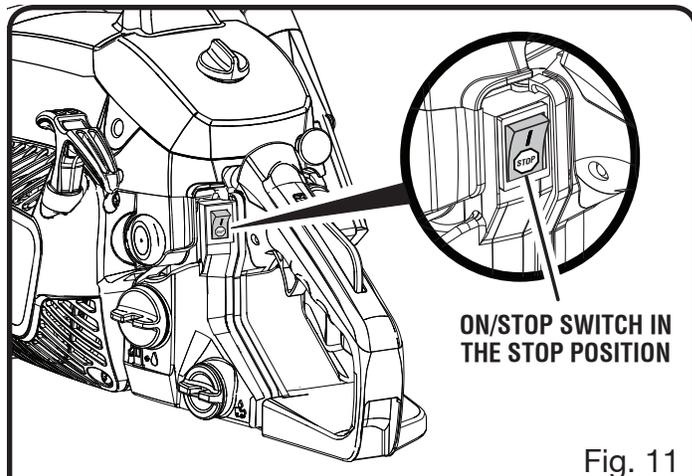


Fig. 11

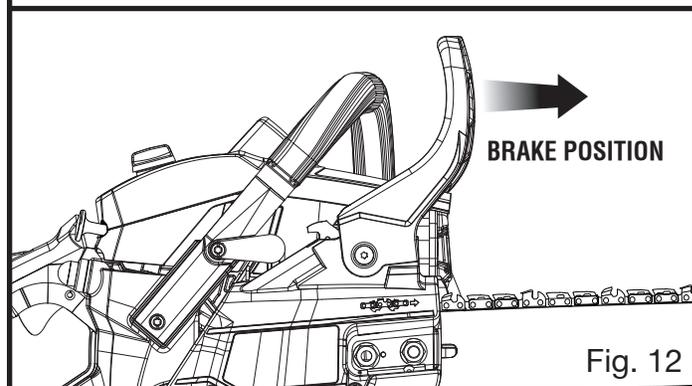


Fig. 12

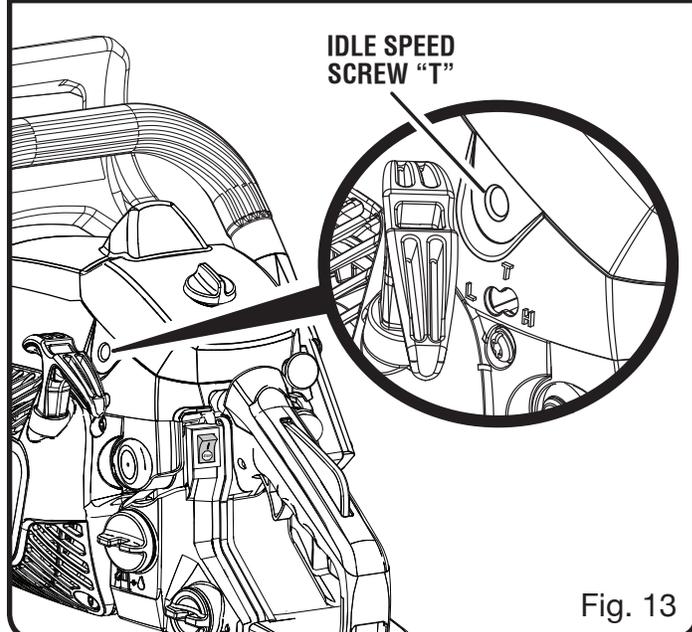


Fig. 13

# OPERATION

## **⚠ WARNING:**

THE SAW CHAIN SHOULD NEVER TURN AT IDLE. Turn the idle speed screw “T” counter-clockwise to reduce the idle RPM and stop the chain, or contact a qualified service center for adjustment and discontinue use until the repair is made. Serious personal injury may result from the saw chain turning at idle.

## **PULL AND PUSH**

See Figure 14.

The reaction force of the saw is always opposite to the direction the chain is moving. Thus, the operator must be ready to control the PULL when cutting on the bottom edge of the bar and the PUSH when cutting along the top edge.

**NOTE:** The chain saw has been fully factory tested. It is normal to find some slight lubricant residue on the saw.

## **⚠ WARNING:**

**KICKBACK** occurs when the moving chain contacts an object at the upper portion of the tip of the guide bar or when the wood closes in and pinches the saw chain in the cut. Contact at the upper portion of the tip of the guide bar can cause the chain to dig into the object and stop the chain for an instant. The result is a lightning-fast reverse reaction which kicks the guide bar up and back toward the operator. If the saw chain is pinched along the top of the guide bar, the guide bar can be driven rapidly back toward the operator. Either of these reactions can cause loss of saw control, which can result in serious injury.

Do not rely exclusively upon the safety devices built into the saw. As a chain saw user, you should take steps to keep your cutting jobs free from accident or injury. See *General Safety Rules* for more details.

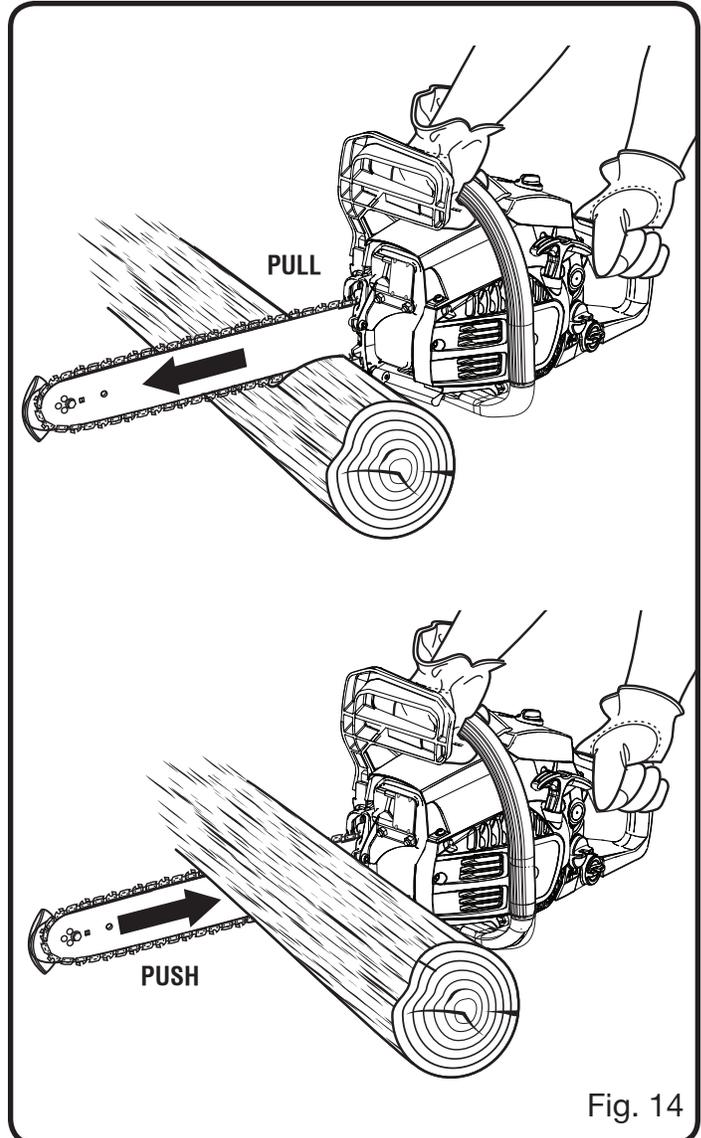


Fig. 14

# OPERATION

## KICKBACK PRECAUTIONS

See Figures 15 - 16.

Rotational kickback occurs when the moving chain contacts an object at the Kickback Danger Zone of the guide bar. The result is a lightning-fast reverse reaction, which kicks the guide bar up and back towards the operator. This reaction can cause loss of control, which can result in serious injury.

## PREPARING FOR CUTTING

### PROPER GRIP ON HANDLES

See Figure 17.

See *General Safety Rules* for appropriate safety equipment.

- Wear non-slip gloves for maximum grip and protection.
- Hold the saw firmly with both hands. Always keep your left hand on the front handle and your right hand on the rear handle so that your body is to the left of the chain line.

#### **⚠ WARNING:**

Never use a left-handed (cross-handed) grip or any stance that would place your body or arm across the chain line.

- Maintain a proper grip on the saw whenever the engine is running. The fingers should encircle the handle and the thumb is wrapped under the handlebar. This grip is least likely to be broken by a kickback or other sudden reaction of the saw. Any grip in which the thumb and fingers are on the same side of the handle is dangerous because a slight kick of the saw can cause loss of control.

### PROPER CUTTING STANCE

See Figure 18.

#### **⚠ WARNING:**

Always use the proper cutting stance described in this section. Never kneel when using the chain saw, except when felling a tree as illustrated in Figure 23. Kneeling could result in loss of stability and control of the chain saw, resulting in serious personal injury.

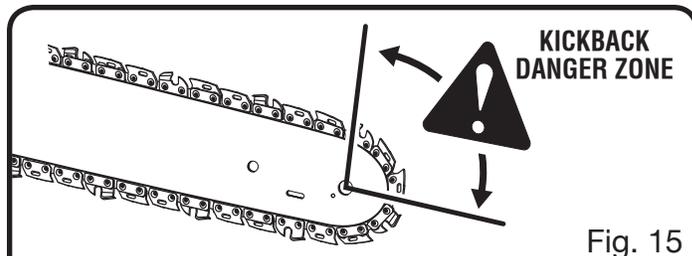


Fig. 15

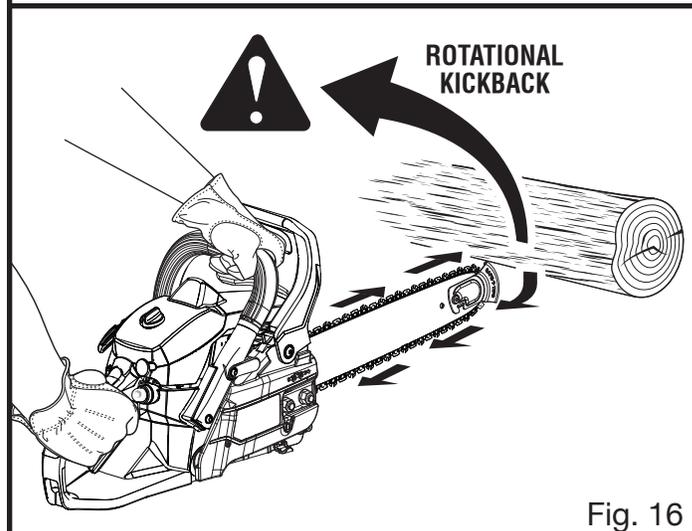


Fig. 16

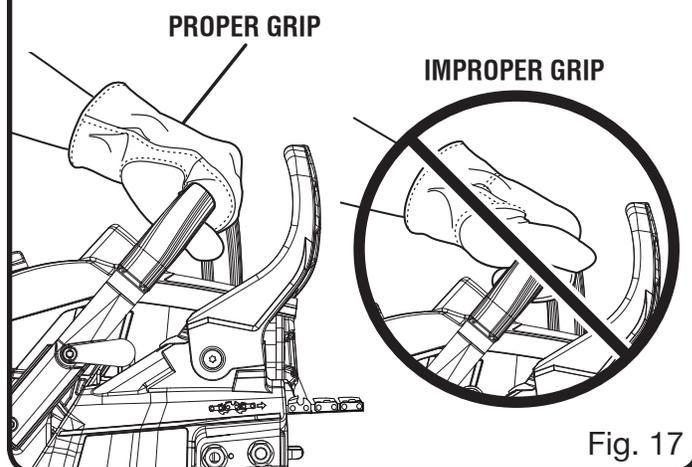
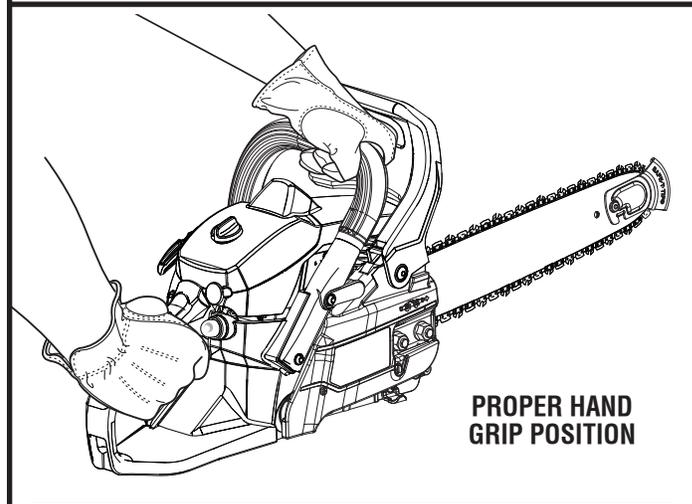


Fig. 17

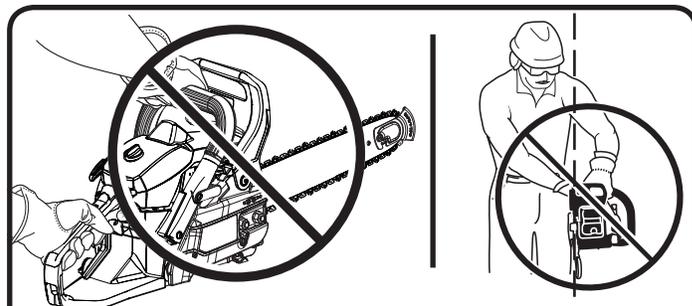
# OPERATION

- Balance your weight with both feet on solid ground.
- Keep left arm with elbow locked in a “straight arm” position to withstand any kickback force.
- Keep your body to the left of the chain line.
- Keep your thumb on underside of handlebar.

## WORK AREA PRECAUTIONS

See Figure 19.

- Cut only wood or materials made from wood; no sheet metal, no plastics, no masonry, no non-wood building materials.
- Never allow children to operate the saw. Allow no person to use this chain saw who has not read this operator’s manual or received adequate instructions for the safe and proper use of this chain saw.
- Keep everyone – helpers, bystanders, children, and animals, a **SAFE DISTANCE** from the cutting area. During felling operations, the safe distance should be a least twice the height of the largest trees in the felling area. During bucking operations, keep a minimum distance of 15 feet between workers.
- Always cut with both feet on solid ground to prevent being pulled off balance.
- Do not cut above chest height as a saw held higher is difficult to control against kickback forces.
- Do not fell trees near electrical wires or buildings. Leave this operation for professionals.
- Cut only when visibility and light are adequate for you to see clearly.



### ⚠ WARNING:

CHAIN LINE →

DO NOT operate the throttle trigger with your left hand and hold the front handle with your right hand. Never allow any part of your body to be in the chain line while operating a saw.

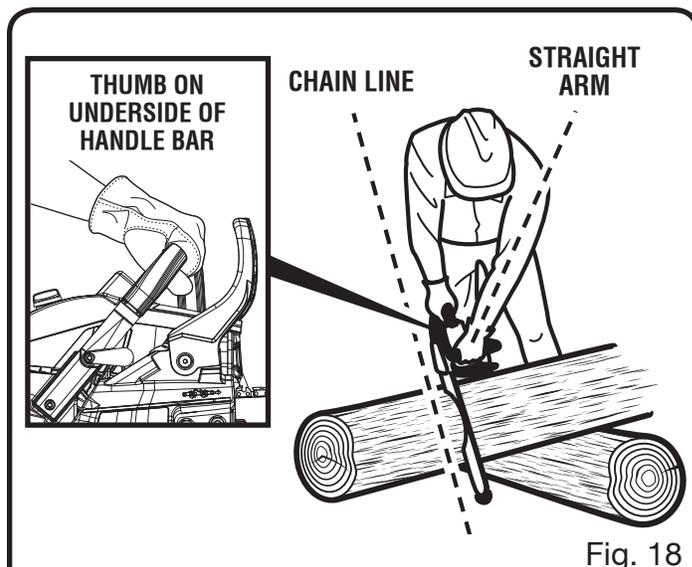


Fig. 18



Fig. 19

# OPERATION

## BASIC OPERATING/CUTTING PROCEDURES

Practice cutting a few small logs using the following technique to get the “feel” of using the saw before you begin a major sawing operation.

- Take the proper stance in front of the wood with the saw idling.
- Accelerate the engine to full throttle just before entering the cut by squeezing the throttle trigger.
- Begin cutting with the saw against the log.
- Keep the engine at full throttle the entire time you are cutting.
- Allow the chain to cut for you; exert only light downward pressure. Forcing the cut could result in damage to the bar, chain, or engine.
- Release the throttle trigger as soon as the cut is completed allowing the engine to idle. Running the saw at full throttle without a cutting load can result in unnecessary wear to the chain, bar, and engine.
- Do not put pressure on the saw at the end of the cut.

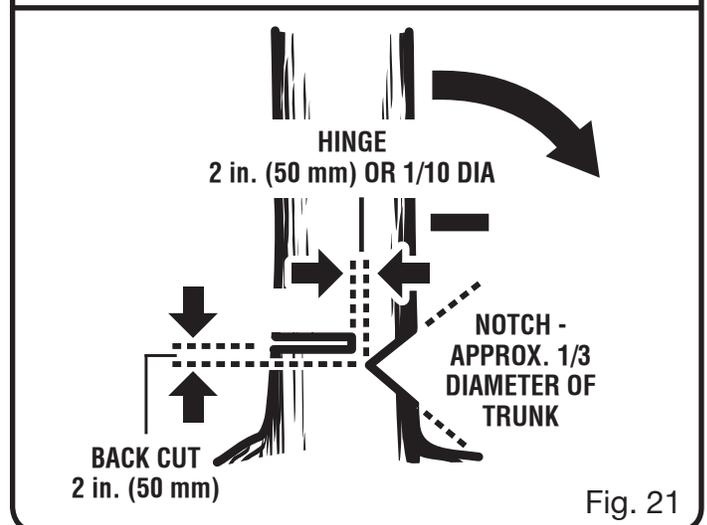
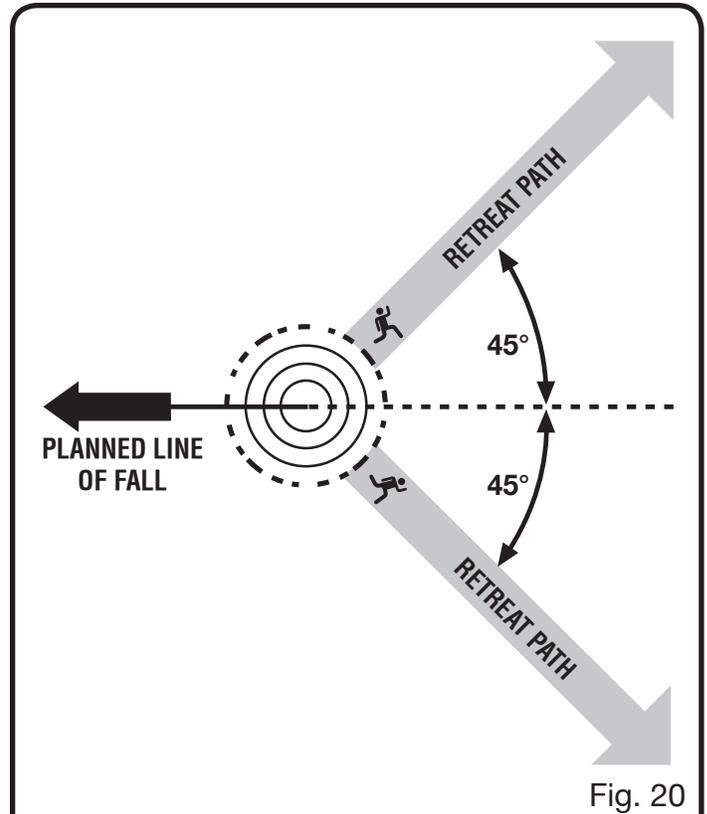
## FELLING TREES

### HAZARDOUS CONDITIONS

See Figures 20 - 23.

#### **⚠ WARNING:**

Do not fell trees during periods of high wind or heavy precipitation. Wait until the hazardous weather has ended.



# OPERATION

## **⚠ WARNING:**

Closely check for broken or dead branches, which could fall while cutting and do not cut near buildings or electrical wires if you do not know the direction of tree fall. Do not cut at night or during bad weather conditions, such as rain, snow, or strong winds, which can reduce visibility and control of the chain saw. If the tree you are felling makes contact with any utility line, you should discontinue use of the chain saw and immediately notify the utility company. Failure to follow these instructions could result in death or serious personal injury.

When felling a tree, it is important that you heed the following warnings to prevent possible serious injury.

- Do not cut down trees having an extreme lean or large trees with rotten limbs, loose bark, or hollow trunks. Have these trees pushed or dragged down with heavy equipment, then cut them up.
- Do not cut trees near electrical wires or buildings.
- Check the tree for damaged or dead branches that could fall and hit you during felling.
- Periodically glance at the top of the tree during the backcut to assure the tree is going to fall in the desired direction.
- If the tree starts to fall in the wrong direction, or if the saw gets caught or hung up during the fall, leave the saw and save yourself!
- Felling a tree – When bucking and felling operations are being performed by two or more persons, at the same time, the felling operation should be separated from the bucking operation by a distance of at least twice the height of the tree being felled. Trees should not be felled in a manner that would endanger any person, strike any utility line or cause any property damage. If the tree does make contact with any utility line, the utility company should be notified immediately.
- Before any cuts are started, pick your escape route (or routes in case the intended route is blocked); clear the immediate area around the tree and make sure there are no obstructions in

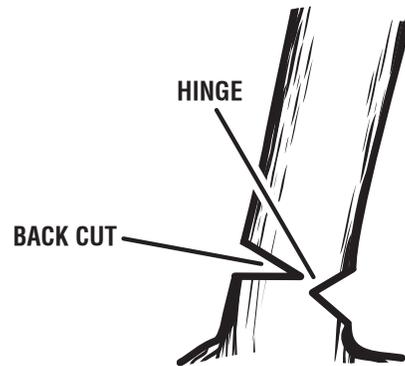


Fig. 22



Fig. 23

your planned path of retreat. Clear paths of safe retreat should extend back and diagonally (45°) to the rear of the planned line of fall. When the tree begins to fall, you should retreat away from the direction of fall along a retreat path and at least 20 feet away from the trunk in case it kicks back over the stump. *See Figure 20.*

- Before felling is started, consider the force and direction of the wind, the lean and balance of the tree, and the location of large limbs. These things influence the direction in which the tree will fall. Do not try to fell a tree along a line different from its natural line of fall.
- The chain saw operator should keep on the uphill side of the terrain as the tree is likely to roll or slide downhill after it is felled.
- Remove dirt, stones, loose bark, nails, staples, and wire from the tree where felling cuts are to be made.
- **Notched Undercut.** Cut a notch about 1/3 the diameter of the tree as shown in figure 21. Make the cuts of the notch so they intersect at a right angle to the line of fall. This notch should be cleaned out to leave a straight line. To keep the weight of the wood off the saw, always make

# OPERATION

the lower cut of the notch before the upper cut.  
See Figure 21.

- **Felling Backcut.** The backcut is always made level and horizontal, and at a minimum of 2 in. above the horizontal cut of the notch. See Figures 21 - 22.
- Never cut through to the notch. Always leave a band of wood between the notch and backcut (approximately 2 in. or 1/10 the diameter of the tree). This is called “hinge” or “hingewood.” It controls the fall of the tree and prevents slipping or twisting or shoot-back of the tree off the stump. See Figures 21 - 22.
- On large diameter trees, stop the back cut before it is deep enough for the tree to either fall or settle back on the stump. Then insert soft wooden or plastic wedges into the cut so they do not touch the chain. The wedges can be driven in, little by little, to help jack the tree over. See Figure 23.

**NOTE:** When bucking or felling with a wedge, it may be necessary to remove the SAFE-T-TIP™ anti-kickback nose guard to allow the bar to be drawn through the cut. After the cut is complete, the tip should be reinstalled immediately.

- As tree starts to fall, stop the chain saw and put it down immediately. Retreat along the cleared path, but watch the action in case something falls your way. Be alert for overhead limbs or branches that may fall and watch your footing.

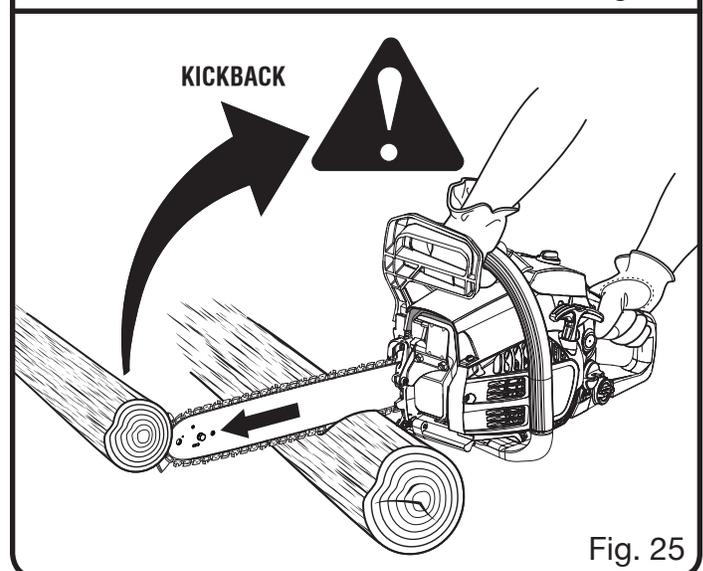
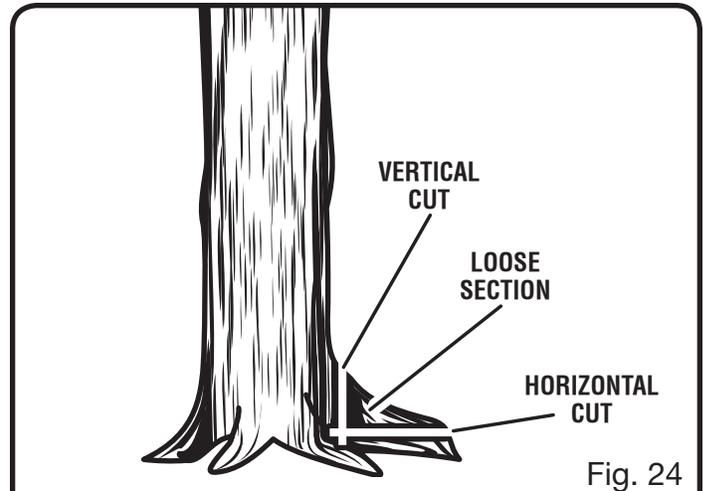
## WARNING:

Never cut through to the notch when making a backcut. The hinge controls the fall of the tree, this is the section of wood between the notch and backcut.

## REMOVING BUTTRESS ROOTS

See Figure 24.

A buttress root is a large root extending from the trunk of the tree above the ground. Remove large buttress roots prior to felling. Make the horizontal cut into the buttress first, followed by the vertical cut. Remove the resulting loose section from the work area. Follow the correct tree felling procedure as stated in **Felling Trees** after you have removed the large buttress roots.



# OPERATION

## BUCKING

See Figure 25.

Bucking is the term used for cutting a fallen tree to the desired log length.

- Cut only one log at a time.
- Support small logs on a saw horse or another log while bucking.
- Keep a clear cutting area. Make sure that no objects can contact the guide bar nose and chain during cutting, this can cause kickback. To avoid the danger, keep the SAFE-T-TIP™ anti-kickback device attached while cutting. Refer to **Kickback** in the *Specific Safety Rules* section of this manual for more information.
- When bucking on a slope, always stand on the uphill side of the log. To maintain complete control of the chain saw when cutting through the log, release the cutting pressure near the end of the cut without relaxing your grip on the chain saw handles. Do not let the chain contact the ground. After completing the cut, wait for the saw chain to stop before you move the chain saw. Always stop the motor before moving from tree to tree.

## BUCKING WITH A WEDGE

See Figure 26.

If the wood diameter is large enough for you to insert a soft bucking wedge without touching the chain, you should use the wedge to hold the cut open to prevent pinching.

**NOTE:** When bucking or felling with a wedge, you may need to remove the SAFE-T-TIP™ anti-kickback device to allow the bar to be drawn through the cut. After you complete the cut, reinstall the tip.

## BUCKING LOGS UNDER STRESS

See Figure 27.

Make the first bucking cut  $\frac{1}{3}$  of the way through the log and finish with a  $\frac{2}{3}$  cut on the opposite side. As you cut the log, it will tend to bend. The saw can become pinched or hung in the log if you make the first cut deeper than  $\frac{1}{3}$  of the diameter of the log.

Give special attention to logs under stress to prevent the bar and chain from pinching.

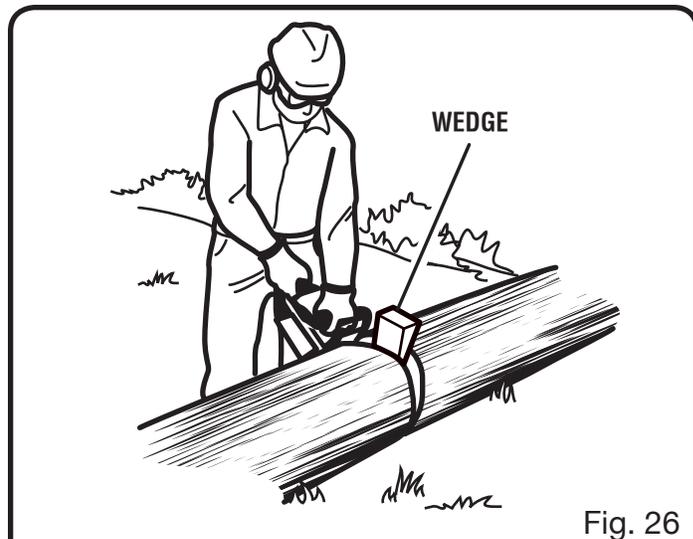


Fig. 26

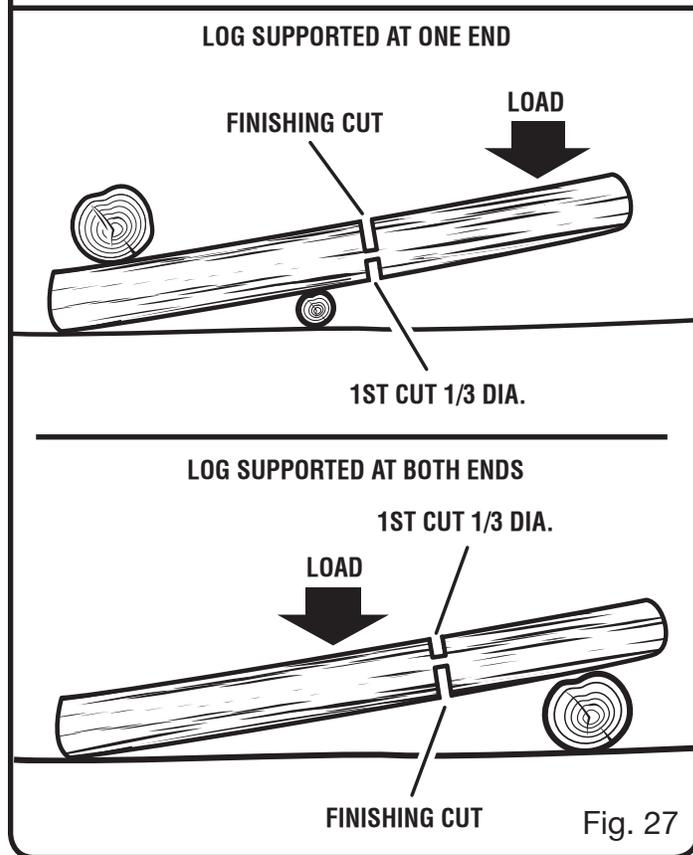


Fig. 27

# OPERATION

## OVERBUCKING

See Figure 28.

Begin on the top side of the log with the bottom of the saw against the log; exert light pressure downward. Note that the saw will tend to pull away from you.

## UNDERBUCKING

See Figure 29.

Begin on the underside of the log with the top of the saw against the log; exert light pressure upward. During underbucking, the saw will tend to push back at you. Be prepared for this reaction and hold the saw firmly to maintain control.

## LIMBING AND PRUNING

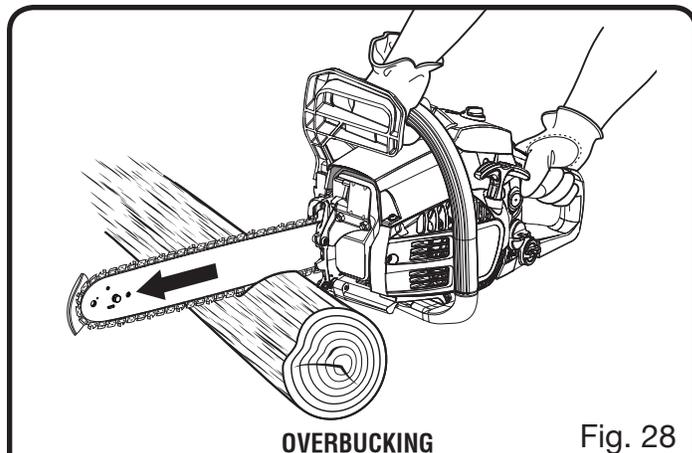
See Figures 30 - 31.

- Work slowly, keeping both hands on the saw with a firm grip. Maintain secure footing and balance.
- Keep the tree between you and the chain while limbing.
- Do not cut from a ladder. This is extremely dangerous. Leave this operation for professionals.
- Do not cut above chest height. A saw held higher than chest height is difficult to control against kickback.

### **⚠ WARNING:**

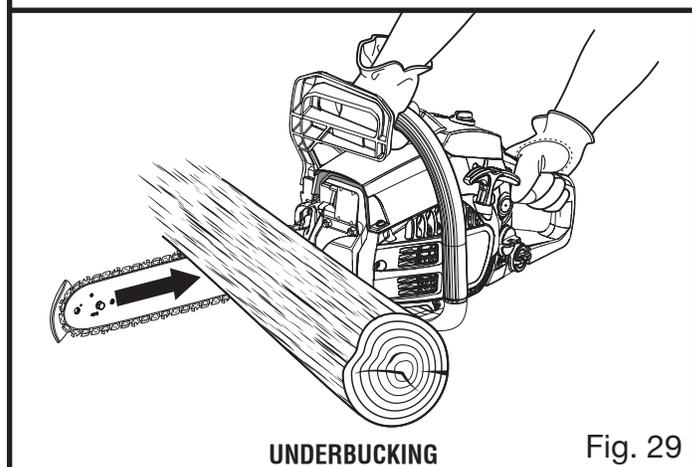
Never climb into a tree to limb or prune. Do not stand on ladders, platforms, a log, or in any position which can cause you to lose your balance or control of the saw and cause death or serious personal injury.

- When pruning trees it is important not to make the flush cut next to the main limb or trunk until you have cut off the limb further out to reduce the weight. This prevents stripping the bark from the main limb or trunk.
  - Underbuck the branch 1/3 through for your first cut.
  - Overbuck the branch to drop it.
  - Finish by cutting smoothly and neatly against the main limb or trunk so the bark will grow back to seal the wound.



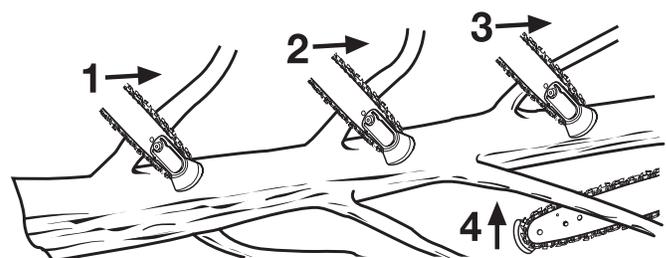
OVERBUCKING

Fig. 28



UNDERBUCKING

Fig. 29



CUT LIMBS ONE AT A TIME AND LEAVE SUPPORT LIMBS UNDER TREE UNTIL LOG IS CUT

Fig. 30

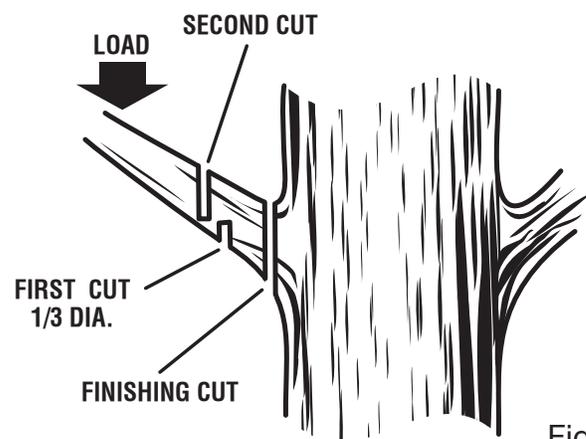


Fig. 31

# OPERATION

## **⚠ WARNING:**

If the limbs to be pruned are above shoulder height, hire a professional to perform the pruning. Cutting above shoulder height could result in an accident, causing serious personal injury.

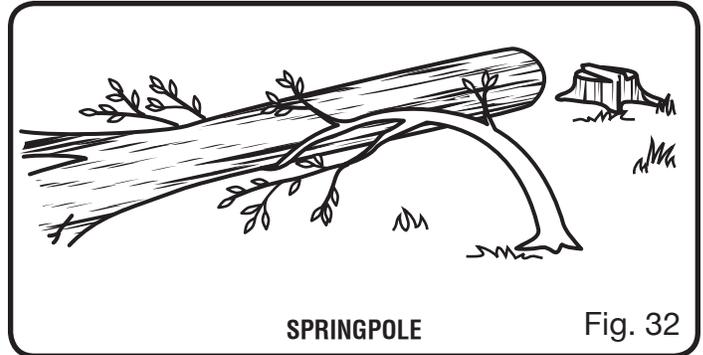
## **CUTTING SPRINGPOLES**

See *Figure 32*.

A springpole is any log, branch, rooted stump, or sapling which is bent under tension by other wood so that it springs back if the wood holding it is cut or removed. On a fallen tree, a rooted stump has a high potential of springing back to the upright position during the bucking cut to separate the log from the stump. Watch out for springpoles — they are dangerous.

## **⚠ WARNING:**

Springpoles are dangerous and could strike the operator, causing the operator to lose control of the chain saw. This could result in severe or fatal injury to the operator.



# MAINTENANCE

Normal maintenance, replacement or repair of emission control devices and systems may be performed by any qualified repair establishment or individual with original or equivalent parts. Warranty and recall repairs must be performed by an authorized service center; please contact customer service for assistance.

## **WARNING:**

Make sure the on/stop switch is in the **STOP** “” position and the chain has stopped before performing any maintenance on the saw. Failure to do so can result in serious personal injuries.

## **WARNING:**

Muffler surfaces are very hot during and after operation of the chain saw; keep all body parts away from the muffler. Serious burns can occur if contact is made with the muffler.

## **WARNING:**

When servicing, use only recommended or equivalent replacement parts. Use of any other parts may create a hazard or cause product damage.

## **WARNING:**

Always wear eye protection with side shields marked to comply with ANSI Z87.1, along with hearing and head protection. Failure to do so could result in objects being thrown into your eyes and other possible serious injuries.

## **NOTICE:**

Periodically inspect the entire product for damaged, missing, or loose parts such as screws, nuts, bolts, caps, etc. Tighten securely all fasteners and caps and do not operate this product until all missing or damaged parts are replaced. Please contact customer service or a qualified service center for assistance.

## GENERAL MAINTENANCE

Avoid using solvents when cleaning plastic parts. Most plastics are susceptible to damage from various types of commercial solvents and may be damaged by their use. Use clean cloths to remove dirt, dust, lubricant, grease, etc.

## **WARNING:**

Do not at any time let brake fluids, gasoline, petroleum-based products, penetrating oils, etc., come in contact with plastic parts. Chemicals can damage, weaken or destroy plastic which may result in serious personal injury.

## REPLACING THE GUIDE BAR AND CHAIN

See Figures 33 - 42.

## **DANGER:**

Never start the engine before installing the guide bar, chain, drivecase cover, and clutch drum. Without all these parts in place, the clutch can fly off or explode, exposing the user to possible death or serious injury.

## **WARNING:**

To avoid serious personal injury, read and understand all the safety instructions in this section.

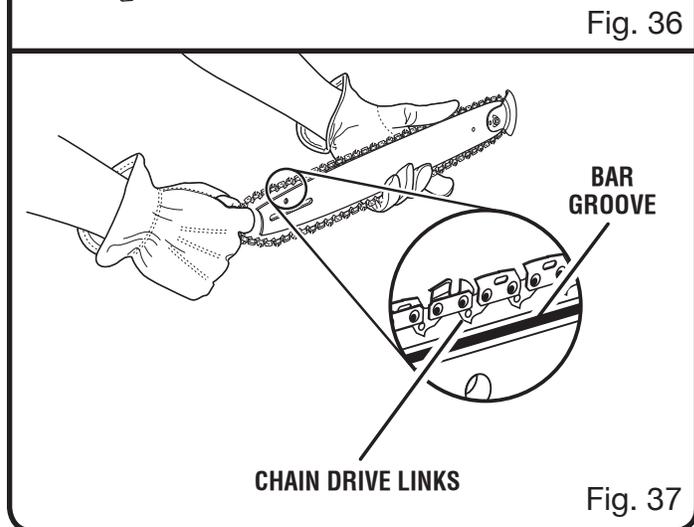
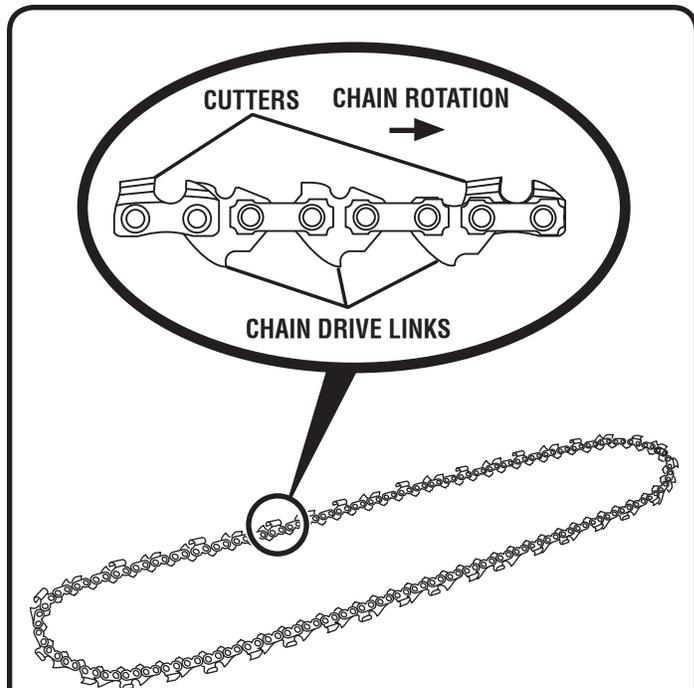
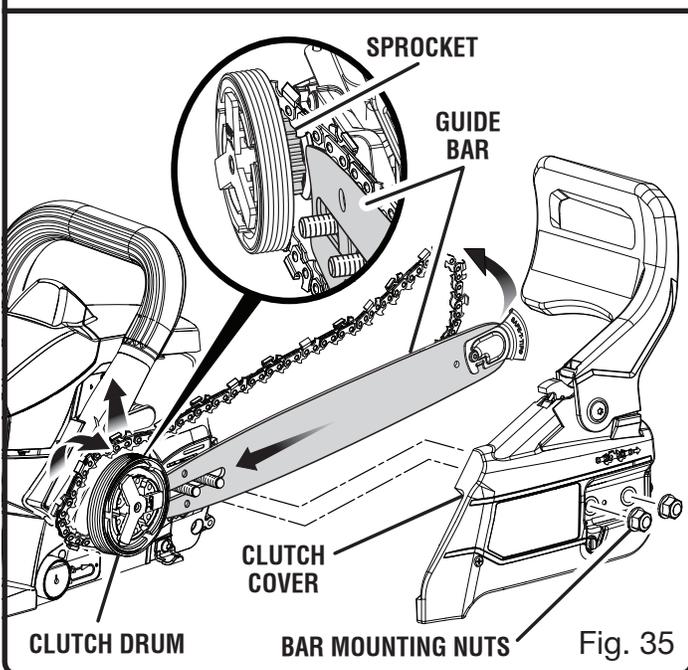
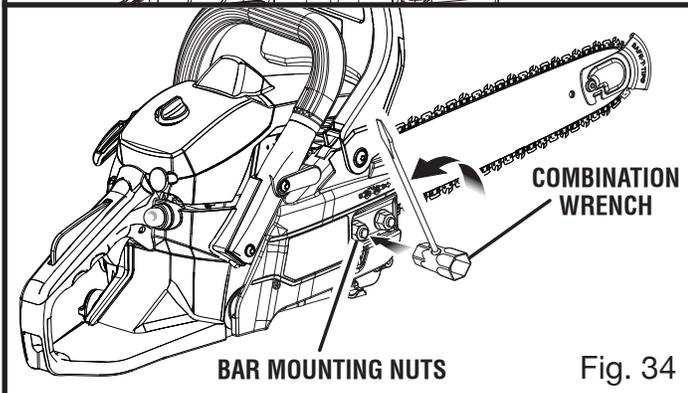
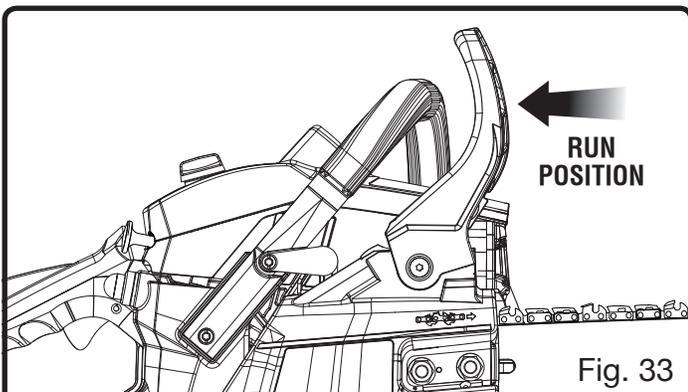
- Always place the switch in the **STOP** “” position before you work on the saw.
- Make sure the chain brake is not set by pulling the chain brake lever/hand guard towards the front handle to the run position.

**NOTE:** When replacing the guide bar and chain, always use the specified bar and chain listed in the **Bar and Chain Combinations** section later in this manual.

- Wear gloves when handling the chain and bar. These components are sharp and may contain burrs.
- Remove the bar mounting nuts using the combination wrench provided.

# MAINTENANCE

- Remove the clutch cover.
- Slide the bar toward the sprocket allowing slack in the chain.
- From the back side of the bar, lift the old chain off the nose and then remove it from the top of the bar, off the sprocket and over the clutch drum.



# MAINTENANCE

- Lay out the new saw chain in a loop and straighten any kinks. The cutters should face in the direction of chain rotation. If they face backwards, turn the loop over.
- Fit the bar flush against the mounting surface so that the bar studs are in the long slot of the bar.
- Position the chain over the nose as shown so it is behind the bar. Holding the chain in position, place the left end of the loop over the clutch drum and around the sprocket.

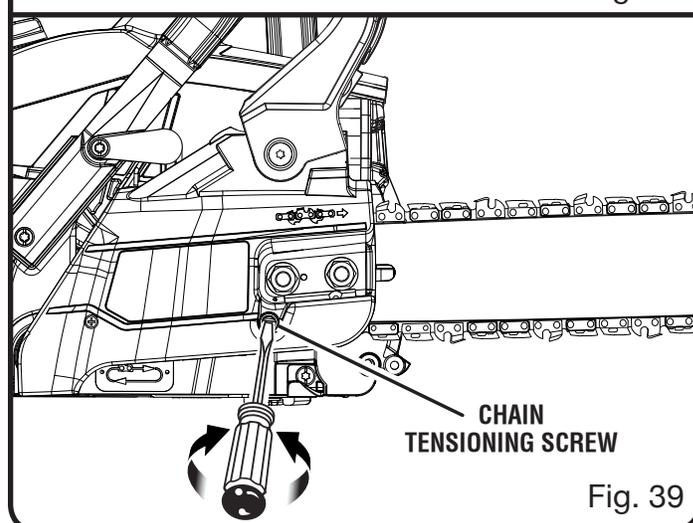
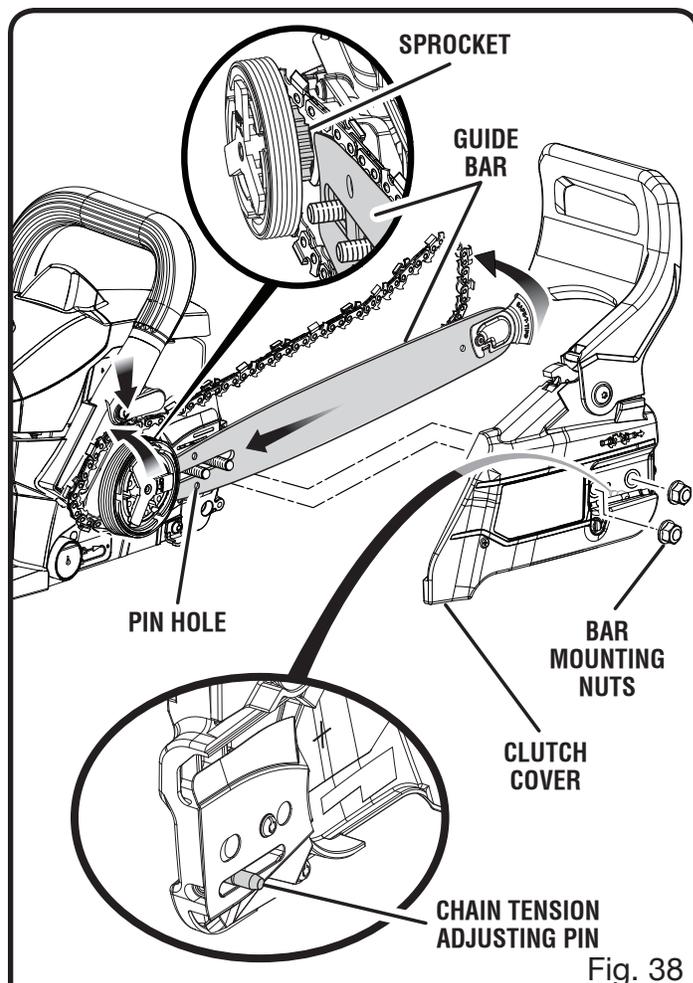
**NOTE:** Be sure the chain rests in the chain catcher to ensure alignment of the drive links in the bar groove.

- Place the chain drive links into the bar groove as shown. Slide the top of the chain toward the nose until the drive links fit into the bar groove.
- Slide the bar away from the sprocket allowing the chain to tighten. Be sure to keep the bar flush against the mounting surface.
- Replace the clutch cover ensuring that the adjusting pin in the clutch cover is in the bar chain tensioning pin hole and that both bar studs are securely in their respective holes in the clutch cover.

**NOTE:** The adjusting pin may need to be slightly repositioned with the chain tensioning screw so that it is aligned with the position of the bar chain tensioning pin hole.

- Replace the clutch cover and bar mounting nuts.
- Finger-tighten the bar mounting nuts. The bar must be free to move for tension adjustment.
- Remove all slack from the chain by turning the chain tensioning screw clockwise until the chain seats snugly against the bar with the drive links in the bar groove.
- Lift the tip of the guide bar up to check for sag.
- Release the tip of the guide bar and turn the chain tensioning screw 1/2 turn clockwise. Repeat this process until sag does not exist.
- **Hold the tip of the guide bar up and tighten the bar mounting nuts securely.**

The chain is correctly tensioned when there is no sag on the underside of the guide bar, the chain is



snug, but it can be turned by hand without binding. Ensure that the chain brake is not set.

**NOTE:** If chain is too tight, it will not rotate. Loosen the bar nuts slightly and turn the tension adjuster 1/4 turn counterclockwise. Lift the tip of the guide bar up and retighten the bar nuts securely. Ensure that the chain will rotate without binding.

# MAINTENANCE

## ADJUSTING THE CHAIN TENSION

See Figures 43 - 45.

### **⚠ WARNING:**

Never touch or adjust the chain while the engine is running. The saw chain is very sharp. Always wear protective gloves when performing maintenance on the chain.

- Stop the engine before setting the chain tension.
- Make sure the bar mounting nuts are loosened to finger tight.
- Turn the chain tensioning screw clockwise to tension the chain.

**NOTE:** A cold chain is correctly tensioned when there is no slack on the underside of the guide bar, the chain is snug, and it can be turned by hand without binding.

- Retension the chain whenever the flats on the tie straps hang out of the bar groove.

**NOTE:** During normal saw operation, the temperature of the chain increases. The tie straps of a correctly tensioned warm chain will hang approximately .050 in. out of the bar groove. The tip of the combination wrench can be used as a guide to help determine the correct warm chain tension.

**NOTE:** New chains tend to stretch; check the chain tension frequently and tension as required.

### **⚠ CAUTION:**

A chain tensioned while warm may be too tight upon cooling. Check the “cold tension” before next use.

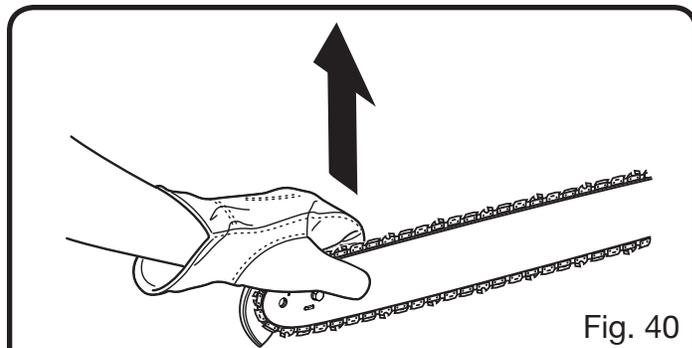


Fig. 40

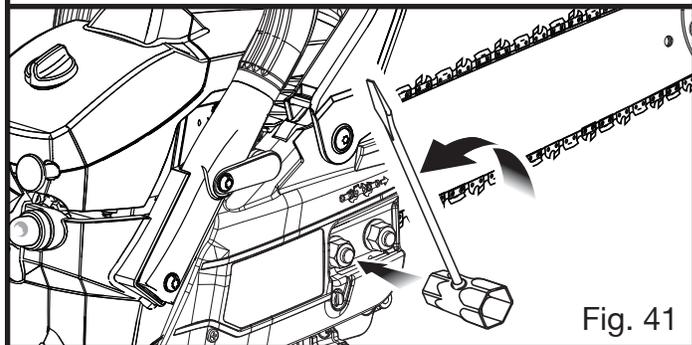


Fig. 41

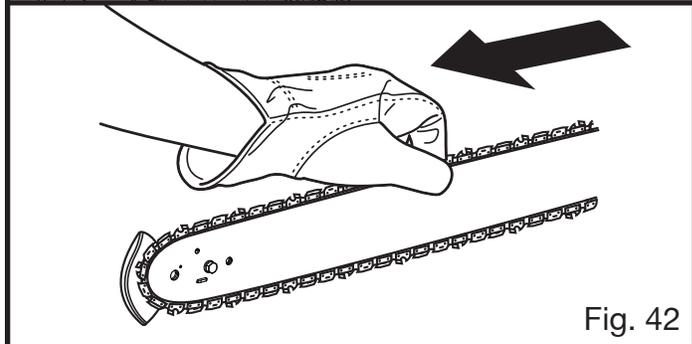


Fig. 42

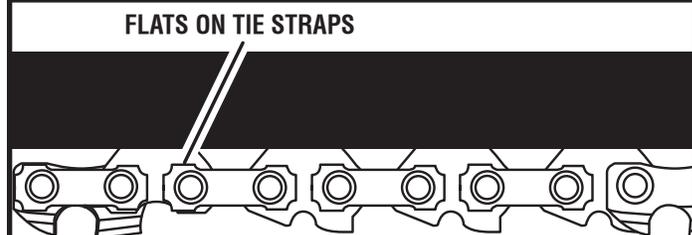


Fig. 43

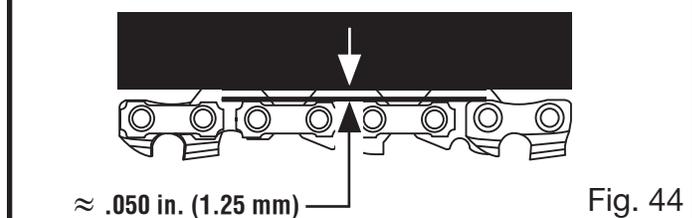


Fig. 44

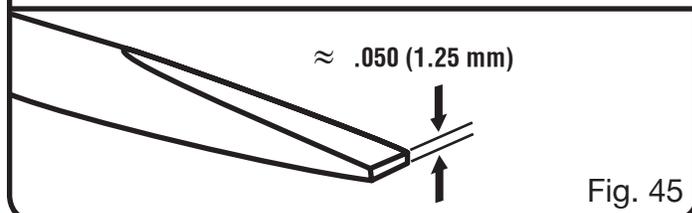


Fig. 45

# MAINTENANCE

## CHAIN MAINTENANCE

See Figures 46 - 47.

### ⚠ CAUTION:

Check that the switch is in the **STOP** “STOP” position before you work on the saw to avoid accidental starting that may result in possible injury.

Use only a low-kickback chain on this saw. This chain provides kickback reduction when properly maintained.

For smooth and fast cutting, maintain the chain properly.

The chain requires sharpening when the wood chips are small and powdery, the chain must be forced through the wood during cutting, or the chain cuts to one side. During maintenance of the chain, consider the following:

- Improper filing angle of the side plate can increase the risk of severe kickback.
- Depth gauge clearance.
  - Too low increases the potential for kickback.
  - Not low enough decreases cutting ability.
- If the cutter teeth hit hard objects such as nails and stones, or are abraded by mud or sand on the wood, have a qualified service center sharpen the chain.

**NOTE:** Inspect the drive sprocket for wear or damage when replacing the chain. If signs of wear or damage are present in the areas indicated, have the drive sprocket replaced by a qualified service center.

**NOTE:** If you do not fully understand the correct procedure for sharpening the chain after reading the instructions that follow, have the saw chain sharpened by a qualified service center or replace with a recommended low-kickback chain.

DEPTH GAUGE CLEARANCE



.025 in.  
(0.6 mm)

Fig. 46

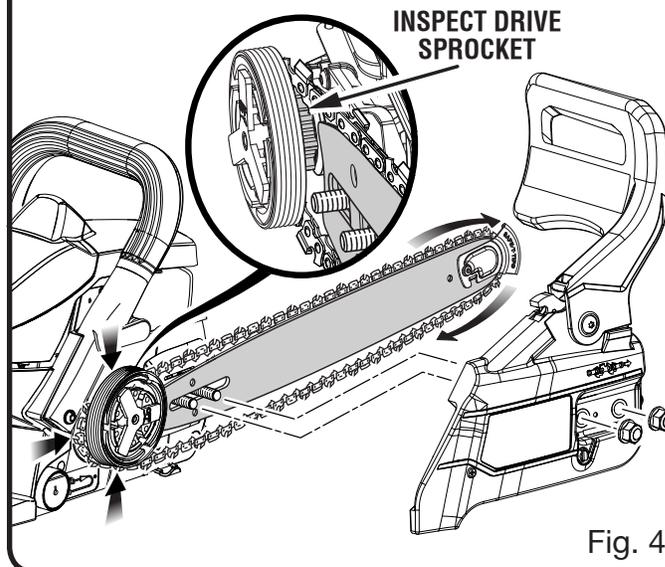


Fig. 47

# MAINTENANCE

## SHARPENING THE CUTTERS

See Figures 48 - 51.

Be careful to file all cutters to the specified angles and to the same length, as fast cutting can only be obtained when all cutters are uniform.

### **⚠ WARNING:**

The saw chain is very sharp. Always wear protective gloves when performing maintenance to the chain to prevent serious personal injury.

- Tension the chain prior to sharpening. Refer to **Adjusting The Chain Tension**.
- Use a 5/32 in. diameter round file and holder. Do all of your filing at the midpoint of the bar.
- Keep the file level with the top plate of the tooth. Do not let the file dip or rock.
- Using light but firm pressure. Stroke towards the front corner of the tooth.
- Lift the file away from the steel on each return stroke.
- Put a few firm strokes on every tooth. File all left hand cutters in one direction. Then move to the other side and file the right hand cutters in the opposite direction.
- Remove filings from the file with a wire brush.

### **NOTICE:**

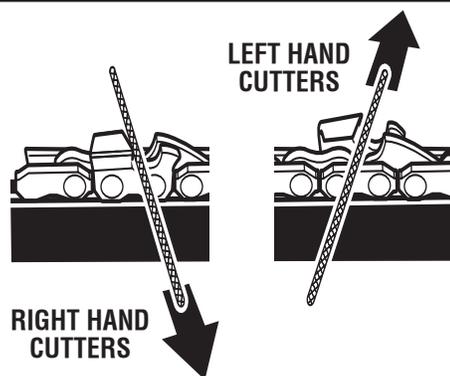
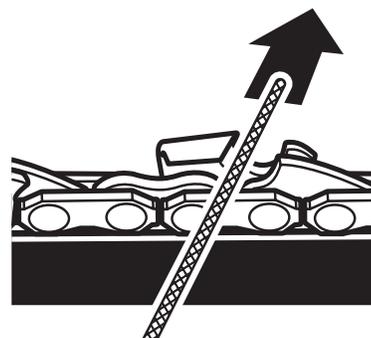
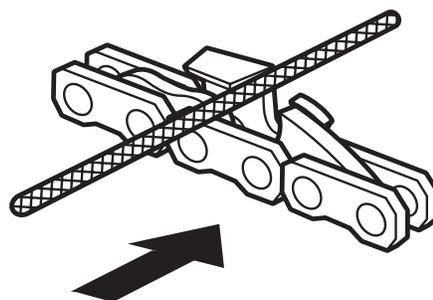
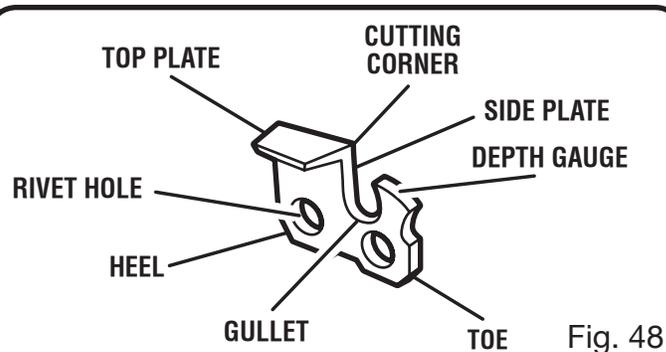
A dull or improperly sharpened chain can cause excessive engine speed during cutting, which may result in severe engine damage.

### **⚠ WARNING:**

Improper chain sharpening increases the potential of kickback.

### **⚠ WARNING:**

Failure to replace or repair a damaged chain can cause serious injury.



# MAINTENANCE

## TOP PLATE FILING ANGLE

See Figure 52.

- **CORRECT 30°** – file holders are marked with guide marks to align file properly to produce correct top plate angle.

## SIDE PLATE ANGLE

See Figure 53.

- **CORRECT 80°** – Produced automatically if you use the correct diameter file in the file holder.
- **HOO** – “Grabs” and dulls quickly; increases the potential of KICKBACK. Results from using a file with a diameter too small or a file held too low.
- **BACKWARD SLOPE** – Needs too much feed pressure; causes excessive wear to the bar and chain. Results from using a file with a diameter too large or file held too high.

## MAINTAINING DEPTH GAUGE CLEARANCE

See Figures 54 - 56.

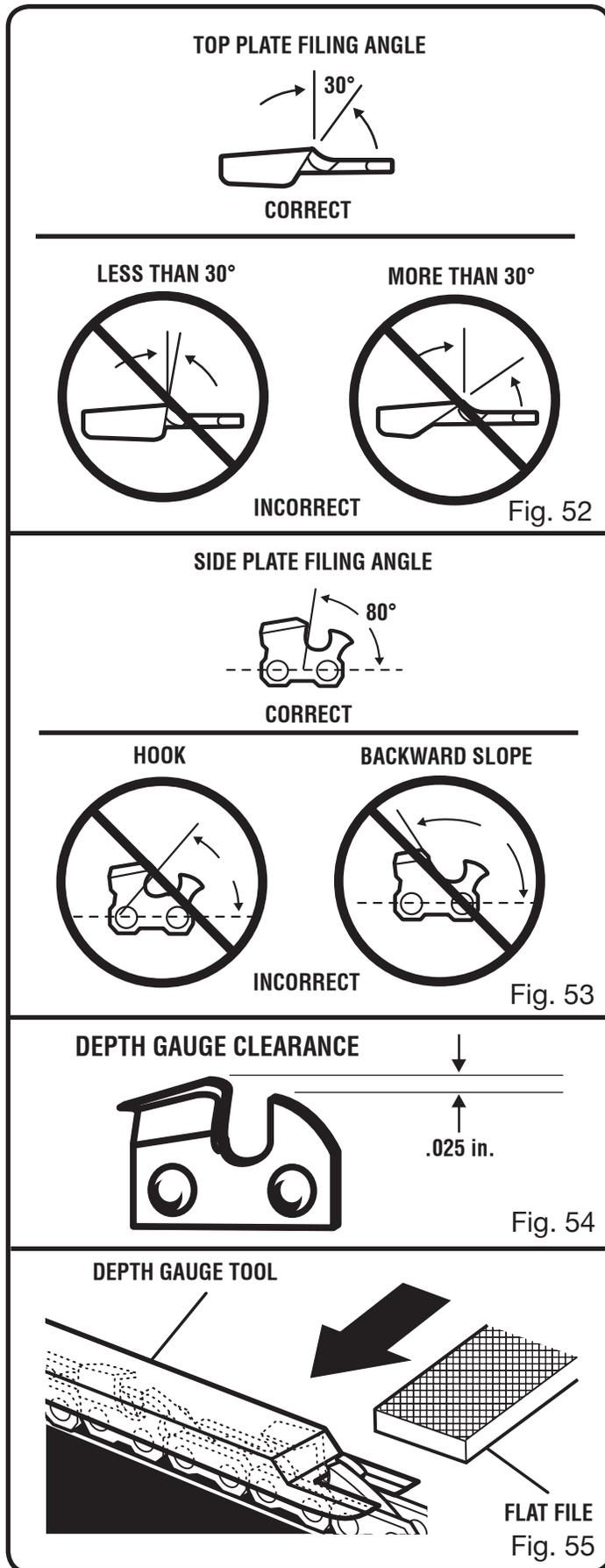
- Maintain the depth gauge at a clearance of .025 in. Use a depth gauge tool for checking the depth gauge clearances.
- Every time the chain is filed, check the depth gauge clearance.
- Use a flat file and a depth gauge tool to lower all gauges uniformly. Use a .025 in. depth gauge tool. After lowering each depth gauge, restore original shape by rounding the front. Be careful not to damage adjoining drive links with the edge of the file.
- Depth gauges must be adjusted with the flat file in the same direction the adjoining cutter was filed with the round file. Use care not to contact cutter face with flat file when adjusting depth gauges.

## MAINTAINING THE GUIDE BAR

See Figure 57.

### ⚠ CAUTION:

Make sure the chain has stopped before you do any work on the saw.



# MAINTENANCE

Proper maintenance will maximize the useful life of the guide bar.

## Each day of use:

Clean the bar and check for wear and damage. Feathering or burring of the bar rails is a normal process of bar wear, but such faults should be smoothed with a file as soon as they occur.

## Each week of use:

- Reverse the guide bar on the saw to distribute the wear.
- Lubricate the socket at the end of the guide bar using a grease syringe in the lubricating hole.
- Turn the guide bar and check that the lubrication holes and chain groove are free from impurities.

**A bar with any of the following faults should be replaced immediately:**

- Wear inside the bar rails that permits the chain to lay over sideways
- Bent guide bar
- Cracked or broken rails
- Spread rails

## MOUNTING THE SAFE-T-TIP™ NOSE GUARD

See Figures 58 - 59.

- Stop the engine and disconnect the spark plug wire.
- Mount the SAFE-T-TIP™ on the bar nose.
- Fit the locking tab in the recessed slot in the guide bar.
- Tighten the screw with wrench until snug.
- From the snug position, tighten the screw an additional 3/4 of a turn using a wrench.

## MAINTAINING THE SAFE-T-TIP™ NOSE GUARD

See Figures 58 - 59.

### **⚠ CAUTION:**

Make sure the chain has stopped before you do any work on the saw.

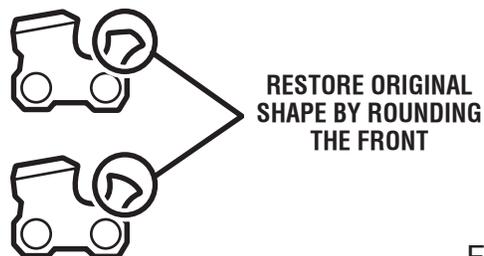


Fig. 56

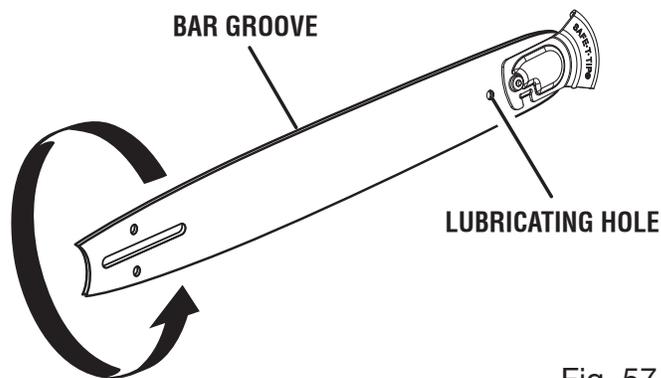


Fig. 57

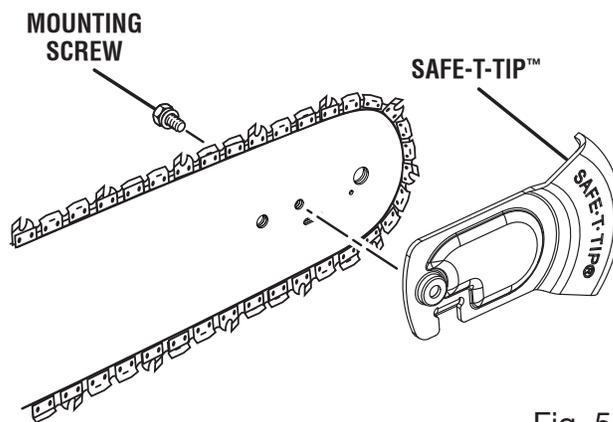


Fig. 58

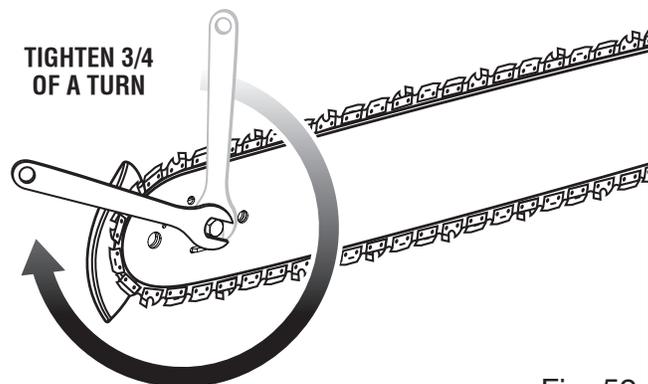


Fig. 59

# MAINTENANCE

## **⚠ WARNING:**

Although the guide bar comes with a SAFE-T-TIP™ antikickback device already installed, check the tightness of the mounting screw before each use.

Use the following instructions to tighten the mounting screw of the nose guard. These are specially hardened screws. If you cannot install the screw tightly, replace both the screw and the SAFE-T-TIP™ before further operation.

**NOTE:** Do not replace the screw with an ordinary screw. Use only identical replacement parts from the manufacturer when replacing parts.

In addition to preventing chain contact with solid objects at the nose of the bar, the SAFE-T-TIP™ also helps keep the chain away from abrasive surfaces, such as the ground. Keep it on the right hand side of the bar where it will be between the chain and the ground during flush-with-ground cutting.

The mounting screw requires a 5/16 in. wrench (or adjustable wrench) to achieve the recommended torque of 35 to 45 in.lb. A torque within this range can be achieved by using the following method.

- Tighten the screw with wrench until snug.
- From the snug position, tighten the screw an additional 3/4 of a turn using a wrench.

## **CLEANING THE AIR FILTER**

See Figures 60 - 61.

- Activate chain brake.
- Remove the air filter cover by rotating the knob counterclockwise.
- Remove the air filter.
- Tap a corner of the filter against a hard surface to dislodge dust from the filter surface.
- Using a flat blade screwdriver, pry apart the filter cover.
- To clean the mesh area of the air filter, blow compressed air on the inside of the air filter to send dust and dirt toward the outside.

**NOTE:** Always wear eye protection when using compressed air to avoid eye injury.

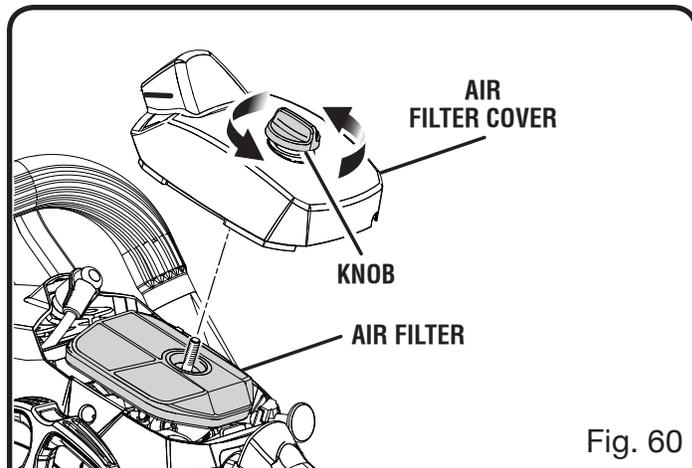


Fig. 60

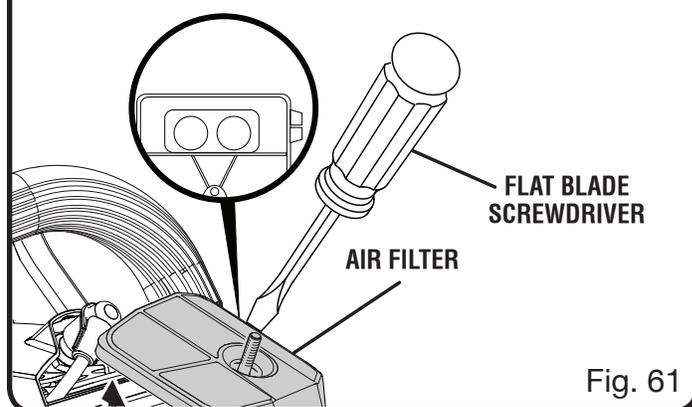


Fig. 61

- Reassemble the filter halves by pressing around the rim until the filter clicks back together.
- Reinstall the air filter.

## **NOTICE:**

Make sure the air filter is correctly placed in the air filter cover before reassembly. Never run the engine without the air filter, as this may cause serious damage to the chain saw.

- Reinstall the air filter cover and rotate knob clockwise to secure.

# MAINTENANCE

## ADJUSTING THE CARBURETOR

See Figures 62 - 64.

### **⚠ WARNING:**

The chain will move around the guide bar when adjusting the idle speed. Wear all protective clothing and keep all bystanders, children, and pets at least 50 ft. away. Make adjustments with the unit supported on a stable surface so that the chain/guide bar does not contact the ground or any object. Keep all parts of your body away from the chain/guide bar and muffler. Failure to follow these instructions could result in serious personal injury.

### **Before adjusting the carburetor:**

- Use a brush or compressed air to clean the starter cover vents.
- Clean the air filter. Refer to **Cleaning the Air Filter** in the *Maintenance* section of this manual.
- Allow the engine to warm up prior to adjustment of engine idle speed.

### **⚠ WARNING:**

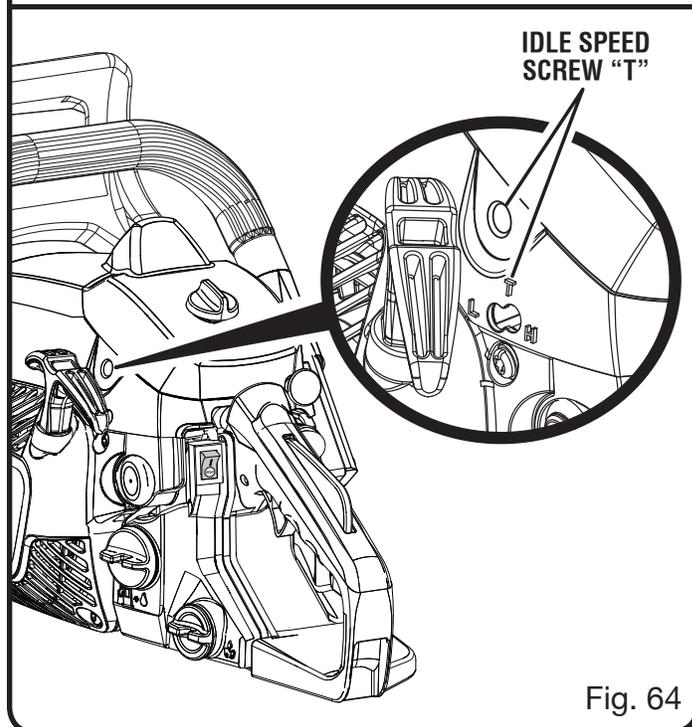
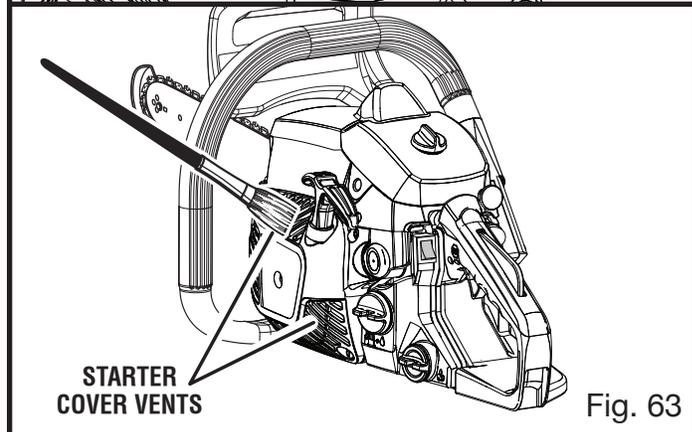
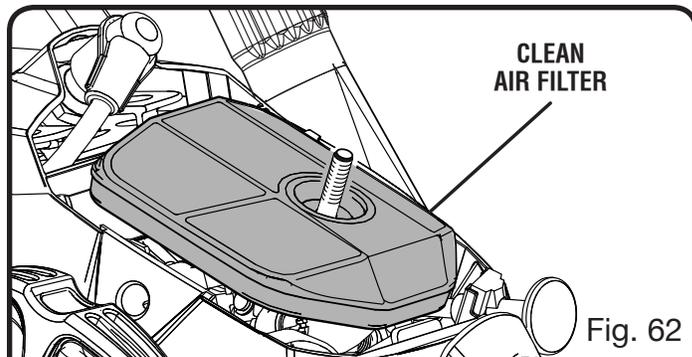
Weather conditions and altitude may affect carburetion. Do not allow bystanders close to the chain saw while adjusting the carburetor.

**Idle Speed Adjustment** — The idle speed adjustment controls how much the throttle valve stays open when the throttle trigger is released. To adjust:

- Turn idle speed screw “T” clockwise to increase idle speed.
- Turn idle speed screw “T” counterclockwise to decrease idle speed.

### **⚠ WARNING:**

THE SAW CHAIN SHOULD NEVER TURN AT IDLE. Serious personal injury may result from the saw chain turning at idle.



## CLEANING THE STARTER ASSEMBLY

See Figure 63.

Use a brush or compressed air to keep the cooling vents of the starter assembly free and clean of debris.

# MAINTENANCE

## CARBURETOR COLD WEATHER MECHANISM

See Figures 65 - 66.

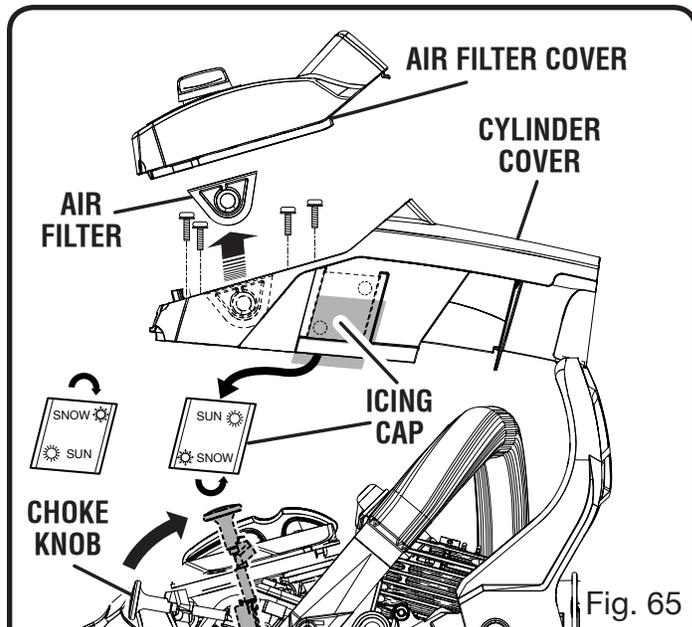
The chain saw is designed with a ventilation hatch on the right side of the cylinder cover which allows warm air to be supplied from the engine to the carburetor to help prevent icing under colder operating conditions. Operating the chain saw in temperatures from 32°F to 41°F (0°C to 5°C) at times of high humidity may result in ice forming within the carburetor. This can cause the output power of the engine to be reduced and/or the engine to fail to operate smoothly. When operating under these circumstances, the chain saw should be placed in cold weather mode before use.

### To switch to cold weather mode:

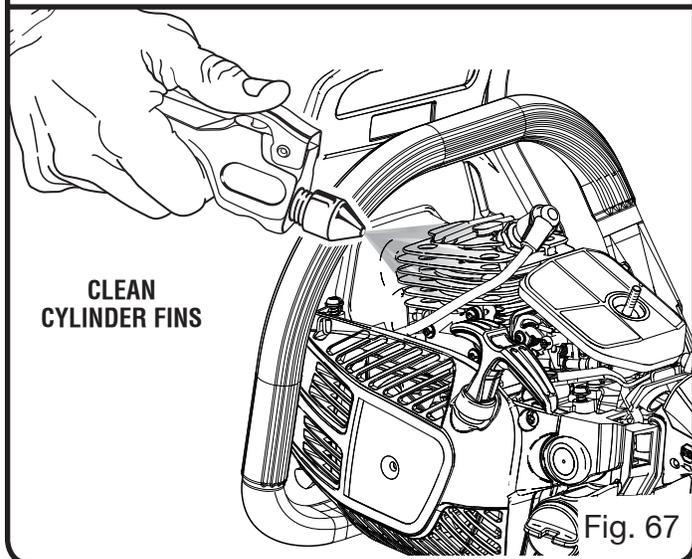
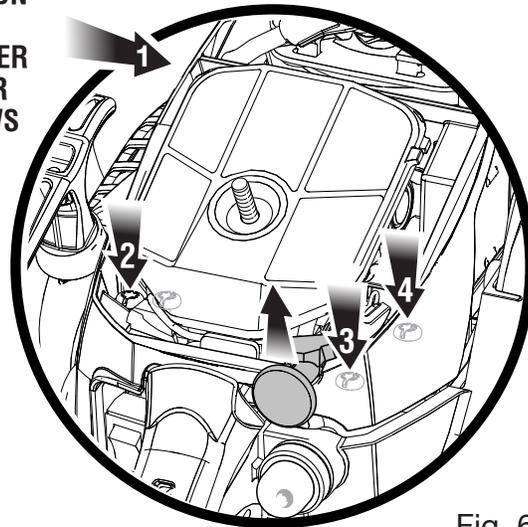
- Place the on/stop switch in the OFF (STOP) position.
- Remove the air filter cover.
- Remove the air filter.
- Lift choke knob up to remove from the cylinder cover.
- Loosen the four screws holding the cylinder cover in place. Remove the cylinder cover.
- Remove the icing cap located on the right-hand side of the cylinder cover by pressing down on it with your finger.
- Adjust the icing cap so that the “snow” mark faces upward, then return it to its original position in the cylinder cover.
- Replace the cylinder cover and reinstall screws to secure.
- Replace choke knob, air filter, and air filter cover.

### NOTICE:

Always return the unit to normal operating mode if there is no chance of icing occurring. Continuing to use the chain saw in cold weather mode when temperatures have risen and returned to normal may result in the engine not starting properly or in the engine not operating at its normal speed.



### LOCATION OF CYLINDER COVER SCREWS



# MAINTENANCE

## CLEANING THE ENGINE

See Figures 67 - 68.

Clean the cylinder fins and flywheel fins with compressed air periodically. Dangerous overheating of the engine may occur due to impurities on the cylinder.

### **⚠ WARNING:**

Never run the saw without all the parts, including the clutch cover and starter housing, securely in place.

Because parts can fracture and pose a danger of thrown objects, leave repairs of the flywheel and clutch to factory trained qualified service center personnel.

**NOTE:** If you notice a power loss with the gas-powered tool, the exhaust port and muffler may be blocked with carbon deposits. These deposits may need to be removed to restore performance.

## CHECKING THE FUEL FILTER

See Figure 69.

Check the fuel filter periodically. Replace it if contaminated or damaged.

## REPLACING THE SPARK PLUG

See Figure 70.

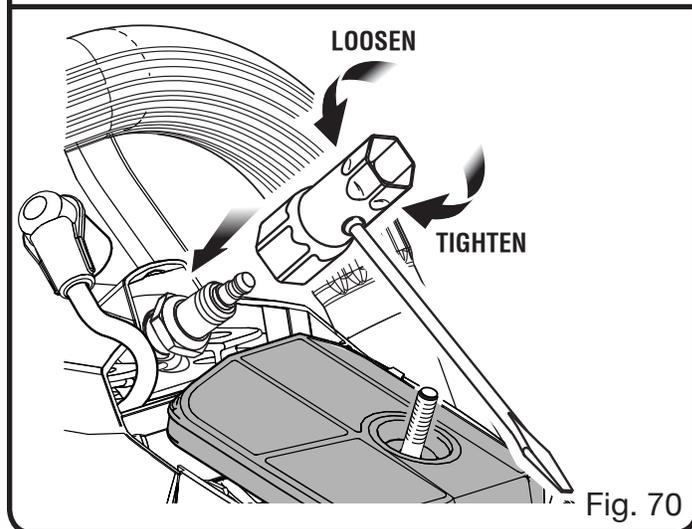
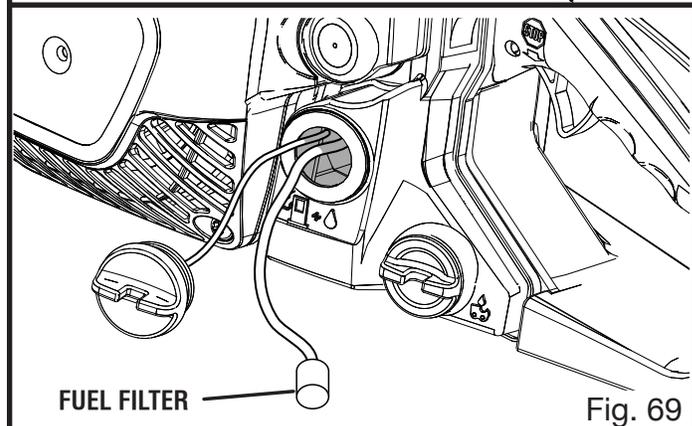
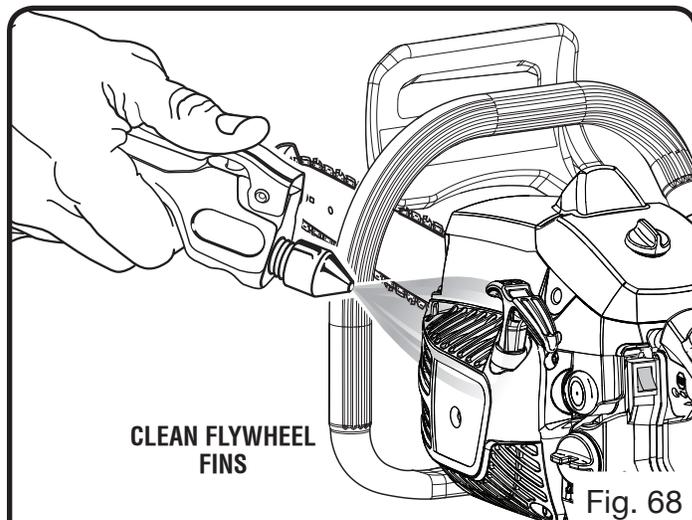
This engine uses a Bosch WSR6F or Torch L7RTC spark plug with .025 in. (0,64 mm) electrode gap. Use an exact replacement and replace every 50 hours or more frequently, if necessary.

### **NOTICE:**

Allow engine to cool before removing spark plug. Removing spark plug from a hot engine can cause serious damage to the chain saw.

- Loosen the spark plug by turning it counter-clockwise with a wrench.
- Remove the spark plug.
- Hand thread the new spark plug, turning it clockwise. Tighten securely with wrench.

**NOTE:** Be careful not to cross-thread the spark plug. Cross-threading will damage the cylinder.



# MAINTENANCE

## CLEANING THE EXHAUST PORT, REPLACING MUFFLER AND SPARK ARRESTOR

### NOTICE:

This product is equipped with a spark arrestor that has been evaluated by the USDA Forest Service; however, product users must comply with Federal, State, and local fire prevention regulations. Check with appropriate authorities. Contact customer service or a qualified service center to purchase a replacement spark arrestor.

**NOTE:** Depending on the type of fuel used, the type and amount of lubricant used, and/or your operating conditions, the exhaust port, muffler, and/or spark arrestor screen may become blocked with carbon deposits. If you notice a power loss with your gas powered tool, you may need to remove these deposits to restore performance. We highly recommend that only qualified service technicians perform this service.

The spark arrestor must be replaced every 50 hours to ensure proper performance of your product. Spark arrestors may be in different locations depending on the model purchased. Please contact your nearest service dealer for the location of the spark arrestor for your model.

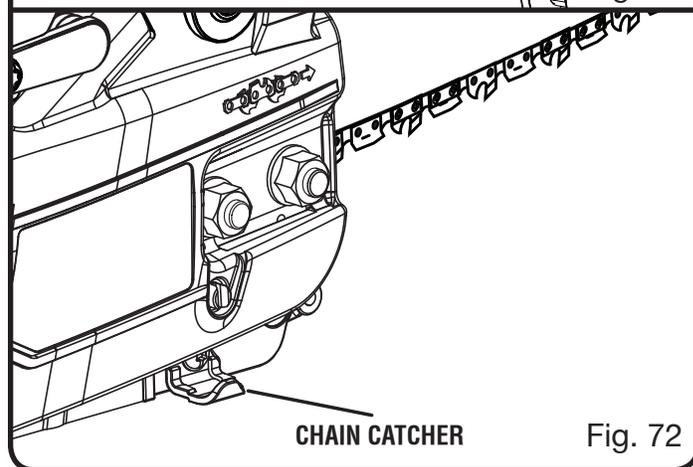
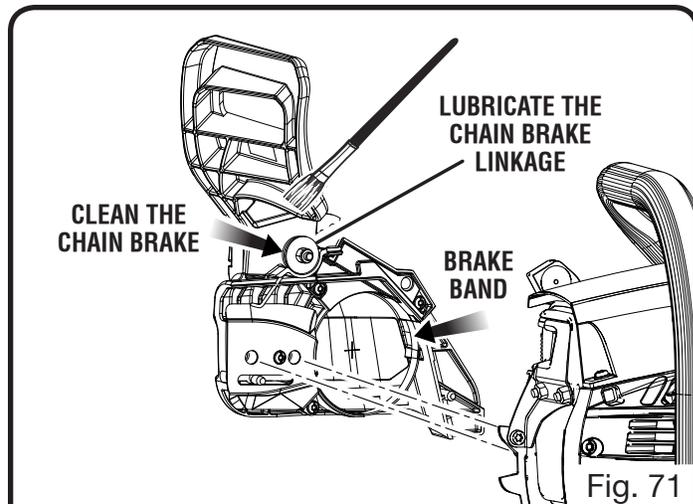
### ⚠ WARNING:

Never run the chain saw without a muffler equipped with a spark arrestor in place. Failure to do so could result in a fire that could cause serious personal injury.

## INSPECTING AND CLEANING CHAIN BRAKE

See Figures 71 - 72.

- Remove the clutch cover and clean the chain brake components. Check wear on the brake band and replace if worn or deformed. The band thickness should not be less than 0.024 in., or worn halfway through.



- Always keep the chain brake mechanism clean and lightly lubricate the linkage.
- Always test the chain brake performance after servicing or cleaning. Refer to **Operating Chain Brake** for additional information.
- Check the chain catcher and replace if damaged.

### ⚠ WARNING:

Even with daily cleaning of the mechanism, the dependability of a chain brake to perform under field conditions cannot be certified. Keep the SAFE-T-TIP™ nose guard on the saw's guide bar and use proper cutting techniques.

## STORING THE CHAIN SAW (1 MONTH OR LONGER)

- Drain all fuel from tank into a container approved for gasoline.

# MAINTENANCE

- Run the engine until it stops. This will remove all fuel-lubricant mix that could become stale and leave varnish and gum in the fuel system.
- Squeeze primer bulb several times to purge fuel from carburetor.
- Drain all bar and chain lubricant from tank into a container approved for lubricant.
- Clean all foreign material from the saw.
- Store it in a well-ventilated place that is inaccessible to children.

**NOTE:** Keep away from corrosive agents such as garden chemicals and de-icing salts.

Abide by all federal and local regulations for the safe storage and handling of gasoline. Excess fuel

should be used in other 2-cycle engine powered equipment.

## HIGH ALTITUDE ENGINE OPERATION

Your engine is configured for operation below 2000 feet altitude at the factory. Your engine must be reconfigured for operation above 2000 feet altitude. Operating the engine with the wrong engine configuration at a given altitude may increase its emissions, decrease fuel efficiency, degrade performance, and cause irreversible damage. Engines configured for high altitude operation cannot be operated in standard altitude conditions. A qualified service center should ensure that your engine is properly configured for your location.

### MAINTENANCE SCHEDULE

Maintenance Part	Inspect for Damage Before Each Use	Clean Every 5 Hours	Replace Every 25 Hours or Yearly	Replace Every 50 Hours
*CATALYTIC MUFFLER ASSEMBLY .....				X
SPARK SCREEN .....				X
*AIR FILTER ASSY				
includes:				
Filter.....		X		
*CARBURETOR ASSY				
includes:				
Gaskets .....	X			
*FUEL TANK ASSY				
includes:				
Fuel Lines .....	X			
Fuel Cap .....	X			
Fuel Filter.....			X	
*IGNITION ASSY				
includes:				
Spark Plug.....			X	
* <b>NOTICE:</b> THE USE OF EMISSION CONTROL COMPONENTS OTHER THAN THOSE DESIGNED FOR THIS UNIT IS A VIOLATION OF FEDERAL LAW.				

## BAR AND CHAIN COMBINATIONS

Chain specifications: 3/8 in. pitch, .050 in. chain gauge, low-profile skip tooth

Length of Bar	Guide Bar Part Number	Chain Part Number	Drive Links
14 in.	311752001	Power Care Y52	52
16 in.	311752002	Power Care Y56	56

# TROUBLESHOOTING

Problem	Possible Cause	Solution
Engine will not start. [Make sure on/stop switch is in the <b>RUN (I)</b> position.]	<p>No spark.</p> <p>Engine is flooded.</p>	<p>Check spark. Remove air filter cover. Remove spark plug from cylinder. Reattach the spark plug wire and lay spark plug on top of cylinder with the metal part of plug touching the cylinder. Pull the starter grip and watch for spark at spark plug tip. If there is no spark, repeat test with a new spark plug.</p> <p>With the on/stop switch in the OFF position, remove spark plug. Move choke knob to RUN position (pushed in completely) and pull starter grip 15 to 20 times. This will clear excess fuel from engine. Clean and reinstall spark plug. Set on/stop switch to RUN (I) position. Push and fully release primer bulb 7 times. Pull starter three times with choke knob at RUN. If engine does not start, move choke knob to HALF CHOKE and repeat normal starting procedure. If engine still fails to start, repeat procedure with a new spark plug.</p>
Engine starts but will not accelerate properly.	Carburetor requires “ <b>L</b> ” (Low Jet) adjustment.	Contact a qualified service center for carburetor adjustment.
Engine starts, then dies.	Carburetor requires “ <b>L</b> ” (Low Jet) adjustment.	Contact a qualified service center for carburetor adjustment.
Engine starts but will not run properly at high speed.	Carburetor requires “ <b>H</b> ” (High Jet) adjustment.	Contact a qualified service center for carburetor adjustment.
Engine does not reach full speed and/or emits excessive smoke.	<p>Lubricant/fuel mixture incorrect.</p> <p>Air filter is dirty.</p> <p>Carburetor requires “<b>H</b>” (High Jet) adjustment.</p>	<p>Use fresh fuel and the correct 2-cycle lubricant mix ratio.</p> <p>Clean air filter. Refer to <b>Cleaning the Air Filter</b> in the <i>Maintenance</i> section of this manual.</p> <p>Contact a qualified service center for carburetor adjustment.</p>
Engine starts, runs, and accelerates but will not idle.	Carburetor requires adjustment to idle speed.	Turn idle speed screw “ <b>T</b> ” clockwise to increase idle speed. Refer to <b>Adjusting the Carburetor</b> in the <i>Maintenance</i> section of this manual.

# TROUBLESHOOTING

Problem	Possible Cause	Solution
Chain turns at idle.	<p>Carburetor requires adjustment to idle speed.</p> <p>Air leak in the intake system.</p>	<p>Turn idle speed screw “T” counterclockwise to decrease speed. Refer to <b>Adjusting the Carburetor</b> in the <i>Maintenance</i> section of this manual.</p> <p>Contact a qualified service center for a rebuild kit.</p>
Bar and chain running hot and smoking.	<p>Chain oil tank empty.</p> <p>Chain tension is too tight.</p> <p>Oiler is not functioning.</p> <p>Clogged lubricant passages.</p>	<p>Oil tank should be filled every time fuel tank is filled.</p> <p>Tension chain per instructions in <b>Adjusting the Chain Tension</b> in the <i>Maintenance</i> section of this manual.</p> <p>Run at half throttle 30 to 45 seconds. Stop saw and check for oil dripping from SAFE-T-TIP™ and guide bar. If lubricant is present, the chain may be dull or bar may be damaged. If no lubricant is on the SAFE-T-TIP™, contact a qualified service center.</p> <p>Remove the clutch cover and guide bar plate and clean lubricant passages with a stiff-bristle brush.</p>
Engine starts and runs, but chain is not rotating.	<p>Chain brake is engaged.</p> <p>Chain tension is too tight.</p> <p>Guide bar and chain assembled incorrectly.</p> <p>Guide bar and/or chain are damaged.</p> <p>Drive sprocket teeth damaged</p>	<p>Release chain brake. Refer to <b>Operating the Chain Brake</b> in the <i>Operation</i> section of this manual.</p> <p>Tension chain per instructions in <b>Adjusting the Chain Tension</b> in the <i>Maintenance</i> section of this manual.</p> <p>Refer to <b>Replacing the Guide Bar and Chain</b> in the <i>Maintenance</i> section of this manual</p> <p>Inspect guide bar and chain for damage.</p> <p>Contact a qualified service center for drive sprocket replacement.</p>

If problem persists after trying the above solutions, contact customer service or a qualified service center for assistance.

## **NOTICE:**

As the equipment owner, you are responsible for the performance of the required maintenance listed in the *Maintenance* section. It is recommended that you retain all receipts covering maintenance on your equipment. Neglecting or failing to perform the required maintenance may increase emissions, decrease fuel efficiency, degrade performance, cause irreversible engine damage and/or void your warranty.

# WARRANTY

## LIMITED WARRANTY STATEMENT

Techtronic Industries North America, Inc., warrants to the original retail purchaser that this RYOBI® brand outdoor product is free from defect in material and workmanship and agrees to repair or replace, at Techtronic Industries North America, Inc.'s, discretion, any defective product free of charge within these time periods from the date of purchase.

- Three years if the product is used for personal, family or household use;
- 30 days, if used for any other purpose, such as commercial or rental.

This warranty extends to the original retail purchaser only and commences on the date of the original retail purchase.

Any part of this product found in the reasonable judgment of Techtronic Industries North America, Inc. to be defective in material or workmanship will be repaired or replaced without charge for parts and labor by an authorized service center for RYOBI® brand outdoor products (Authorized Ryobi Service Center).

The product, including any defective part, must be returned to an authorized Ryobi service center within the warranty period. The expense of delivering the product to the service center for warranty work and the expense of returning it back to the owner after repair or replacement will be paid by the owner. Techtronic Industries North America, Inc.'s, responsibility in respect to claims is limited to making the required repairs or replacements and no claim of breach of warranty shall be cause for cancellation or rescission of the contract of sale of any RYOBI® brand outdoor product. Proof of purchase will be required by the dealer to substantiate any warranty claim. All warranty work must be performed by an authorized service dealer.

This warranty is limited to thirty (30) days from the date of original retail purchase for any RYOBI® brand outdoor product that is used for rental or commercial purposes, or any other income-producing purpose.

This warranty does not cover any product that has been subject to misuse, neglect, negligence, or accident, or that has been operated in any way contrary to the operating instructions as specified in this operator's manual. This warranty does not apply to any damage to the product that is the result of improper maintenance or to any product that has been altered or modified. The warranty does not extend to repairs made necessary by normal wear or by the use of parts or accessories which are either incompatible with the RYOBI® brand outdoor product or adversely affect its operation, performance, or durability. In addition, this warranty does not cover:

- A. Wear items – Bump Knobs, Outer Spools, Cutting Strings, Inner Reels, Starter Ropes, Drive Belts, Tines, Felt Washers, Hitch Pins, Mulching Blades, Blower Fans, Blower and Vacuum Tubes, Vacuum Bag and Straps, Guide Bars, Saw Chains
- B. Maintenance items as described in the Maintenance Schedule provided in your operator's manual

Techtronic Industries North America, Inc., reserves the right to change or improve the design of any RYOBI® brand outdoor product without assuming any obligation to modify any product previously manufactured.

ALL IMPLIED WARRANTIES ARE LIMITED IN DURATION TO THE STATED WARRANTY PERIOD. ACCORDINGLY, ANY SUCH IMPLIED WARRANTIES INCLUDING MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHERWISE, ARE DISCLAIMED IN THEIR ENTIRETY AFTER THE EXPIRATION OF THE APPROPRIATE THREE-YEAR OR THIRTY-DAY WARRANTY PERIOD. TECHTRONIC INDUSTRIES NORTH AMERICA, INC.'S, OBLIGATION UNDER THIS WARRANTY IS STRICTLY AND EXCLUSIVELY LIMITED TO THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS AND TECHTRONIC INDUSTRIES NORTH AMERICA, INC., DOES NOT ASSUME OR AUTHORIZE ANYONE TO ASSUME FOR THEM ANY OTHER OBLIGATION. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. TECHTRONIC INDUSTRIES NORTH AMERICA, INC., ASSUMES NO RESPONSIBILITY FOR INCIDENTAL, CONSEQUENTIAL, OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, EXPENSE OF RETURNING THE PRODUCT TO AN AUTHORIZED RYOBI SERVICE CENTER AND EXPENSE OF DELIVERING IT BACK TO THE OWNER, MECHANIC'S TRAVEL TIME, TELEPHONE OR TELEGRAM CHARGES, RENTAL OF A LIKE PRODUCT DURING THE TIME WARRANTY SERVICE IS BEING PERFORMED, TRAVEL, LOSS OR DAMAGE TO PERSONAL PROPERTY, LOSS OF REVENUE, LOSS OF USE OF THE PRODUCT, LOSS OF TIME, OR INCONVENIENCE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

This warranty applies to all RYOBI® brand outdoor products manufactured by or for Techtronic Industries North America, Inc., and sold in the United States and Canada.

To locate your nearest Authorized Ryobi Service Center, dial 1-800-860-4050.