	<b>Cincinnati Fire Department Fire Training Supplement DRILL BOOK</b>	<b>SECTION # 5 Tools &amp; Equipment</b>
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## **TOPIC #11            STIHL 044 - CHAIN SAW**

This section is intended to give the firefighter the basic information for the operation and normal maintenance of the Stihl-044 chain saw. *For more information or repair instructions, see the owners manual.*



The STIHL 044 chain saw is carried by all Ladder companies and Heavy Rescue Companies.

### **SAFETY PERCAUTIONS**

1. Wear safety glasses, goggles or use the helmet face shield while using the saw.  
**Note:** the helmet face shield provides MINIMUM eye protection when using the saw. Safety glasses or goggles have a much higher safety rating and provide a much higher level of eye protection.
2. Wear gloves and turn-out gear.
3. Always start the saw before carrying it to the place of service.
4. Never carry the saw while it is running unless the chain brake is engaged and the saw is at idle.
5. Do not "DROP START" the saw.
6. If the saw is equipped with a carrying strap, it must be removed before operating the saw.
7. When cutting any surface covered with loose material, remove any loose debris.

### **FUEL**

The Stihl-044 is powered by a two-stroke engine and requires a 50:1 fuel/oil mix to operate. When mixing new gas/oil mix always start with a empty can. Adding new gas/oil mix to old gas/oil mix changes the mix ratio of the final product and increases the chance of starting problems.


### **CHAIN/BAR OIL**

This oil is manufactured for this purpose and is designed to stick to the bar and chain as it moves. Only use bar/chain oil, normal engine oil will not provide the level of lubrication needed during the high speed movement of the chain when cutting. It is important to check and fill the bar/chain oil every time you refuel. The saw is designed so that the fuel runs out before the bar/chain oil does.



Bar/Chain  
Oil

Gas/Oil  
50:1, Mix

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**Note:** The fuel and bar/chain oil caps are made of plastic. These caps need to be tight but be careful not to over tighten them causing them to strip their threads or the screwdriver slot in the top.

### CHAIN BRAKE

The chain brake is designed to stop the chain in the event of a kick back or violent movement of the saw. The brake is activated in one of three ways

1. Manually, the operator activates the brake by pushing the handle forward (toward the chain) causing the brake to engage.
2. Automatically, When the operators hand is placed on the front handle bar and the saw experiences a kick back, the operators wrist contacts the brake handle as the saw is rotating toward the operator. This contact engages the brake, stopping the chain.
3. Automatically, the chain brake handle is weighted near its top; during violent movement of the saw in a backward motion the momentum of the weights will cause the brake to engage stopping the chain.




The chain brake **WILL** stop and hold the chain. If the chain brake is engaged and the saw is not in idle the centrifugal clutch, clutch housing and drive shaft of the saw will heat up and can be damaged beyond repair. Never operate the saw above idle speed with the brake engaged.

### THE MASTER CONTROL:

The master control operates almost all the stop/start/choke functions of the saw. It has four positions:

1. "O" This position is the "Stop" position. It will shut off the saw.
2. "I" This is the "RUN" position. It allows use of the throttle.
3. ")((" This is the "WARM START" position. It allows the engine to start
4. ")-(" This is the "COLD START" position. It allows the engine to be started when it is cold or has not run in awhile.



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## STARTING INSTRUCTIONS

There are two approved ways to hold the saw when preparing to start.


1. Place the saw on the ground, make sure you have a toe placed through the handle or a knee placed on the handle.
2. Place the rear section (rear handle) of the saw between your legs, holding it tightly in place. Controlling the movement of the saw at all times.

**Note:** no one should be in the working range of the saw when you attempt to start.



## STARTING

1. **Engage the chain brake** by pushing the chain brake handle toward the bar and listening for a distinctive “click”.
2. Place the master control in the proper position.
  - a. To cold start, (saw has not been run), grab the rear handle depressing the throttle trigger interlock and squeeze the throttle trigger, move the master control to the “-)( “ position. This will lock the throttle in the start position.
  - b. To warm start, (saw has been run lately and is still warm), grab the rear handle depressing the throttle trigger interlock and squeeze the throttle trigger. Move the master control to the “-)( “ position. This will lock the throttle in the start position.
3. Place the saw in one of the two approved starting positions.
4. Your left hand should grip the front handlebar firmly to assist in controlling the saw.
5. With your right hand, pull the starter rope slowly until you feel resistance then give it a brisk, strong pull. Do not let the grip to snap, but guide the starter rope slowly to allow the rope to rewind. Continue to pull till you hear the engine “pop” or “fire, if starting from the “-)( “ position move the master control lever up one notch to the “-)( “ position and continue pulling the starter rope till the saw starts.
6. When started reach down and squeeze the throttle trigger which will which will automatically move the master control lever to the run “ I “ position and unlock the throttle allowing the motor to move to idle.
7. Disengage the chain brake before beginning any work or revving the saw up to maximum RPM.
8. To stop the engine, move the master control lever to the “O” position.

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## CARE AND MAINTENANCE

### DAILY

Keep the saw clean and ready for use. Test the saw daily, inspect the chain for tension and sharpness, check the fuel and bar/chain oil, start and operate the saw for at least two minutes. When the saw is started allow it to run at idle speed for one minute before testing it at max throttle, this allows the internal parts to reach operating temperature and prolongs saw life.

### AFTER EACH USE

Clean the saw exterior, bar and internal chain/clutch area of debris. Check the air filter to see if it needs to be cleaned or replaced. Check the chain to determine how many cutting teeth are missing or damaged. The Cincinnati Fire Department is an emergency service, it is imperative that all tools operate to their maximum capability. Use common sense in determining when to replace the cutting chain. If there is any drought as to the capability of the cutting chain to operate to it's maximum capability REPLACE IT. (follow instructions in the owners manual.


### ADJUSTING THE CHAIN

When adjusting the chain it is important not to over tighten. If the chain is to tight it will require more of the engines power to move the chain leaving less power to make the cut.

The correct way to tighten the chain is

1. Loosen the bar nuts on the side of the saw
2. Pull up on the tip of the bar.
3. Adjust chain till the tips have entered the slot on the bar and the bottom edge of the chain is about 1/8<sup>th</sup> of an inch from the bar.
4. Keep pulling up on the tip of the bar, tighten the bar nuts. Tighten the nuts till they are a little tighter that snug.



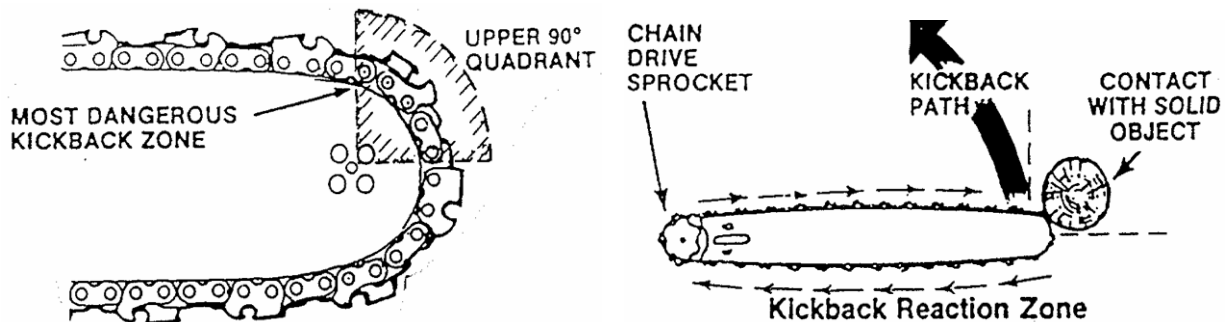
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## CUTTING

**NEVER OPERATE THE SAW WITH ONE HAND.** Always hold the saw firmly with both hands when the engine is running. Place your left hand on the front handle bar keeping your left arm straight and locked and your right hand on the rear handle and throttle trigger. **RELEASE CHAIN BRAKE.** Always cut at full throttle/maximum RPMs. The cutting chain is designed to use it's momentum to assist in cutting, high RPMs allow this to happen. Slow speed or low RPMs allow the chain to stop when the teeth hit something hard transferring all the force to the cutting tooth causing it to break off. Listen to the sound of the saw, if you hear the saw engine start to slow or bog down; back down on your cutting speed to allow the engine to regain RPMs. Do not force the chain saw. If you have to force the saw, stop until you find out what is prohibiting you from cutting. Exert moderate feed pressure to help the chain cut the wood.


## KICKBACK

The kickback zone is the front upper quadrant of the bar. If this area of the bar comes in contact with the cutting surface it can cause the saw to kick back toward the operator.



In the event this happens the chain brake should kick in stopping the rotation of the chain before it strikes the operator.



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### **PENETRATION CUT**

To begin the penetration cut, hold the saw at approximately 45deg angle to the roof. This will position the highest number of cutters in contact with the roof surface for optimum penetration speed. Attempting to penetrate with too high of an angle may cause kickback, while penetrating with too low of an angle will cause unnecessary wear to the cutters. Plunge the bar in aggressively for penetration, but don't penetrate any deeper than necessary. This will prevent the inadvertent cutting of rafters and hidden obstructions that may cause damage to the saw.

After you have penetrated the surface of the area to be cut, increase the angle of the saw to **90deg**. This places the greatest number of cutters in contact with the broad surface of any underlying rafter, thus increasing your sensitivity to feel for the rafters. If it takes an unusual amount of time to penetrate, there may be an underlying structure. Move to an alternate sight to begin your cut.

### **ROLLING THE RAFTERS**

When you feel a rafter, pull the saw up and allow it to cut only the roof decking as you "roll" the saw over the rafter. After rolling over the rafter, return the saw to the previous depth and continue the cut until you reach the next rafter. This maneuver will protect the integrity of the roof that you are working on. This is an acquired skill and you will get better with practice