

OWNERS'MANUAL

McCULLOCH



CORPORATION

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Table of Contents

Fuel & Engine Lubrication 5	Dirt & Sawdust	
Chain Lubrication 6	Sprocket	
Operating Instructions 8 Starting & Stopping 10 If Engine Floods 11 Breaking-in A New Engine 12 Cutting With Your Saw 13	Chain Maintenance	
Saw Maintenance 17 Air Filter 17 Spark Plug 20 Exhaust Stack 21 Carburetor Adjustment 22	Chain Sharpening Keep Chain Clean If Chain Breaks Bar Maintenance Cleaning	35 35 36

It's a temptation to use your saw before you read this manual, but if you've never run a chain saw (and even if you have) reading this manual will make your new Mini-Mac 6 a lot easier to use.

The serial number of the saw is stamped on a metal tab, attached to the rear handle adjacent to the spark plug. Make a record of the serial number for identification in case the saw is lost or stolen; and keep the record in a safe place.



A power chain saw is a most useful and efficient woodcutting tool. As in the operation of other mechanical equipment, however, it requires common sense handling to provide safety as well as labor saving performance. A few simple Do's and Don'ts can make all the difference.

DO

Be safe!

Start your saw without help.

Start the saw on a firm surface.

Turn off your saw when moving between cuts.

Be sure of your footing and pre-plan a safe exit from a falling tree.

Watch out for falling limbs.

Refuel in a safe place. Guard against fire hazards. Keep a firm grip on a running saw with both hands.

Beware of "kickback".

Wear close fitting and protective clothing including safety hats, goggles, shoes and gloves.

Obey all laws, rules and regulations of the cutting area.

Keep the chain snug on the guide bar.

Keep all screws and fasteners tight.

DON'T

Be sorry!

Fail to follow the instructions for operation of the saw in this owner's manual.

Start a saw on your leg or knee.

Let a moving chain touch your clothing.

Touch or try to stop a moving chain with your hand.

Allow any other person or animal close to a running saw or where a tree is being cut down.

Cut with a dull or loose chain.

Smoke while operating the saw.

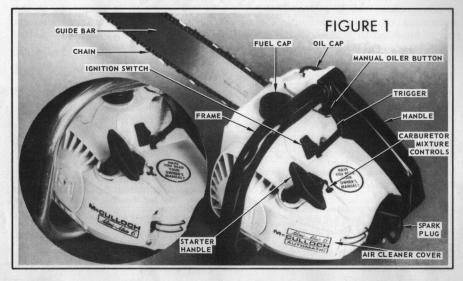
Spill fuel or start a saw where you fuel it.

Refuel a hot saw. (Allow it to cool a few minutes.)
Use any other fuel than that recommended in your

Run the saw without an exhaust stack, muffler or spark arrester.

Allow dirt, fuel or sawdust to build up on the engine or outside of the saw.

Forget the rules for fire prevention and forest protection.



Fuel and Engine Lubrication

Two-cycle engines are lubricated by oil mixed into the gasoline. The correct ratio of oil to gasoline is very important. Follow the ratio specified in the Fuel Mixture Table. Use only regular grade gasoline. McCulloch 40:1 Oil is the best two-cycle motor oil to use. If it isn't available, use any well-known brand of SAE 40 two-cycle, non-additive, motor oil. Never use dirty or reclaimed motor oils.

Thoroughly mix the gasoline and oil in a container equipped with a flexible spout before filling the fuel tank of your saw. Wipe the fuel cap and the area around it clean before filling the fuel tank. Do not let dirt get into the fuel tank. Dirt can seriously damage the engine.

FUEL MIXTURE TABLE - GASOLINE TO OIL RATIO

	WICKE INDEE	CAUGETIC TO OIL KATTO		
WITH McCULLOCH 40:7 OIL (40 TO 7 RATIO)		WITH SAE 40 TWO-CYCLE MOTOR OIL (16 TO 1 RATIO)		
Gasoline	Oil	Gasoline	Oil	
2 U.S. GALLONS	1 (6 OZ.) CAN	1 U.S. GALLON	1/2 U.S. PINT	
1-1/2 IMPERIAL GALLONS			1/2 IMPERIAL PINT	
7 LITERS	1 (6 OZ.) CAN	4 LITERS	1/4 LITER	
5 U.S. GALLONS	1 (16 0 Z.) CAN	2 U.S. GALLONS	1 U.S. PINT	
4 IMPERIAL GALLONS	1 (16 OZ.) CAN	2 IMPERIAL GALLONS	1 IMPERIAL PINT	
19 LITERS	1 (16 OZ.) CAN	8 LITERS	1/2 LITER	

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Chain Lubrication

Your chain is lubricated with oil from the chain oil tank. Fill the oil tank each time you fill the fuel tank.

We recommend using McCulloch Chain, Bar and Sprocket Oil which contains additives to reduce friction and wear and to assist in the prevention of pitch formation on the bar and chain. If McCulloch Chain, Bar and Sprocket Oil is not available, use SAE 30 non-additive motor oil at temperatures above 40 and SAE 10 non-additive motor oil at lower temperatures.

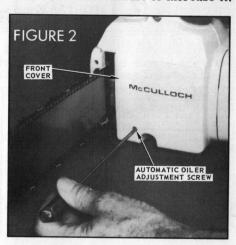
Keep the oil supply container clean. Wipe the oil tank cap and the oil tank surrounding the fill area clean before filling the oil tank. Do not use dirty or reclaimed motor oils under any circumstances. Dirt can plug the chain oiling system. Never operate your saw if the oiler system does not work.

AUTOMATIC OILER ADJUSTMENT

Some Mini Mac 6 saws are equipped with an automatic chain oiler, adjusted at the factory for average cutting conditions. Oil flow may be adjusted however,

to suit individual desires by an adjustment screw at the front of the saw. Turn the screw clockwise to decrease oil flow and counterclockwise to increase it.

The automatic oiler adjustment screw should never be turned more than a quarter turn at a time without checking the oil flow after the adjustment. Maximum oil flow can empty the chain oil tank in approximately ten minutes of cutting. Where increased oil flow is desired for short periods, it is better to supplement the oil flow by more frequent use of the manual oiler button. The automatic oiler supplies oil whenever the engine is running. Long periods at idle speed can result in oil puddles beneath the saw and wasted oil. It is advisable to turn the saw off between cuts unless it is in almost continuous use.



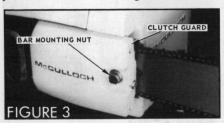
Operating Instructions

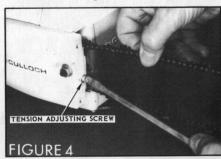
CHAIN TENSION IS IMPORTANT!

A too loose chain can be dangerous - a too tight chain can be expensive because it will wear out fast.

Even though your chain is installed, check chain tension before you start your saw. Chain tension is correct when the chain has a snug fit on the bar but can

still be pulled easily around the bar by hand. Chain is sharp - protect your hand when touching it.





Follow these steps to adjust chain tension:

1. Loosen the bar mounting nut. See Figure 3.

2. With the bar nose or rounded end

of the bar held up, turn the tension adjusting screw clockwise to tighten the chain. Turn the screw counterclockwise to loosen the chain. See Figure 4.



3. When tension is correct, tighten the bar mounting nut while still holding the nose of the bar up and then recheck chain tension by pulling it around the bar. Protect your hand from the sharp cutting teeth of the chain. See Figure 5.

A chain will lengthen during the first few hours of use. If the chain is hot to the touch, allow it to cool before checking tension. Keep chain and bar groove oiled. For more information on chain maintenance, turn to page 27.

STARTING & STOPPING

- 1. Fill the fuel tank with the correct fuel mixture. Fill the chain oil tank with McCulloch Chain, Bar and Sprocket Oil. Pump the manual oiler button until oil shows between the chain and the bar at the top of the bar where the chain comes out from behind the clutch guard. Figure 6.
- Make sure the chain has the correct tension and that the bar is tight on the saw.



- 3. Slide the ignition switch to the ON position.
- 4. Turn the choke lever to the fully closed position. A warm engine usually does not require the use of the choke. However, when restarting an ex-

tremely hot engine or one which has just been refueled, it may be necessary to use the choke to clean out the vapors in the carburetor.

- 5. Hold the throttle trigger back and pull the starter handle with a smooth, rapid stroke. Guide the rope back into the starter. The engine should start with two or three pulls. Additional pulls may be required if the engine hasn't been started recently or if the fuel tank was empty prior to being filled.
- 6. As soon as the engine starts, turn the choke lever to the open position. Use choke and throttle as necessary to keep the engine running until warmed up. Never run the engine at full speed unless cutting wood.
- 7. Pump the chain oil button every ten to fifteen seconds or as needed to keep the chain and bar groove lubricated.
- 8. To stop the engine, release the throttle trigger and slide the ignition switch to the OFF position.

IF ENGINE FLOODS

1. Turn choke lever to open position. Move ignition switch to ON.

- 2. Hold saw with muffler side down.
- 3. Hold throttle trigger full back and pull starter handle until engine starts.

BREAKING IN A NEW ENGINE

Run your saw engine at one-third throttle for three minutes and then at one-half throttle for three minutes prior to making your first cut. By operating the engine at part throttle for the first few minutes with the correct fuel mixture, all bearing surfaces will be properly lubricated for longer life and better performance.

The saw should always be operated at full throttle when it is under load and in the cut, but only when cutting under load conditions.

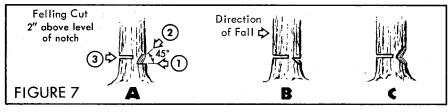
Make several preliminary cuts to get the feel of your saw. Stop the engine after each preliminary cut and check the chain to make sure it is lubricated properly and to adjust chain tension.

CUTTING WITH YOUR SAW

The most common types of cutting are felling, limbing, pruning and bucking. Advice on how to make these cuts is given in the paragraphs which follow. It is helpful to use a spike which is an accessory available from your McCulloch dealer.

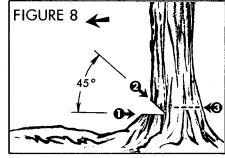
FELLING

Felling is the term for cutting down a tree. Small trees of up to six and a half or seven inches in diameter are usually cut through in one cut. Larger trees require undercuts. Undercuts determine the direction the tree will fall. The tree, unless it is leaning too far in the wrong direction, will usually fall toward the side of the undercut. Types of undercuts are shown in the illustration. Type A is easy to make and commonly used for small trees. Type B leaves the butt end of the log cut square. Type C is a variation of Type A. The undercut should be about one-third of the diameter of the tree. Do not cut completely through to the undercut on the felling cut. The uncut band of wood between the undercut and the felling cut acts as a hinge. Figures 7 and 8.



If there is brush around the tree you are felling, clear a working space so that you do not trip or stumble when working. Have a clear path of retreat before making the felling cut. Watch out for dead limbs and bark which might fall while you are cutting.

Be sure to clean the cut wood out of the undercut so the tree will fall true. Make the felling cut horizontal, moving the bar in an arc. If you are using a



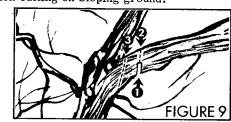
spike, let the moving saw chain draw the spike tight against the tree. The spike will act as a fulcrum. On a small tree, the felling cut can be made from one side. On a larger tree, make the felling cut from both sides. You cha then see what you are doing and will be able to leave an equal amount of wood as a hinge.

LIMBING

Limbing is the process of removing limbs from either standing or fallen trees. Make sure you are out of the way of any falling limbs. If the tree lies on sloping ground, cut off the limbs which are off the ground first. Be sure to stand on the uphill side of the tree when cutting on sloping ground.

PRUNING

Pruning is removing unwanted limbs from a standing tree to improve the tree's appearance. It is advisable to attach the saw to a rope so you can pull it up into the tree after you. Keep the rope tied to the saw while cutting and tie the other end to the tree so the

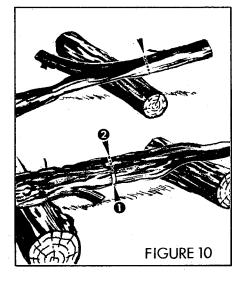


saw can fall only a short distance if you drop it. Make sure you are secured to the tree. A safety rope or belt around the tree trunk will allow you to use both hands on the saw.

When pruning make an undercut a few inches from the trunk first. This will prevent the falling limb from tearing away bark from the trunk. Then make a downward cut to meet the upward cut. Finally, after the limb has fallen, make a second downward cut next to the trunk to remove the stub. Figure 9.

BUCKING

Bucking is cutting a fallen log into lengths. Make sure you have good footing and stand uphill of the log when cutting on sloping ground. If possible,



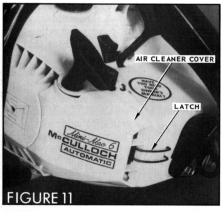
the log should be supported so that the end to be cut off is off the ground in the air. If the log is supported at both ends and you must cut in the middle, make an undercut halfway through the log and then make your downward cut. This will prevent the log from pinching your bar and chain. Be careful that the chain does not cut into the ground when bucking as this causes rapid dulling of the chain. Figure 10.

Saw Maintenance

While most of the maintenance of the Mini Mac 6 can be done by anyone handy with tools, specialized adjustments and repair work should be done by a McCulloch chain saw serviceman.

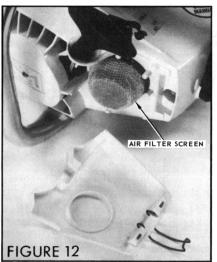
AIR FILTER

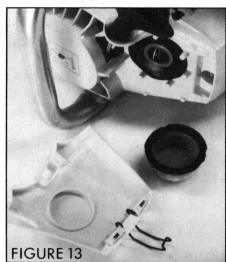
The air filter acts like the air filter on a car. It keeps dirt out of the engine. The air filter must be kept clean. If the filter gets dirty, the engine won't run properly because the dirt will block the flow of air.



To clean the air filter -

- Lift the spring latch of the air cleaner cover and remove the cover. Figure 11.
- Lift off the air filter screen, Figures 12 and 13. Blow the filter clean with light air pressure or wash it in fuel mix. Dry in open air and keep away from open flame.
- Reinstall the screen in its original position - centered within the ring of small locating studs on the fan housing.
- 4. Reinstall cover. Slide the lips on forward end of cover under mating flanges on fan housing, then press rear end of the cover down until it snaps into position, smooth and even all around at the edges. Push the spring latch down until it engages the retaining notch at the back of the fan housing.





SPARK PLUG

A clean, properly gapped spark plug is a major factor in easy starting and best performance. When starting or performance is not satisfactory, the plug should be cleaned and gapped.

SPARK PLUG

FIGURE 14

RUBBER CONNECTOR

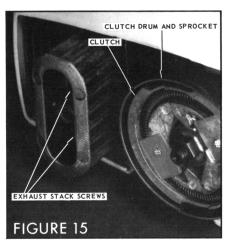
To clean and gap the spark plug --

- 1. Remove the rubber connector from the spark plug. Figure 14.
- 2. Remove the spark plug with a spark plug wrench.
- 3. Clean the electrodes with emery cloth or very fine sandpaper. (Do not use a spark plug cleaning machine. It is almost impossible to clean the grit from the spark plug.) Blow all dust away.
- 4. Adjust the side electrode to a gap of 0.025 inch (0.635 mm).
- 5. Wipe all dirt off the white porcelain insulator and reinstall the spark plug and connector.

If the spark plug is damaged it will not function properly. Install only the new spark plug recommended by your McCulloch chain saw serviceman.

EXHAUST STACK

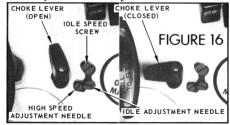
The exhaust stack is attached to the saw with two screws. The stack should be removed occasionally and cleaned of carbon deposits that may build up until engine exhaust is restricted. Clean the stack by scraping away all of the heavier deposits, then wash it with a solvent. Avoid any scraping while the stack is on the engine because of the danger of particles falling into the combustion chamber. An accessory spark arrester (screen) is available from your McCulloch dealer, for use in fire hazardous areas.



CARBURETOR ADJUSTMENT

While the carburetor was set at the factory, it may be necessary due to local conditions to readjust it. As carburetor adjustment is critical and if done carelessly can damage the carburetor and engine, it should be done by a Mc-Culloch chain saw service technician. In an emergency or to satisfy an immediate need until your serviceman can do it properly, you can by carefully following the steps indicated, temporarily adjust the carburetor. NOTE: Before making any carburetor adjustments make sure the air filter is clean. Very often a dirty air filter will make the engine operate as though the carburetor needed adjustment. Cleaning the air filter may correct the problem.

1. Carefully turn the idle and high speed adjustment needles clockwise until resistance is felt. Do not turn the needles in too tight or you can damage the tips of the needles and their seats. Then open (turn counterclockwise) each needle 1 turn.



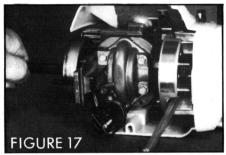
- 2. Start the engine and let it warm up for at least three minutes. Do not race the engine. If the engine will not idle and keeps stopping, turn the idle speed screw clockwise until the engine idles. The chain may move slowly when the engine is cold. If it still moves after the engine is warmed up, turn the screw counterclockwise until the chain stops.
- 3. Hold the engine bar nose down and turn the idle adjustment needle until the engine idles smoothly and accelerates without hesitation or stumbling. Final position of the idle adjustment needle will usually be between 1/2 and 3/4 of a turn open. Turn the engine to see that it idles smoothly in all positions. If necessary, readjust the idle speed screw to a point just below where the chain starts to move.
- 4. While cutting wood with the saw, adjust the high speed adjustment needle for best power. Do not judge by the sound; judge by the way the saw cuts. Final position of the high speed adjustment needle should be 1/2 to 3/4 of a turn open.
- 5. Check idle operation again. It may be necessary to adjust the idle adjustment needle slightly to obtain best idle operation after the high speed adjustment needle has been set.

DIRT & SAWDUST

It's natural for any saw to acquire dirt and sawdust when it's used. But the saw must be kept clean for proper operation. In addition to the air filter, the openings in the fan housing, the cooling fins and the area around the sprocket must be kept clean. The fins and sprocket area are accessible after removing the clutch guard. Scrape the dirt away with a blunt wooden scraper or wash it with solvent. A bottle brush or old tooth brush will help. When the saw is clean, reinstall the clutch guard. Tighten all attaching screws and nuts securely.

SPROCKET

The sprocket is part of the clutch drum which is held on the crankshaft by the clutch rotor. The drum bushing should be lubricated frequently with a good grade of non-fibrous chassis grease. To remove the sprocket and drum for lubrication or replacement, proceed as follows:

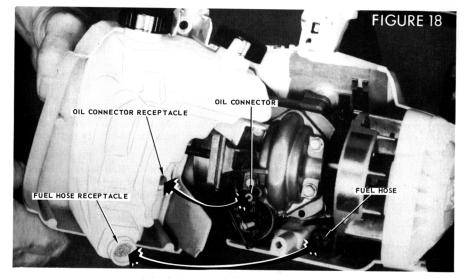


- 1. Remove the clutch guard, bar and chain, and the front cover and fuel tank.
- 2. Lock the flywheel with a screwdriver braced against one of the heavy flywheel bosses (not a fin), and the flywheel nut. Figure 17. Turn the clutch rotor nut clockwise to remove it and the clutch assembly.
- 3. Remove the sprocket and drum and lubricate the crankshaft and drum bushing.

After lubrication and/or replacement, and reinstallation, lock the flywheel with opposite leverage on the screwdriver and remember to turn the clutch rotor <u>counterclockwise</u> to install it. The clutch must be securely tight on the crankshaft.

When replacing the fuel tank and front cover, be sure to line up the fuel hose and the oil connector with the corresponding tank receptacles as shown in Figure 18. Guide the tank and cover carefully as they are installed on the saw to insure both connections. After installation of tank and cover, check both connections by inspection.

The fuel hose connection can be inspected through an inspection hole in the fan housing on the underside of the saw. To inspect the oil connection, look under the bar pad past the edge of the clutch drum.



Chain Maintenance

Your Mini Mac 6 is equipped with a McCulloch S25 saw chain. The chain is designed for maximum performance with your saw and no other chain should be used. The chain requires care if it is to continue to cut easily, to last a long time and provide the proper kind of service. This is how to look after it.

INSTALLING THE CHAIN

- 1. Remove the bar mounting nut and remove the clutch guard.
- 2. Turn the chain tension screw counterclockwise as far as it will go. Push the bar toward the sprocket and remove the old chain. Do not remove the bar.

CAUTION! McCulloch saw chain is sharp! Handle it carefully for it can cut if handled carelessly.

- 3. Place the new chain around the sprocket and bar. The cutting edges of the chain along the top of the bar face toward the nose.
- 4. Fit the adjustment nut tang into the bar and install the clutch guard. Tighten the bar mounting nut finger tight.
- 5. Adjust chain tension.

CHAIN TENSION

Chain tension is correct when, with the bar nose held up and the chain snug on the bar, the chain can still be easily pulled around the bar.

- 1. Loosen the bar mounting nut.
- 2. Turn the chain tension screw clockwise until chain is snug with the bar nose held up.
- 3. While still holding bar nose up, tighten the bar mounting nut securely.

Check chain tension frequently on a new chain. Check chain tension at least every hour on an older chain. If the chain is hot, allow it to cool before adjusting it. Correct chain tension results in easier cutting and operation. Maintain it at all times.

NEW CHAIN BREAK-IN

- 1. Run the chain at slow speeds for at least three minutes. Make sure enough oil is pumped onto the chain to flood the bar groove. Increase speed to half throttle and run chain for another three minutes. Stop the engine and check and adjust chain tension.
- 2. After using the saw for the first ten minutes, shut off the engine and again check chain tension. Repeat tension check several times during the first few hours of operation.

CHAIN LUBRICATION

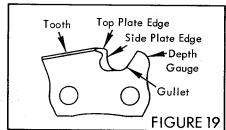
Make sure the manual oiler works before starting your saw. Pump the oiler button. Oil should appear between the chain and bar at the top of the bar just forward of the sprocket guard. Keep the oil tank filled with clean oil.

Use plenty of oil on the bar and chain when cutting. Never let the chain run dry on the bar. In abrasive wood, pump the oiler button more frequently.

CHAIN SHARPFNING

Chain sharpening is divided into two main steps - sharpening cutter teeth and lowering depth gauges. The names of the parts of the cutters are shown in Figure 19.

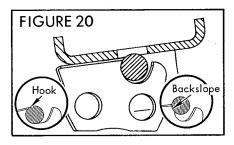
The use of a McCulloch Depth Gauge tool and a McCulloch File Guide is recommended to make chain sharpening a relatively easy task. Your McCulloch chain saw serviceman will advise what clearance to set your depth gauges. If you require any advice or help, always feel free to call on him.



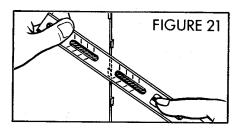
SHARPENING CUTTER TEETH

When sharpening cutter teeth, use a 1/8-inch diameter round file. When mounted in the McCulloch File Guide and held properly, this size file will give the proper shape to the top and side plate edges.

- 1. Adjust chain tension snug on the bar to keep the chain from leaning over under filing pressure. Or place the chain in a chain filing vise.
- 2. Mount the 1/8-inch diameter file in the McCulloch File Guide.
- 3. Place file and guide on the tooth to be sharpened as shown. The guide rides on the top plate of the tooth the flat of the guide against the flat of the tooth to provide proper placement of the file against the top plate edge. Avoid letting the front of the guide drop or rise up as this will cause a hook or backslope. Figure 20.



4. Turn the guide so the guide lines are parallel to the chain as shown in the illustration. Hold the guide level and push the file from the inside of the cutter being sharpened toward the outside. Extend the first finger to assist in applying pressure during filing. See Figure 21.



- 5. Push the file toward the outside of the cutter with pressure against the side plate edge. Maintain the same relationship between the guide lines and the side of the chain and hold the guide level.
- 6. Release pressure against the cutting edge on the return stroke.
- 7. Continue to file the tooth until it's sharp. Do all the teeth on one side of the chain first. Sharpen the teeth at the same point on the bar. Then move to the other side of the chain and sharpen the remaining teeth. Try to use the same number of strokes on all teeth as this will help to keep them all the same length. You can check the length of the teeth with the scale on the depth gauge tool. Each mark on the scale equals 1/16 inch.

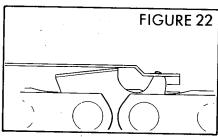
8. Remove the file from the file guide. With the handle held high, file down and toward the outside of each cutter to clean out the gullet. Do not touch the cutting edges during this operation.

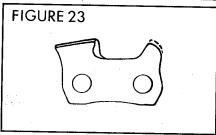
LOWERING DEPTH GAUGES

Depth gauges were set at the factory for average cutting. When cutting soft woods, depth gauges should be lowered for greater clearance. Try cutting with the chain before lowering the depth gauges. If the chain feeds easily into the wood, leave the depth gauges as they are.

Use a McCulloch Depth Gauge tool and a flat file to lower the depth gauges. For most types of cutting, whether soft or hard wood, a clearance of 0.025 inch is best. Use the McCulloch Depth Gauge tool with the 0.025 and 0.030 inch clearances. Both the McCulloch Depth Gauge tool and the McCulloch File Guide are light and convenient enough so they can be carried in your hip pocket when you are using the saw.

- Place the depth gauge tool over two cutter teeth with the depth gauge on the first cutter projecting through the 0.025 inch clearance slot of the tool. Figure 22.
- Remove the projecting part of the depth gauge with the flat file. File across the depth gauge tool toward the outside of the chain.
- After lowering all the depth gauges, round off their leading edges with a stroke or two of the flat file. Maintain the same profile as on original depth gauges and as shown in Figure 23.
- Always file depth gauges at the same place on the bar in order to assure uniformity.





4. Always file depth gauges at the same place on the bar in order to assure uniformity.

KEEP CHAIN CLEAN

After sharpening chain, pull it slowly around the bar while pumping the manual oil button frequently. This will help flush filings and dirt off the chain. If the chain is very dirty, remove it from the saw and wash it in kerosene or solvent to remove dirt and filings. Soak the chain in SAE 30 motor oil to lubricate it and prevent rust before putting it back on the saw.

IF CHAIN BREAKS

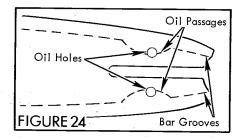
If the chain breaks, take it to your McCulloch chain saw dealer or serviceman. He can repair it. He will also check the condition of the bar and sprocket and help to keep your chain saw in operating condition.

Bar Maintenance

Do not use the bar to pry objects. If the bar is pinched in wood and cannot be freed, use wedges or an axe to force the wood apart and free the bar. Never try to force wood apart with the bar.

CLEANING

After four or five hours of operation, remove the bar from the saw. Clean the sawdust and grime from the oil holes in the side of the bar and from the passage between the oil holes and bar groove. Use wire or pipe cleaner. Clean all sawdust and grime from sides of bar and bar mounting pad. Reinstall bar with opposite edge down to equalize wear.



"Easier Starting Hint"

For shipping purposes, fuel is removed from the engine after the engine is tested. Lack of use or a period of storage can also result in removing or evaporating all fuel from the engine.

Under these circumstances, it can be easier to start the engine in the following manner: Remove the air filter cover and air filter. Hold the saw bar nose down and inject about 1/2 teaspoon of fuel mixture through the carburetor air intake. (An oil can with the proper fuel mixture is ideal for this purpose.) Do not flood the engine. Turn the saw so as to move the fuel mixture through the duct and carburetor into the crankcase. Usually two or three pulls of the starter rope will draw fuel into the combustion chamber and start the engine. It may be necessary to repeat the injection two or three times before the engine will run by itself. Replace the air filter and air filter cover. Never cut with the air filter and air filter cover removed from the engine.

DO NOT USE THIS METHOD FOR REGULAR STARTING.



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McCulioch Corporation reserves the right to modify or change specifications without (1) prior notification or (2) obligation including the obligation to back-fit or supply back-fit components for units previously shipped from the factory.