

McCULLOCH
chain saws

MAC 10 Series

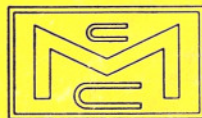
PRO MAC Series

SUPER PRO Series

G Series

OWNER'S MANUAL

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McCULLOCH CORPORATION



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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!*

- DO ... start your saw *without help*.
- DO ... keep a *firm grip on the frame* when pulling the starter handle.
- DO ... start the saw on a *firm, level surface*.
- DO ... *turn off your saw* when moving between cuts.
- DO ... *use wedges* to control the fall of a tree and prevent binding in the cut.
- DO ... *be sure of your footing* and pre-plan a *safe exit* from a falling tree.
- DO ... *watch out* for falling limbs.
- DO ... guard against *fire hazards*.
- DO ... *refuel* in a safe place.
- DO ... *use caution* when refueling a hot saw (*allow it to cool a few minutes*).
- DO ... keep a *firm grip on a running saw* with both hands, keeping thumb and fingers *curled around the frame*.
- DO ... *clear away all limbs and branches* near the tree being cut.
- DO ... beware of "*kickback*".*
- DO ... *keep chain sharp* and snug on the bar.
- DO ... obey all *laws, rules and regulations* of all cutting areas.
- DO ... keep all *screws, fasteners, frames and handles* tight.
- DO ... wear *close-fitting and protective clothing*, including safety hats, goggles, shoes and gloves.



DON'T *Be Sorry!*

DON'T ... fail to follow *all instructions* in this owner's manual for *safe operation* of the saw.

DON'T ... start your saw *on your leg or knee* or on an uneven surface.

DON'T ... let a *moving chain* touch your clothing.

DON'T ... *touch or try to stop* a moving chain with your hand.

DON'T ... allow any other *person or animal* close to a running saw or *where a tree is being cut down*.

DON'T ... cut with a *dull or loose chain*.

DON'T ... try to use a saw *with loose or broken frame, handle or brace*.

DON'T ... cut with your saw until you have a *firm footing, full visibility and complete control* of the chain and bar.

DON'T ... *smoke* while operating the saw.

DON'T ... *spill fuel* or start a saw *where you fuel it*.

DON'T ... use any other *fuel* than that recommended in your owner's manual.

DON'T ... run the saw *without a muffler* or spark arrester.

DON'T ... use the saw for any purpose *except cutting wood*.

DON'T ... allow *dirt, fuel or sawdust* to build up on the engine or outside of the saw.

DON'T ... *forget the rules* for fire prevention and forest protection.

*"Kickback" is a term used to describe the condition of the chain jumping out of the cut. A properly sharpened and tensioned chain will normally feed easily into the wood without chatter, bounce or resistance, but - **VERY IMPORTANT** - the saw must always be held firmly with both hands and under complete control by the operator. Personal injury can be prevented by reasonable attention and avoiding the usual causes of kickback -

1. Loose or dull chain.
2. Striking loose limbs or other objects with the tip of the bar while the chain is moving.
3. Striking metal or cement, etc., buried in the wood.
4. Running the engine too slowly at the start of a cut.
5. Carelessness in holding and guiding the saw while cutting.

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Introduction

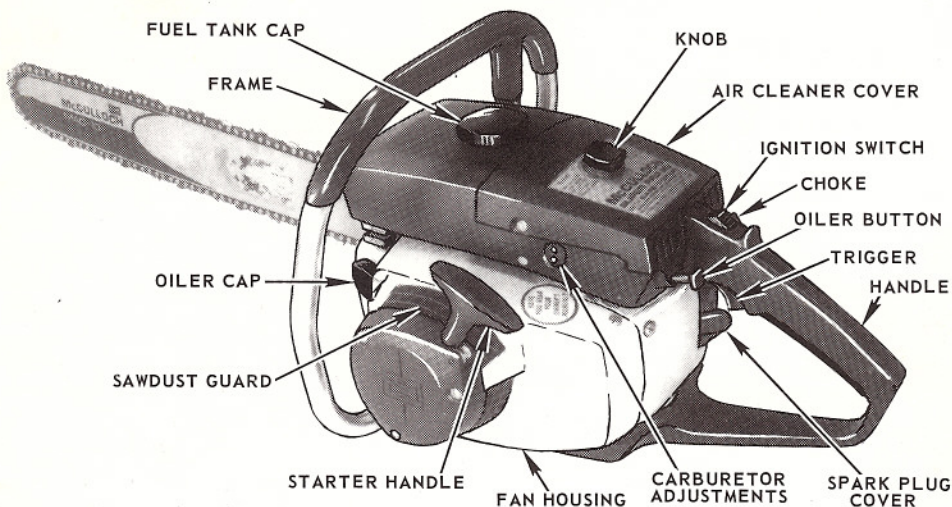
Your new McCulloch chain saw is designed and constructed to give you the very best service and performance. The finest materials and the most advanced manufacturing methods have been used in its construction. In order to take full advantage of these high standards, you should study this Owner's Manual carefully. You will find the information it contains will help you to properly identify the various elements of your saw, how to install and operate them, and to obtain the long service life and excellent performance built into every model of McCulloch saws.

The serial number of your chain saw is stamped on a metal plate and attached to the saw at the bottom of the airbox. Remove the air cleaner cover and air filter to find this plate. Write the serial number down and keep it in a safe place for reference so that you will be able to identify the saw if it is lost or stolen and recovered.

The policy of McCulloch Corporation is one of continual improvement in design, manufacturing and engineering advancement wherever possible to assure still finer two-cycle power tools. Hence, specifications, equipment, colors, design and manufacturer's suggested list prices are subject to change without notice and McCulloch Corporation reserves the right to make such changes without prior notification or obligation to backfit or supply backfit components for units previously shipped from the factory.

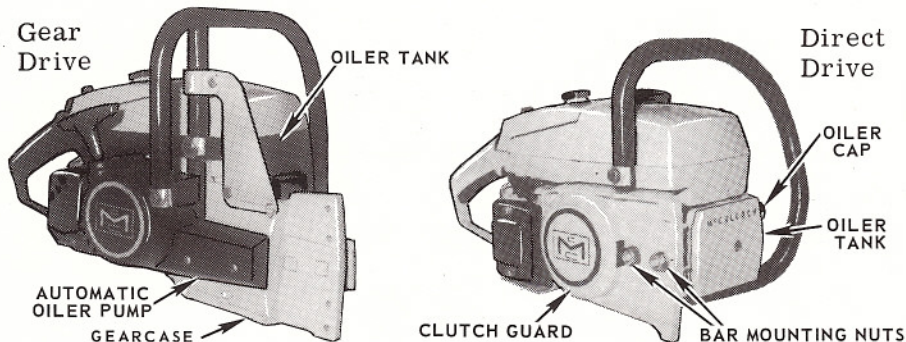
Location & Identification

McCulloch chain saws are manufactured in a wide range of types, styles and sizes to satisfy all cutting requirements. Before using your saw, study the brief description of these types and styles to familiarize yourself with names and locations of various parts and which of them apply to your particular model.



DIRECT OR GEAR DRIVE MODELS

On direct drive models the chain is driven by a sprocket integral with the clutch drum, located behind the clutch guard. Gear drive models are usually identified by the letter "G" in the model name. The chain is driven by a sprocket mounted on the sprocket shaft, and located on the engine side of the gearcase.



Features & Options

LEFT-HAND START OR RIGHT-HAND START MODELS

Left-hand start models usually have the letter "L" in the model name. The starter is mounted on the fan housing. On right-hand start models, the starter is mounted on the clutch guard.



LEFT-HAND START

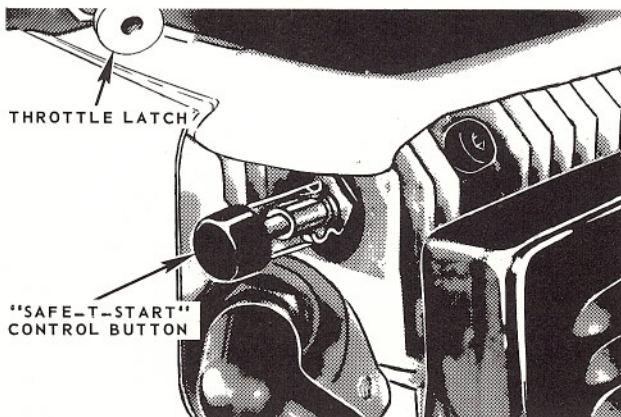


RIGHT-HAND START

AUTOMATIC OR MANUALLY OPERATED CHAIN OILERS

All models are equipped with a manually operated chain and bar oiling system operated by an oiler push button at the left of the saw handle. Direct drive automatic oiler models have in addition, an adjustable, engine pulse operated oiler pump located within the oiler tank to furnish a constant supply of oil to the bar and chain whenever the engine is running. On these models, the button is used when additional chain oiling is desired (see further description of the automatic oiler on page 7).

SAFE-T-START MODELS



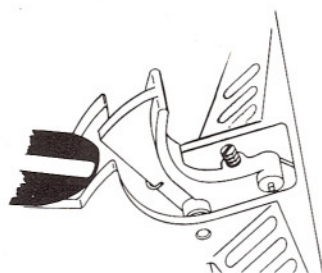
THROTTLE LATCH

"SAFE-T-START"
CONTROL BUTTON

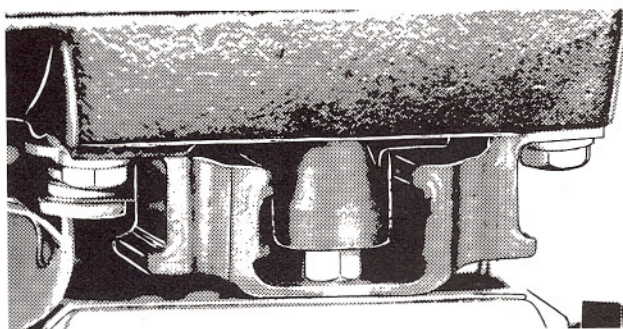
Many models are equipped with a "Safe-T-Start" system featuring a compression release valve and a throttle latch for safety, ease and convenience in the starting procedure described on page 12.

AUTOMATIC IDLE ADJUSTMENT

Most models are equipped with an automatic idle adjustment to provide a fast starting idle adjustment. This is a screw adjustment found on the underside of the throttle trigger. Turn the screw clockwise to increase starting idle speed, counterclockwise to reduce it. The automatic idle adjustment screw has no effect on the regular chain saw idling speed after the engine has started.



STANDARD OR CUSHIONED POWER ENGINES



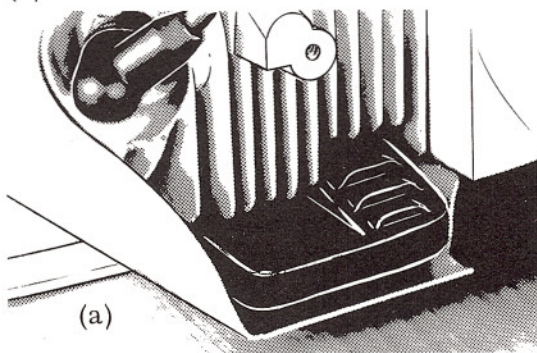
Some models have rubber shock mounts between the engine and the handles and frames to isolate engine vibrations. Operating procedures are not affected by this shock mounting system.

MUFFLERS AND SPARK ARRESTERS

Mufflers furnished on these saws are of two general types:

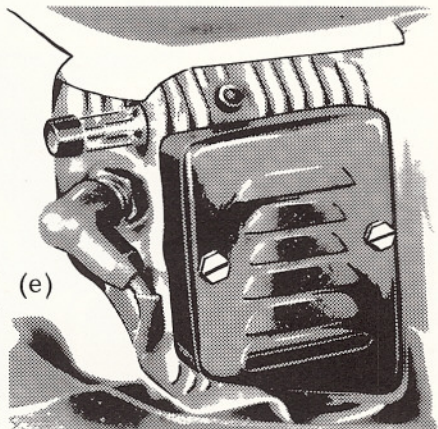
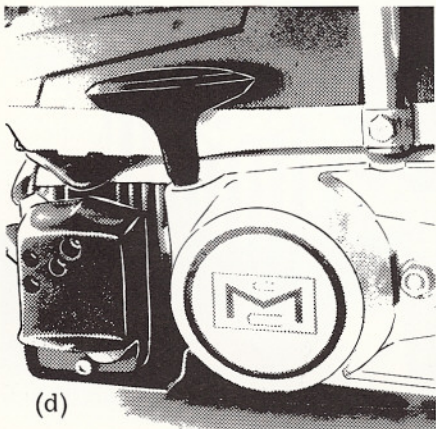
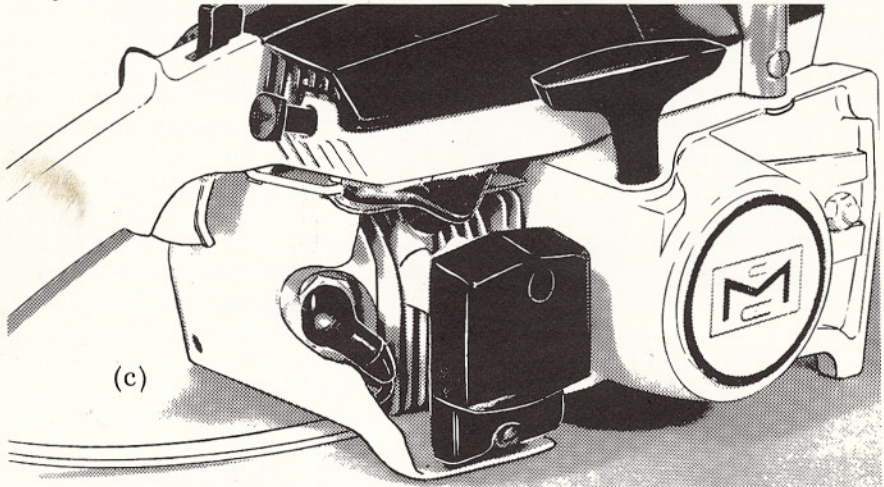
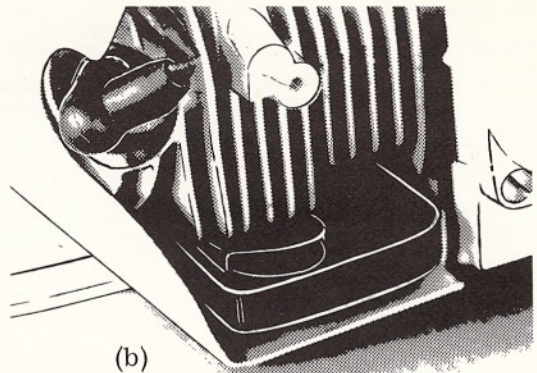
1. Flat, under the cylinder, either plain (a) or with "sound silencer" reeds (b), and
2. Rectangular, on the side of the cylinder, also plain or reed-type as in (c), (d) and (e).

Baffles and spark arresters which comply with forestry regulations to limit spark emission in fire hazard areas may be obtained from your McCulloch dealer for all types except the flat, plain, one-piece type (a). Except for this type, all have removable reeds or



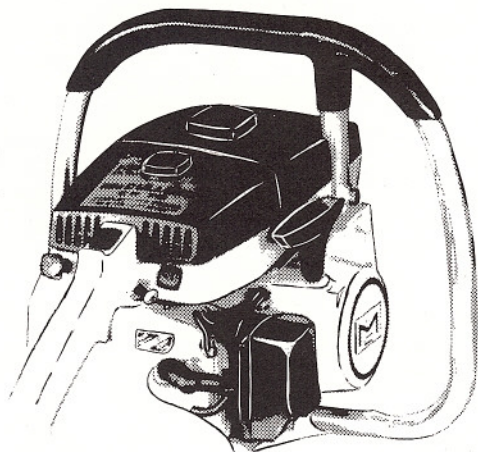
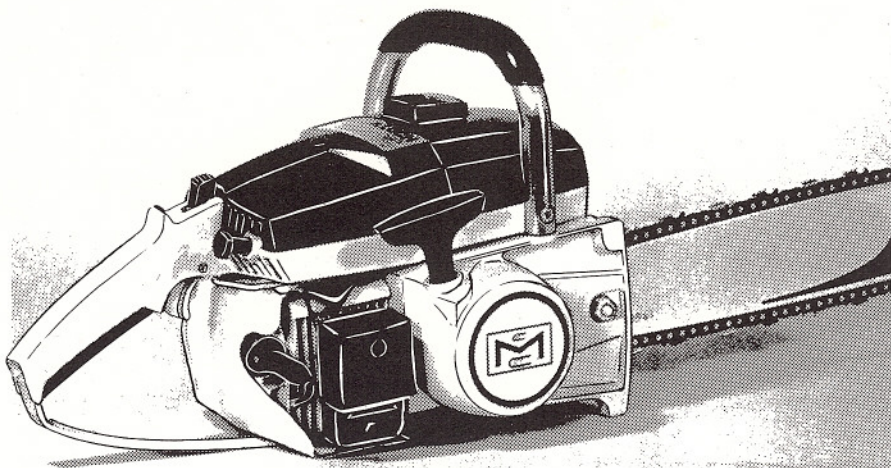
removable covers and reeds for inspection and cleaning.

Accumulations of exhaust particles on baffles, screens and reed ports should be cleaned away periodically to maintain engine efficiency. These parts should be removed, scraped and washed with a good solvent to clean away all soot and carbon.



WRAP-AROUND AND 'C' (FLUSH-CUT) FRAMES

On most models these frames are interchangeable and are available as an accessory from your McCulloch dealer when a type other than that furnished on the saw is desired.



SPIKES - BAR PLATES - TOOLS

These chain saw accessories are furnished with some models and are available from your McCulloch dealer for others.

Fuel and Lubrication

Chain saw fuel is a mixture of gasoline and lubricating oil. The grade of gasoline, the quality and type of oil, and the ratio of gasoline to oil, are all very important to the efficient operation of the engine. Lubrication of the internal moving parts of the engine depends upon the oil in the fuel mixture.

GASOLINE

Use only regular grade gasoline. Do not use gasolines with a high lead content, because their continued use will result in poor operation and in the formation of lead deposits in the combustion chamber and on the spark plug.

OIL

McCulloch 40/50 oil is the best oil to use when mixing fuel. It is specially compounded for use in two-cycle, air cooled engines and it lubricates better than other oils at the high internal temperatures at which air cooled engines operate. If McCulloch oil is not available, use a good grade of two-cycle motor oil. Automotive or reclaimed motor oils are not recommended.

DO NOT USE EXOTIC FUELS TO AID IN STARTING OR RUNNING THE ENGINE, AND DO NOT USE DE-ICING ADDITIVES BECAUSE THEY CONTAIN INGREDIENTS HARMFUL TO RUBBER PARTS IN CARBURETORS AND OIL SEALS.

FUEL MIXTURE TABLE - GASOLINE TO OIL RATIO

WITH McCULLOCH 40/50 OIL (40 TO 1 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 (6 oz.) can	1 Imperial gallon	1/2 Imperial pint
7 liters	1 (6 oz.) can	4 liters	1/4 liter
5 U.S. gallons	1 (16 oz.) 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
		4 U.S. gallons	1 U.S. quart
		4 Imperial gallons	1 Imperial quart
		16 liters	1 liter

Thoroughly mixing the gasoline and oil is very important. For mixing fuel, use a separate container with a flexible spout and strainer, and mix only enough to last for a day or two of operation.

1. Pour about 1/3 of the gasoline into the container and add all of the oil. Shake vigorously!
2. Pour the balance of the gasoline into the container and again shake vigorously.
3. Fill the fuel tank on the saw and keep the extra fuel in the mixing container capped tightly.

CHAIN LUBRICATION

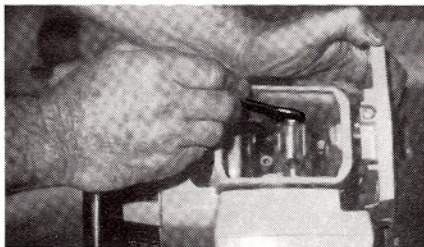
The chain must be properly lubricated when it is running or it will wear out very fast. Fill the chain oiler tank with clean oil every time you fill the fuel tank. Use a good grade of SAE 30 motor oil when temperatures are above 40°F. (5°C.) and SAE 10 motor oil when temperatures go below 40°F. (5°C.). Never use dirty or reclaimed oils.

AUTOMATIC CHAIN OILER

On gear drive saws, the automatic chain oiler is driven by a worm gear on the sprocket shaft. The pump is integral with the transmission assembly and requires no adjustment. When direct drive saws are equipped with an automatic chain oiler, the pump is mounted within the oiler tank and may be readjusted to either reduce or increase the output volume. On both types of saw, oil delivery to the bar and chain may be supplemented by pumping the manual oiler button. The automatic system should always be primed by the manual pump after the saw has lain idle for some time, and after refill of the oiler tank.

Automatic oiler pumps on direct drive saws are adjusted at the factory to deliver a volume of oil suitable for average cutting conditions. Readjustment, however, may be desired for cutting dry and hard wood, in heavy pitch or sap, and in sandy or abrasive areas. To change the adjustment, proceed as follows:

1. Drain the oil from the oiler tank and remove the cover.
2. Turn the saw upside down.
3. Loosen the locknut on the adjusting screw.
4. Turn the adjusting screw out (to increase) or in (to decrease)



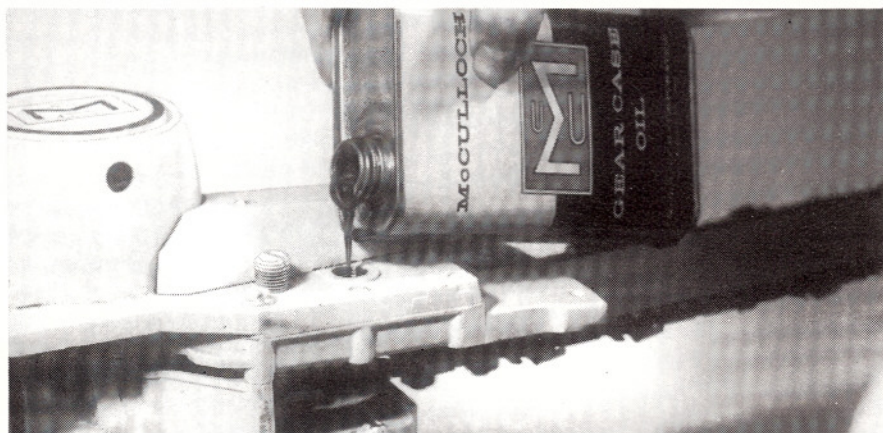
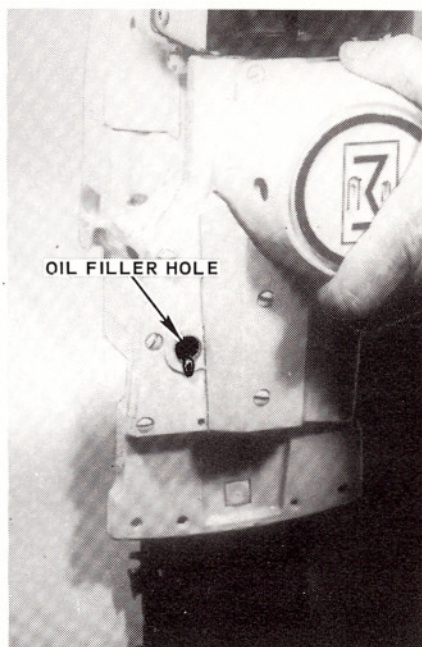
oil output. Do not turn the screw more than a fraction of a turn at a time. The adjustment screw is very sensitive to change and oil output should be checked after each adjustment.

5. After adjustment, tighten the locknut securely.
6. Replace the oil tank cover and refill with clean oil.

GEARCASE (GEAR DRIVE SAWS)

The gearcase was filled with oil to the correct level at the factory, but should be checked before running the saw for the first time and daily when the saw is in use. Turn the saw up on end with the bar down as shown and remove the filler plug. Gear oil should just be even with the bottom of the oilfiller hole. Do not overfill the gearcase. Check the oil after the saw has been operating for a few minutes and the oil is warm and freeflowing. Cold oil will not indicate a true level.

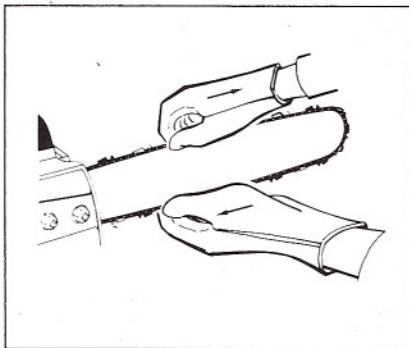
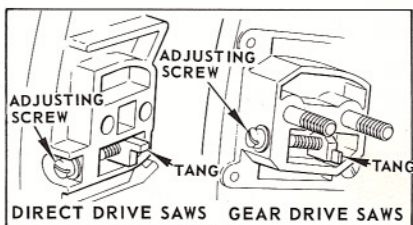
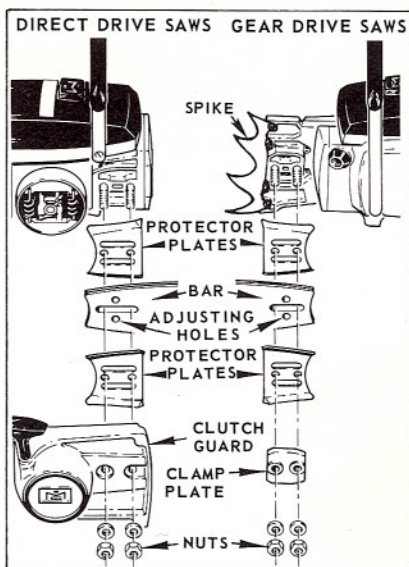
To add oil to the gearcase, turn the saw on its left side, fan housing down, and remove the filler plug. Use only SAE 140 gear oil. If too much oil is added, pour out the excess.



Installation of Bar, Chain, Sprocket and Spike

BAR AND CHAIN

1. Remove the bar mounting nuts and washers and the clutch guard (direct drive saws), or clamp plate (gear drive saws). Extra washers are placed on the bar mounting bolts behind the clutch guard on direct drive saws for shipping purposes only. Be sure to remove and discard these washers before installing the bar.
2. Place one protector plate on the bar bolts, flange side toward the mounting pad. (On some models this plate is integral with a full side saw-dust guard.)
3. Slide the slotted end of the bar over the two mounting bolts and place the second protector plate outside the bar, flange side away from the bar. Be very sure that the adjustment nut tang fits into the adjusting hole in the bar.
4. Loop the chain over the sprocket with the cutting edges at the top of the sprocket pointing toward the nose of the bar. Fit the center link tangs of the chain into bar groove. **CAUTION:** When handling chain, wear heavy gloves or use a protective cloth or prevent injury to the hands.



5. Install the clutch guard (direct drive saws) or clamp plate (gear drive saws), and tighten the bar mounting nuts and washers on the bar bolts finger tight.
6. Adjust chain tension as follows:
 - (a) Turn the chain tension adjustment screw clockwise until all slack in the chain has been removed.
 - (b) While holding the nose of the bar up as far as the mounting bolts will allow, continue tightening the chain until resistance is felt, then tighten the bar mounting nuts with a wrench.

NOTE: The chain has the proper tension when, with the bar locked in the uppermost position, it has a snug fit all around the bar and will still pull around the bar easily by hand. There should be no droop or sag of the chain permitted.
7. Pump oil onto the chain with the manual oiler while pulling the chain around the bar by hand until both chain and bar are thoroughly lubricated.

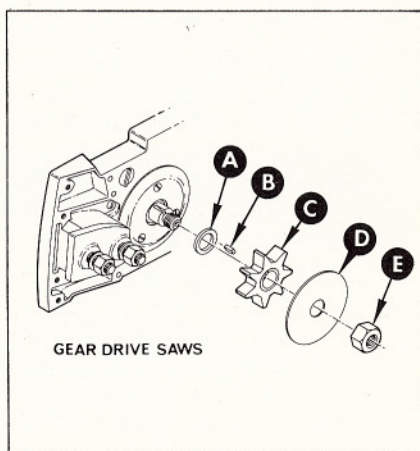
NOTE: For maximum service life, keep the chain snug on the bar at all times and keep both bar and chain well lubricated. Stop the saw and check tension often. A new chain will lengthen or "stretch" as it heats up during break-in. Keep an especially close watch on tension and keep plenty of oil on the chain during this period.

SPROCKET

The sprocket for gear drive saws is supplied by your McCulloch dealer to suit the pitch of the chain to be used with it. Installation parts for the sprocket which are shipped in a loose parts kit with the saw, and the selected sprocket are installed as follows:

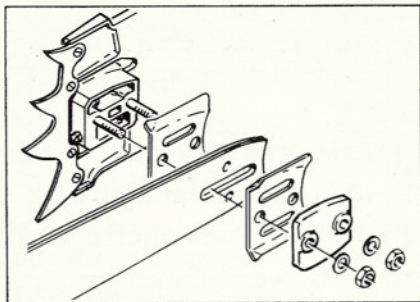
Place the spacer (A) on the sprocket shaft and insert the key (B). Slide the sprocket (C) onto the shaft with the keyway fitting over the key. Some sprockets have one flat side and one side with a recess around the shaft hole. The flat side always goes toward the gearcase.

Install the sprocket plate (D) and sprocket nut (E). Lock the sprocket shaft with a screwdriver or wrench between the sprocket and the bar mounting bolt next to it. Tighten the nut securely.



SPIKE

Spikes are furnished with some models or they may be obtained from your McCulloch dealer as an added accessory. In either case, the spike is attached with screws, washers and nuts at the forward end of the gearcase on gear drive saws or the clutch guard on direct drive saws.



Operating Instructions

STARTING THE ENGINE

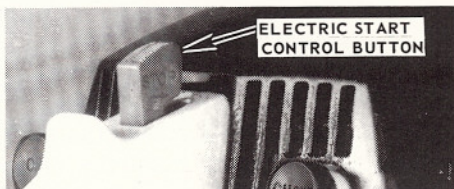
1. Fill the fuel tank with the correct fuel mixture.
2. Fill the chain oiler tank with the correct grade of oil.
3. Make sure the chain is correctly tensioned and the bar is clamped tightly.
4. Move the choke to the closed position (pull out on choke button).
5. Move the ignition switch to the "ON" or "START" position.
6. Push the throttle latch button in to advance the throttle to a starting position.
7. Push the "Safe-T-Start" button in, to open the decompression valve.
8. Hold the saw down firmly and on a level, solid surface. Keep all parts of the body clear of the bar and chain.
9. Pull the starter handle until you feel the starter engage, then pull the handle with a short, rapid pull. The engine should start within two or three pulls.



Allow the starter to rewind slowly between pulls. When the engine starts, the control button will move out automatically, closing the valve.

CAUTION: If the engine fires but does not continue to run, push the button in again before pulling the starter handle. Always check to see that the valve is open (button pushed in) before pulling the starter rope.

On electric start models, press the control button down into the handle. This automatically opens the compression release



valve and actuates the starter. As soon as the engine starts, release the control button. Release of the button automatically closes the compression release valve for normal operation.

CAUTION: Never allow the engine to run with the valve open. Severe damage will result.

10. When the engine starts, pull back lightly on the trigger to release the throttle latch. Use the choke only enough to keep the engine running. Use the throttle as necessary until the engine is warm enough to run at idle speed without further throttling. Do not run the engine at full speed to make it warm up faster.

IF THE ENGINE FLOODS

Hold the throttle full back and repeat step 9 above until the engine starts.

STOPPING THE ENGINE

1. Release the throttle trigger.
2. Move the ignition switch to the "OFF" position.

BREAKING-IN A NEW ENGINE

Breaking in a new engine is very important to long service life and performance. Run your engine for its first few minutes at one-third throttle. Increase speed to about half throttle and run for a few minutes longer. Cut a few limbs or small logs at first. Make small cuts and get the feel of your saw. Check your chain tension frequently and make frequent use of your manual oiler button. Remember, your chain saw is a precision product and its treatment during its first half-hour of operation will determine how long and how well it will serve you.

OPERATING THE ENGINE

Do not run your engine with the throttle pulled full back unless you are cutting wood.

Never run your engine with the spark arrester off or do any cutting with the air filter removed from your engine. To do so may permit dirt to be sucked into the crankcase and cylinder where it will cause rapid wear of the moving parts of your engine.

STORAGE

1. Run your engine about thirty seconds at idle speed with the choke closed, then shut off the engine. This will put a heavy coating of oil and gasoline in the internal parts of the engine.
2. Remove the spark plug and pour about a spoonful of clean oil through the spark plug hole into the combustion chamber. Pull the starter handle at least twice. This will coat the interior of the combustion chamber with oil. Replace the spark plug.
3. Remove the chain and bar. Soak the chain in oil and oil the bar groove.
4. Drain the fuel from the tank and from the carburetor.
5. Store the chain in oiled paper or immersed in oil.
6. Cover the engine and bar with a canvas or other protective covering and store it in a cool, dry place.
7. During long periods of storage, remove the cover about once every month and pull the starter rope several times to crank the engine and distribute the oil.

REMOVAL FROM STORAGE

1. Remove the spark plug. Pull the starter rope briskly to clear the cylinder of excess oil and fuel mixture. Clean and adjust the spark plug or install a new plug.
2. Fill the fuel tank with the correct fuel mixture and fill the oil tank with the correct grade of oil. Follow the standard starting procedure. See page 31 for "Starting Hints".
3. Install the bar and chain, well oiled, and set the correct tension on the chain.
4. (Gear Drive Saws) After the engine is warmed up, turn it off. Remove the gearcase filler plug, turn the filler opening down and drain the oil from the gearcase. Refill the gearcase with SAE 140 gear oil. Capacity is 65 cc (slightly more than 2 oz.). Check to make sure that the oil level is correct after refilling the gearcase.

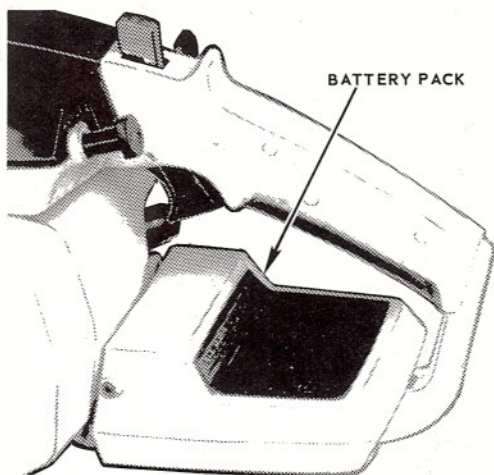
NOTE: Various rubber parts on the saw may deteriorate during long periods of storage. If your saw operates poorly after a long period of storage, we recommend you have it checked by your McCulloch dealer.

BATTERY (ELECTRIC START ONLY)

The battery consists of cells wired into a battery pack. It is carried on the handle under the grip as shown. When the engine is

running at normal cutting speed, current from the starter-generator recharges the battery pack.

Battery power can fall off because of long storage inactivity. After an extended period of storage, the saw may have to be started for the first time with the manual starter. The battery pack can also be recharged using a McCULLOCH BATTERY PACK CHARGER, available from your McCulloch dealer.



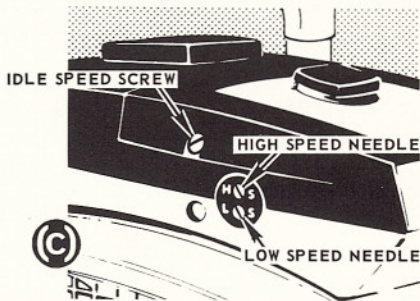
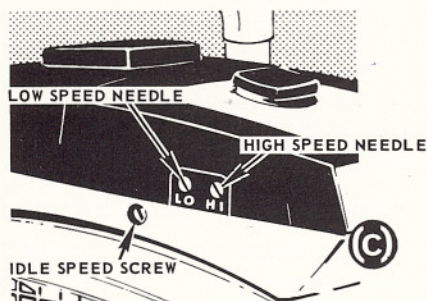
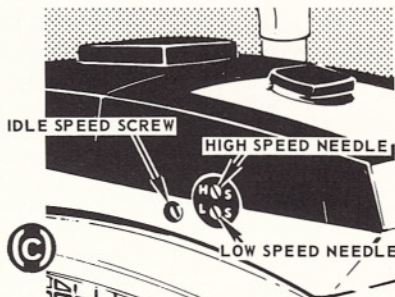
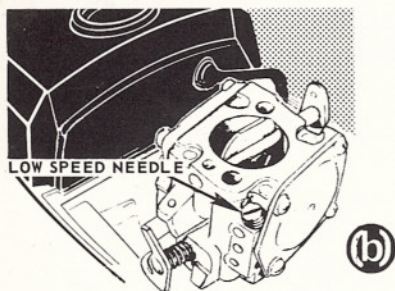
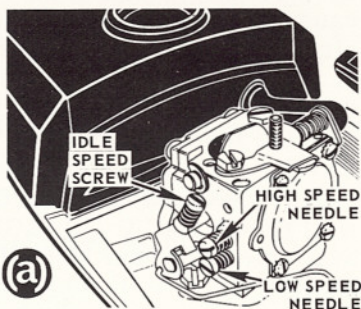
The battery pack is designed solely to start McCulloch electric start chain saws. It should not be used for any other purpose. Do not attempt to tamper with its wiring.

General Maintenance

CARBURETOR

The carburetor on your saw was adjusted at the factory for best operation of the saw. If for any reason it should require readjustment, follow these instructions carefully. Careless adjustment can seriously damage the carburetor and the engine. While all carburetors on these saws require the same basic settings for proper operation, the style or arrangement of the fuel mixture needles and screws vary among types and models. Arrangements include the following:

- Internal (inside the airbox) adjustment needles and idle speed screw.
- Internal low speed adjustment needle only. The carburetor is equipped with a non-adjustable, high speed jet for controlling the high speed fuel mixture (see adjustment steps 2 and 3).
- External adjustment needles and idle speed screw in one of the styles illustrated.



Adjustment:

1. Carefully turn the low and high speed needles in until resistance is felt then turn both needles out 1 full turn. With bar and chain installed, start the engine and let it warm up thoroughly.
2. Adjust the low speed needle to obtain smooth, rapid acceleration every time without faltering. If needle is turned in too far, the engine will hesitate or falter on acceleration. If turned out too far the engine will run rough and smoke heavily on acceleration.

NOTE: When checking adjustments, be sure that the air filter is clean and in place on the airbox.

3. Adjust the idle speed screw so that the engine idles without any chain movement.
4. Adjust the high speed needle to obtain maximum power under load. Do not use a leaner mixture than necessary to obtain smooth running while cutting wood. Do not adjust the needle for maximum sound and do not run the engine at full throttle unless it is under a cutting load.

Some carburetors have a built-in, automatic high speed governor. The governor is not adjustable and the engine will "four-cycle" at governed top speed.

AIR FILTER

The air filter must be kept clean and in good condition so that the engine will have enough clean, filtered air for proper combustion of the fuel mixture. A bad filter will cause rapid engine wear. It should be checked frequently for holes, cracks and worn sealing edges, and when necessary, replaced with a new filter. To clean the filter:



1. Clean the cover and sides of the carburetor enclosure of all dust, dirt and oil to prevent dirt from falling into the airbox.
2. Loosen the cover knob and lift off the cover.
3. Remove the filter from the airbox.

4. Shake or brush dirt particles away. Do not use engine exhaust to try to blow the filter clean. Wash the filter in clean gasoline or solvent.

CAUTION: Keep away from heat or open flame when using gasoline or solvent.

5. Dry the filter in the open air, then reinstall it and the cover. Be sure that the filter rests flat around the airbox and that the cover presses firmly down all around the sealing edges. Screw the cover knob down tight so that air cannot enter the airbox under the edges of the filter.

SPARK PLUG

The saw is normally equipped with an AC CS45T or similar spark plug. A cooler spark plug, AC CS42T or similar is available for use in very hot weather. The spark plug should be kept clean and have its electrode gap adjusted regularly.



1. Grasp the connector with your fingers and pull it away from the plug with a back and forth twisting motion.
2. Remove the plug with a spark plug wrench.
3. Carefully clean the electrodes with emery cloth or very fine sand paper.
4. Blow all dust and grit away.

NOTE: The use of a sandblast machine to clean the spark plug is not recommended.

5. Measure the air gap (distance between electrodes) with a wire gauge. The gap should be 0.025 inch (0.635 mm). Adjust the gap by bending the side electrode only. Do not try to bend the center electrode or you will break the insulator.

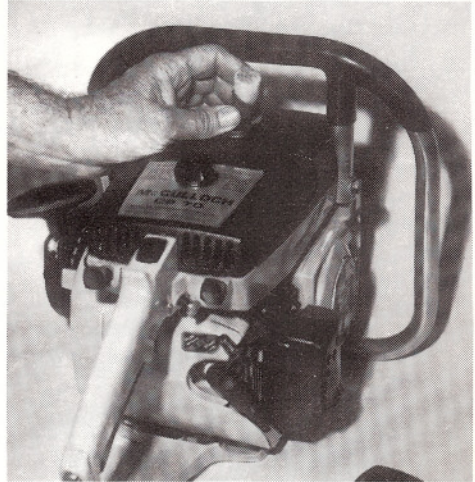
FUEL TANK FILTER

The fuel tank contains a fuel pick-up tube which has a filter in the open end of the bell on the tube. The filter will prevent dirt from

entering the fuel line to the carburetor. After a while, dirt will build up on the filter and will cut down the flow of fuel. Or, if water is permitted to enter the fuel tank, the water will get into the filter and prevent the flow of fuel to the carburetor. If either condition occurs, install a new filter. However, if a new filter is not available, the filter can be cleaned for temporary use.

1. Remove the fuel tank cap.
2. Lift out the free end (the bell-shaped end) of the black rubber pick-up tube (see illustration).
3. Pull the filter out of the bell with a twisting motion.
4. Wash the filter in gasoline or solvent. If the filter is water soaked, it must be dried thoroughly.

CAUTION: Reinstall the filter by pushing it back into the bell and twisting as it is inserted.



Never operate the chain saw engine without the fuel filter!

FAN HOUSING AND COOLING FINS

The grillwork on the fan housing or on the starter assembly if the saw has a left-hand starter, must be kept clean and open for the free and unrestricted circulation of cooling air for the engine. If these elements are allowed to be choked with dirt or sawdust, the engine will run too hot and may become damaged by overheating.



1. Remove the fan housing screws and the fan housing or the fan housing and starter assembly together if the saw has a left-hand start.
2. Wash the grillwork in gasoline or solvent, being careful to remove all dirt and sawdust from the openings. Use a soft bristle brush to finish the cleanup.

At least once every month, but more frequently with extensive use of the saw, the cylinder fins and exterior of the crankcase should be cleaned to prevent dirt and sawdust from building up around the cylinder. With the fan housing removed from the saw, it is convenient to inspect the cylinder fins and remove sawdust and bits of small wood cuttings that may have accumulated. Scrape away any such material with a wooden scraper and small brush.

Keeping the cylinder fins clean will help to keep the engine cool for more efficient operation.

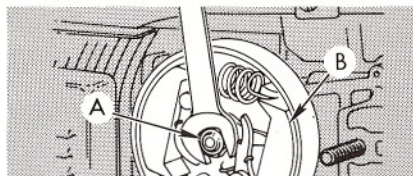
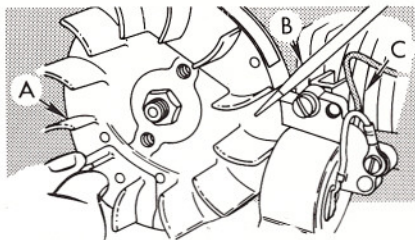
SPROCKET

The sprocket should be checked frequently (every day with extensive use of the saw) for evidence of wear or damage, and replaced as necessary. The sprocket bearing should be kept clean and well lubricated.

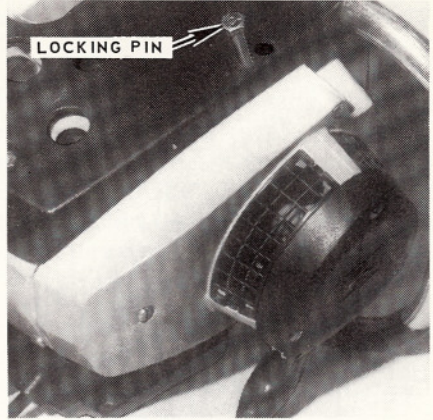
On direct drive saws, the sprocket is part of the clutch drum assembly. For maintenance on this assembly, remove the clutch guard and the fan housing. Lock the crankshaft by holding a screwdriver between a leg of the coil lamination and a heavy boss on the flywheel (not one of the fins). Remove the clutch nut with a wrench. Remove the clutch and the sprocket and drum assembly.

Clean the sprocket bearing and lubricate it with a good grade of automotive chassis grease. Install the sprocket and drum assembly, clutch and clutch retaining nut. Lock the crankshaft at the flywheel end (opposite rotation), and tighten the clutch nut securely.

On Super Pro models, a convenient method for locking the crankshaft for removal or installation of the clutch and of the sprocket and drum assembly is as follows:

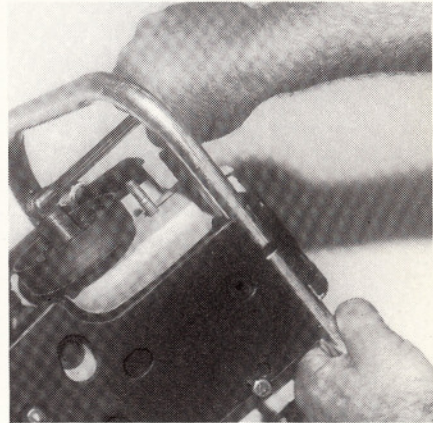


1. Insert a smooth-end, 1/4 inch pin through the hole in the skid until it touches the flywheel.



2. Rotate the flywheel by pulling gently on the starter handle until you feel the pin slip into a notch on the flywheel rim.

3. Remove the clutch nut with a 9/16 inch wrench, turning the nut counterclockwise, which will free the clutch and the sprocket and drum assembly for removal.



4. Lock the crankshaft in the same way when replacing the clutch nut. Turn the nut clockwise to replace it and tighten securely.

SPROCKET (GEAR DRIVE SAWS)

The sprocket on gear drive saws should also be checked periodically to make sure that it is not worn to the point that the sprocket teeth are not properly supporting the chain and are causing chain wear.

A worn sprocket should be replaced as soon as heavy grooves (1/64 inch) are worn into the slopes of the teeth, or if there is evidence that the chain center links are hitting sprocket at the hub section between sprocket teeth. To install a new sprocket, lock the sprocket shaft by placing a spare sprocket between the bar

bolts and the sprocket being removed. Turn the sprocket nut counterclockwise to remove it from the shaft. Remove the outer sprocket plate and pry the old sprocket off the shaft. Install the new sprocket, replace the plate, and again locking the shaft with a spare sprocket, replace and tighten the sprocket nut securely.

Preventive Maintenance

A good preventive maintenance program of regular inspection and care will increase life and improve performance of your McCulloch chain saw. This maintenance check chart is a guide for such a program. Cleaning, adjustment and parts replacement may, un-

Preventive Maintenance Check Chart		FREQUENCY			
ITEM	MAINTENANCE	Daily	Weekly	Monthly	As Required
Screws, Nuts, Bolts	Inspect & Tighten	X			
Controls	Inspect	X			
Air Filter	Clean	X			
	Replace		X		
Sawdust Guard	Clean	X			
Chain	Inspect & Sharpen	X			
Bar	Clean & Turn	X			
Shock Mounts (CP)	Inspect	X			
	*Replace				X
Sprocket	Inspect	X			
	Replace				X
Fuel Filter	Clean		X		
Oil Screen	Clean		X		
Muffler	Clean	X			
Spark Plug	Clean & Adjust		X		
	Replace				X
Cylinder Fins	Clean			X	
Starter Rope	Inspect		X		
	*Replace				X
Carburetor	*Clean			X	
Fuel Tank	Clean			X	
Breaker Points	*Clean & Adjust			X	
Lamination Gap	*Check & Adjust			X	
Exhaust Ports	*Clean			X	
Gearcase Oil (Gear Drive)	Check	X			
	Drain & Refill		X		

* Recommended For maintenance by an Authorized McCulloch Dealer

der certain conditions, be required at more frequent intervals than those indicated*. The chain oiler must be kept constantly in good operating condition and the chain must be kept snug on the bar. Shock mounts on models so equipped (usually designated "CP" models) serve the same purpose as shock absorbers on an automobile and receive as much or more punishment. They provide the extremely smooth cutting performance on these models and should be inspected frequently and replaced when any deterioration is noted. Look for tears in the rubber and separation between the rubber and metal supports.

* After the first seven days or fifteen hours of operation, whichever comes earliest, take your saw back to your nearest McCulloch Servicing Dealer for an inspection and checkup. He will be pleased to help you establish a preventive maintenance program to suit your individual needs. The recommended first seven day or fifteen hour checkup and a follow-up of regular, periodic checkup and tune-up at your McCulloch dealer's shop will be minimal in cost and will assure you long, satisfactory service life from your McCulloch chain saw.

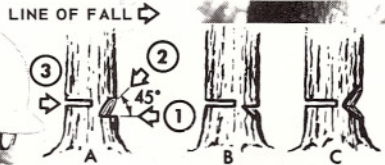
DIRT IS A CHAIN SAW'S WORST ENEMY!

NEGLECT IS NEARLY AS BAD!

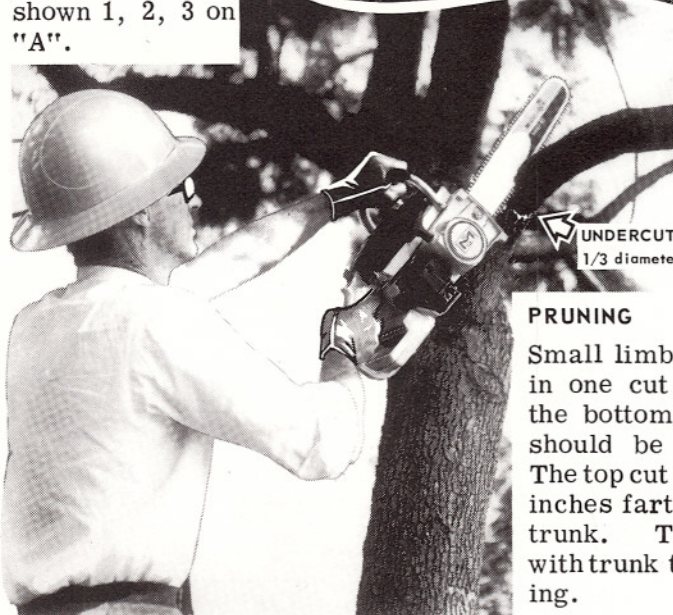
General Cutting Instructions

FELLING

Direction of fall is controlled by the undercut. Type "A" is easy to make and is commonly used for small trees. Type "B" leaves butt end of log cut squarely across. Type "C" is a variation of Type "A". Notch should be about $\frac{1}{3}$ the diameter of the tree. On felling cut, do not cut through to notch. Uncut band of wood parallel to notch serves as a hinge. Make cuts in order shown 1, 2, 3 on "A".



FELLING CUT
2" above level
of notch



UNDERCUT
 $\frac{1}{3}$ diameter of limb

PRUNING

Small limbs can be pruned in one cut - starting from the bottom. Large limbs should be undercut first. The top cut is made several inches farther out from the trunk. Trim stub flush with trunk to expedite healing.



BUCKING

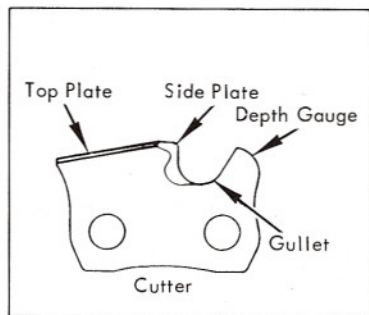
Log should be raised off the ground by use of limbs, logs or other means.

Chain Maintenance

Saw chain is very sharp! Wear gloves to protect your hands! How you care for your saw chain determines how easy it will cut, how long it will last and the kind of service you will get from it.

The use of McCulloch Depth Gauge Tools and a McCulloch File Guide is recommended to make chain sharpening a relatively simple task. Your McCulloch dealer will advise what clearance to set your depth gauges for the kind of wood you are planning to cut. If you require any advice or help, always feel free to call on him.

Cutters are the most important part of the chain. The manner in which the cutters are kept sharp determines how effectively the chain will cut wood. Names of the important parts of the cutter are shown in the illustration.



CHAIN TENSION

Check the chain tension frequently. Loosen the bar mounting nuts. Hold the bar nose up and turn the chain tension adjustment screw until the chain is a snug fit on the bar but can still be pulled around the bar by hand (don't forget the gloves). While continuing to hold the bar nose up, retighten the bar mounting nuts.

If the chain is hot to the touch, let it cool off before checking chain tension.

NEW CHAIN BREAK-IN

1. Run chain at low speed without cutting for five minutes. Push manual oiler button every ten to fifteen seconds to provide extra oil.
2. After five minutes, shut off engine and recheck and adjust chain tension. Never touch the chain while the saw engine is running!
3. Start engine and make a few easy cuts. Get the feel of the chain while it is working. Work up gradually to heavy cutting. Keep chain well lubricated.
4. After ten minutes, shut off engine and check chain tension. Adjust it as necessary. Repeat chain tension check periodically during first few hours of cutting.

CHAIN LUBRICATION

Periodically make sure manual and automatic oiler (if saw is so equipped) are working. Keep oiler tank filled with clean oil.

Use plenty of oil on chain when cutting. Never let chain run dry on the bar. In abrasive wood, use extra oil.

CHAIN SHARPENING

Chain sharpening is divided into two main steps: Sharpening cutters, and lowering depth gauges.

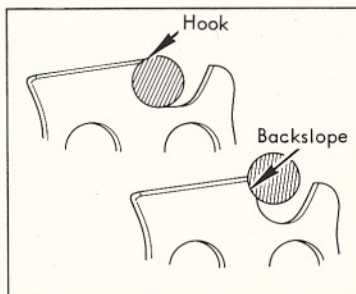
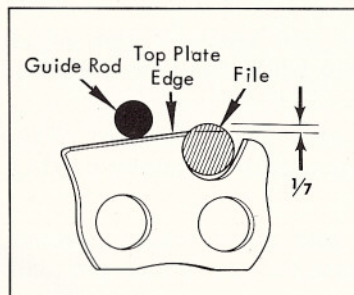
The depth gauge determines the "bite" of the cutters. Use of a McCulloch File Guide and McCulloch Depth Gauge Tools will make for accuracy and easier cutting. Use the proper diameter file for your chain. Check the File Size Table for the proper size.

FILE SIZE TABLE

CHAIN	FILE DIAMETER	
SM57	3/16	5/32
S40	7/32	3/16
S80	1/4	7/32
M90	9/32	9/32

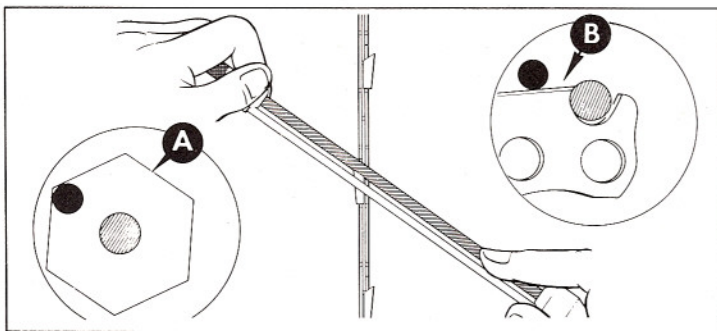
SHARPENING CUTTERS

1. Adjust chain tension snug on bar to keep chain from leaning over under filing pressure. Or place chain in chain filing vise.
2. If using McCulloch File Guide, mount file in guide. Make sure file guide screws are tight.
3. Place file on tooth to be sharpened with one-seventh of file above top plate edge. File guide rod rides on top plate. Avoid

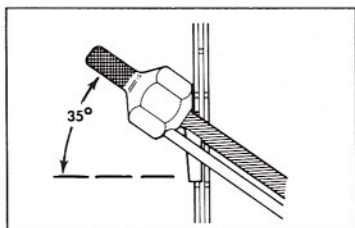


holding file too low or too high and causing a "hook" or a "backslope". Always file toward the outside of the chain.

4. Hold handle in one hand and tip in other. With file guide, apply pressure so that pressure is centered between rod and file as in "A". If filing with one hand, extend first finger of hand to apply pressure closer to filing area as in "B".



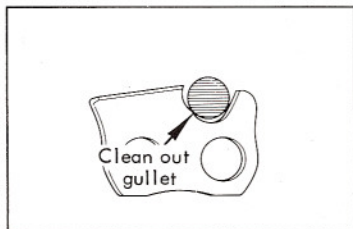
5. Hold file at 35° top filing angle or visually line up cone on guide top of file holder with side of chain. This gives correct 35° top filing angle.



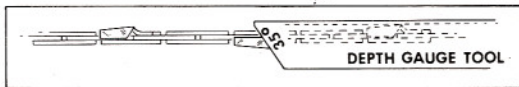
6. Apply pressure against face of tooth and push file toward outside of chain. Maintain 35° angle and hold file level.

7. Release pressure against cutting edge on return stroke.

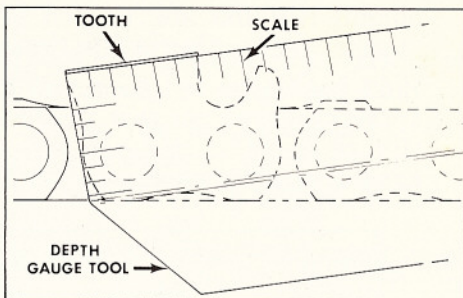
8. Again, hold file at 35° angle and repeat sharpening stroke until tooth is sharp. Drop file into gullet and clean out with a few light strokes. Do not touch cutting edge of tooth.



9. Filing angle can be checked with a McCulloch Depth Gauge Tool. Hold Depth Gauge Tool parallel with chain with angle on tool against front of tooth. Angle on front of tooth should be 35° for best cutting. Turn tool over when checking teeth on other side of chain.



10. Sharpen all teeth on one side of chain before sharpening teeth on the other side. Use same number of strokes on each tooth to help keep all teeth the same length. Check length of teeth with scale on Depth Gauge Tool. Each mark on scale equals 1/16 inch.

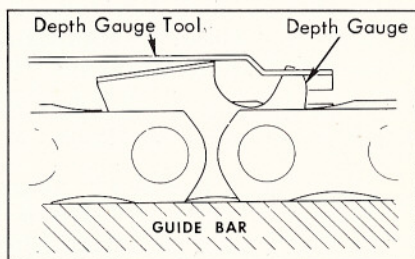


LOWERING DEPTH GAUGES

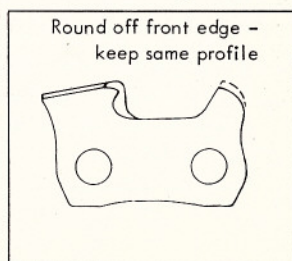
Depth gauges were set at the factory for average cutting. When cutting soft woods, depth gauges should be lowered for greater clearance. Try cutting with the chain before lowering the depth gauges. If chain feeds easily into wood, leave depth gauges as they are.

Use McCulloch Depth Gauge Tool and flat file to lower depth gauges. For cutting hard woods, set depth gauges at 0.035 inch. For cutting soft woods, depth gauges can be lowered up to 0.050 inch depending on the power of the saw. McCulloch Depth Gauge Tools come in two sizes - 0.035 and 0.040 inch clearances, and 0.045 and 0.050 inch clearances. Your dealer will help you choose the correct tool for your chain and saw and for the wood you intend to cut.

1. Place depth gauge tool over two cutter teeth with depth gauge on first cutter projecting through desired clearance slot of depth gauge tool.
2. Remove projecting part of depth gauge with flat file. File across depth gauge tool toward outside of chain.



3. After lowering all depth gauges, round off their leading edges with a stroke or two of the flat file. Maintain same profile as on original depth gauge.
4. Always place depth gauge to be filed at same place on bar when lowering depth gauges.



KEEP CHAIN CLEAN

After sharpening chain, pull it slowly around the bar by hand while pumping the manual oiler button repeatedly. 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 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 dealer for repair. He has the tools and the know-how. He will check the condition of the bar and sprocket at the same time and will help to keep your chain saw in operating condition.

IGNITION AND SPARK PLUG CHECK

Failure of the engine to start may be caused by a poor ignition spark. If you have checked the fuel supply and found the fuel tank full, then check the ignition spark as follows:

Remove the spark plug. Clean and dry the spark plug electrodes if they are wet. Ground the metal side of the spark plug against the paint-free metal surface of the engine. Do not ground the electrodes directly over the spark plug hole. Hold the spark plug by grasping the rubber boot to avoid the possibility of shock when the starter handle is pulled. Pull the starter rope sharply to spin the flywheel and watch to see if a spark jumps the spark plug gap while the flywheel is turning. If no spark can be seen, install a new spark plug and recheck. If there is still no spark, have your McCulloch dealer check the ignition system.

A HINT FOR EASIER STARTING

A newly manufactured saw or one which has been in storage may sometimes be difficult to start. This is because for shipping purposes one of the manufacturing processes removes all fuel from the fuel tank, fuel lines and carburetor after the engine is tested. Proper storage and long storage periods 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. Prime the engine by injecting about half a teaspoon of the proper fuel mixture through the carburetor air intake. (An oil can filled with the proper fuel mixture is ideal for this purpose.) Take care not to flood the engine, and do not spill fuel into the airbox. It usually takes two or three pulls of the starter rope to draw the fuel into the combustion chamber and start the engine. It may be necessary to start the engine two or three times in this manner before the engine will run on its own fuel system. As soon as the engine is running on its own fuel system, replace the air filter and air filter cover. Never do any cutting with the air filter and air filter cover off the engine.

NOTE: DO NOT USE THIS METHOD FOR REGULAR STARTING!



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