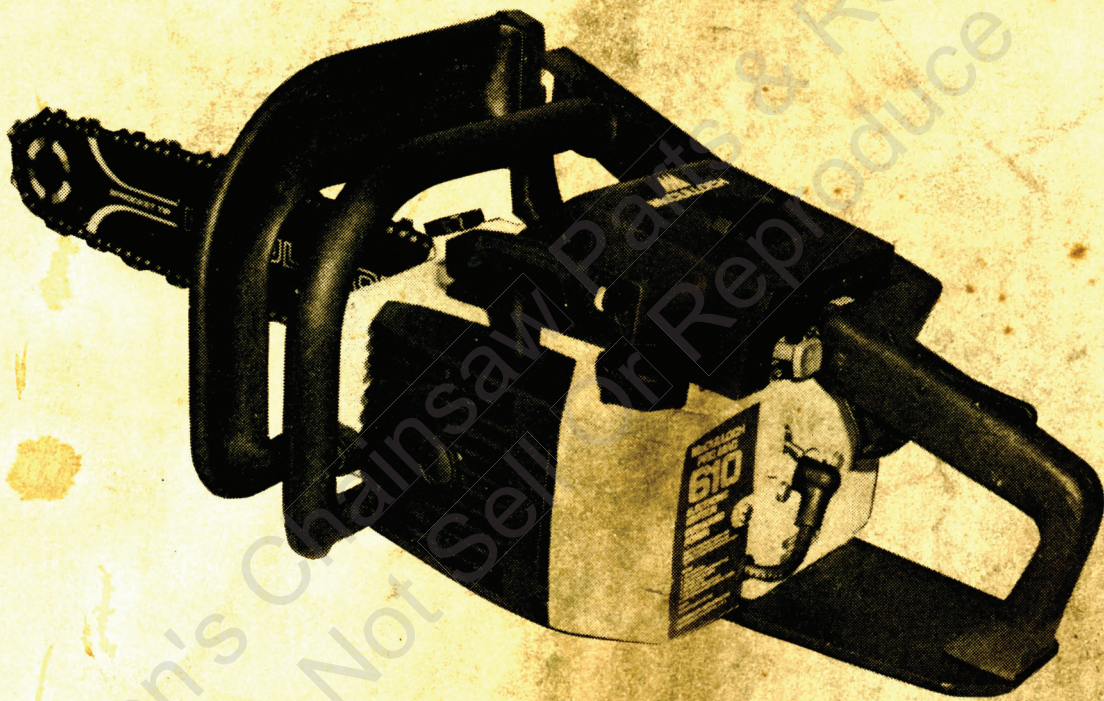




OWNER'S MANUAL



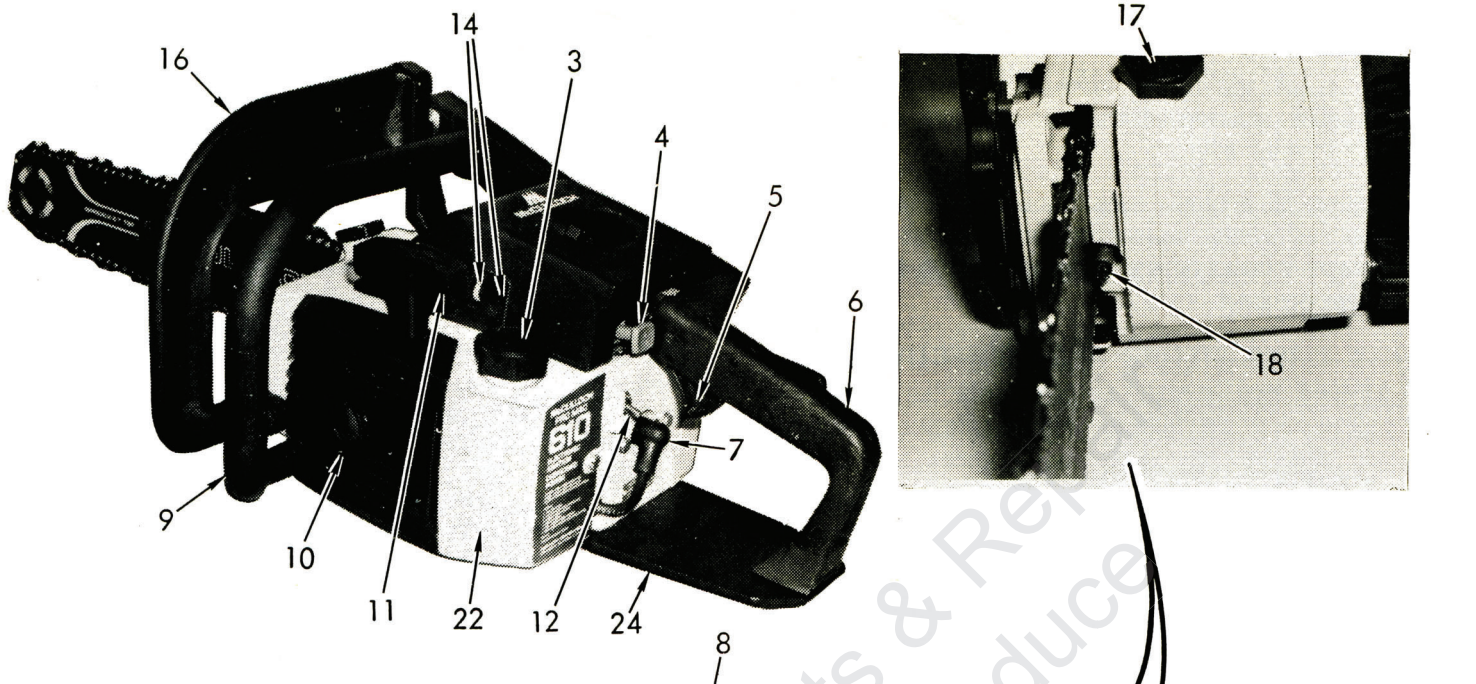
PRO MAC 610/650 Chain Saws

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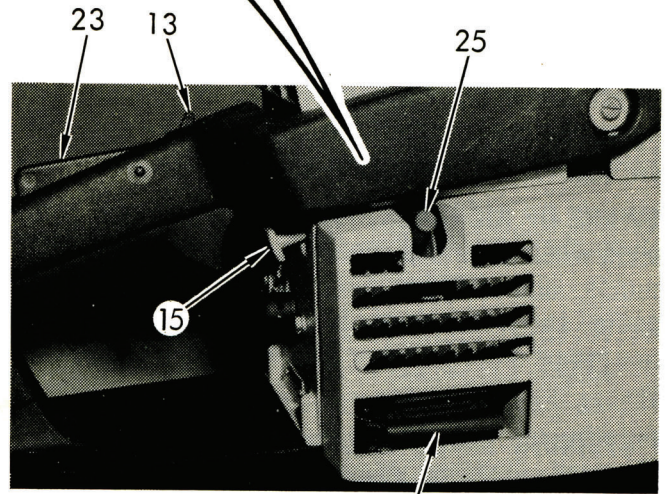
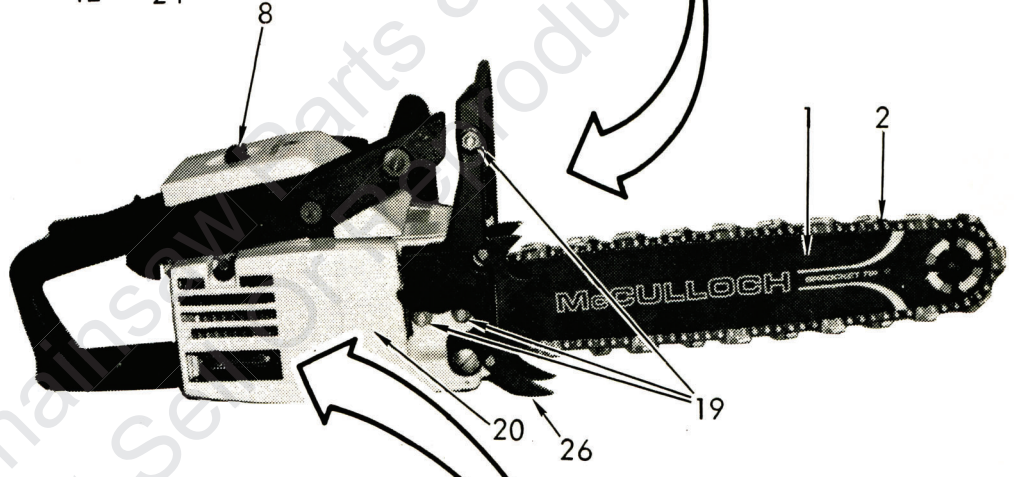
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NOTE: Throughout this manual, a number circled in black indicates the illustration which corresponds to the text where the number appears.

IDENTIFICATION



1. Guide Bar
2. Saw Chain
3. Fuel Tank Cap
4. Oiler Button
5. Throttle Trigger
6. Rear Handle
7. Spark Plug Cover
8. Air Cleaner Cover Knob
9. Front Handle
10. Starter Cover
11. Starter Handle
12. Ignition/Stop Switch
13. Throttle Latch
14. Carburetor Controls
15. Choke Button
16. CHAIN BRAKE Lever/Handguard
17. Oil Tank Cap
18. Saw Chain Tension Adjustment Screw
19. CHAIN BRAKE Retaining Nuts
20. CHAIN BRAKE
21. Muffler
22. Fan Housing w/fuel sight gauge
23. Safety Trigger
24. Bottom Shroud (Boot Loop)
25. DSP Button (PM 650)
26. Spike (Standard on 650)



The serial number is attached to the rear of the saw. Since it is possible that this may be separated from the saw, you may want to etch your own marking on the saw and record this along with the serial number and the model number.

NOTE: Many fasteners on the Pro Mac 610 and 650 are metric and are so referred to throughout this owners manual, along with American standard measurements where indicated.

SAFETY INSTRUCTIONS

READ YOUR OWNER'S MANUAL AND ALL SUPPLEMENTS (if any enclosed) thoroughly before operating your saw. ①

Operation of a chain saw should be restricted to mature, properly instructed individuals. **DO NOT ATTEMPT OPERATIONS BEYOND YOUR CAPACITY OR EXPERIENCE.**

WEAR CLOSE FITTING AND PROTECTIVE WORK CLOTHING that is made to give protection, such as (A) safety hat, (B) safety shield, safety goggles or safety glasses, (C) safety work shoes, (D) heavy duty work gloves, and (E) good grade ear plugs or sound barriers. ②

DON'T USE ANY OTHER FUEL than that recommended in your Owner's Manual.

REFUEL IN A SAFE PLACE. OPEN FUEL CAP SLOWLY to release any pressure which may have formed in fuel tank. Do not start a saw where you fuel it, move at least 10 feet (3 meters) from fueling area before starting. ③

DO NOT OVERFILL or spill fuel. If fuel has been spilled on the unit, be certain the saw has dried before starting it. Do not refuel a hot saw — allow it to cool off. ③

DON'T SMOKE while fueling or operating the saw. ④

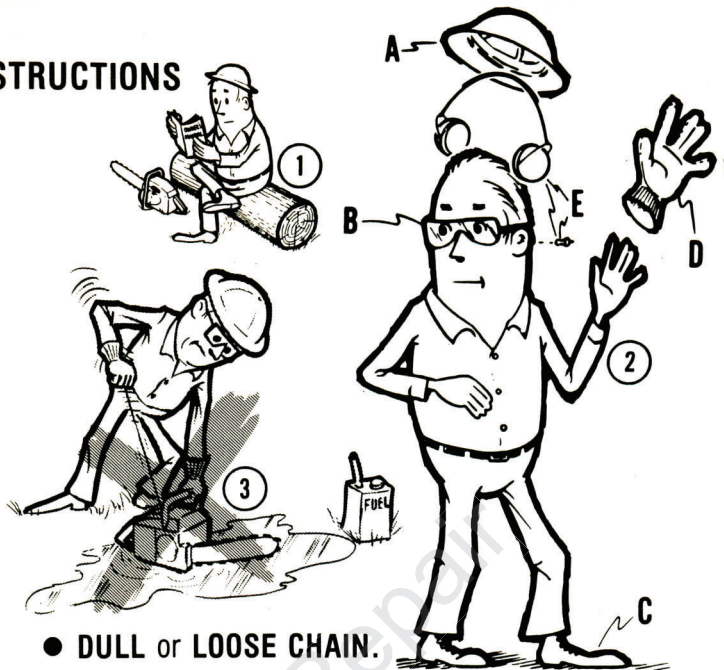
DON'T WORK ALONE.

START YOUR SAW WITHOUT HELP. Don't start a saw on your leg or knee. Never operate a chain saw when you are fatigued. ⑤

KEEP ALL PARTS of your body and clothing away from the saw chain when starting or running the engine. Before you start the engine, make sure the saw chain is not contacting anything. ⑥

BEWARE OF KICKBACK! Hold saw firmly with both hands when engine is running; use a firm grip with thumbs and fingers encircling the chain saw handles and watch carefully what you cut. Kickback (saw jumps or jerks, up or backward) can be caused by:

- **STRIKING LIMBS** or other objects accidentally with the tip of the saw while the chain is moving.
- **STRIKING METAL**, cement, or other hard material near the wood, or buried in the wood.
- **RUNNING ENGINE SLOWLY** at start of, or during cut.



- **DULL or LOOSE CHAIN.**
- **CUTTING ABOVE SHOULDER HEIGHT.**
- **INATTENTION** in holding or guiding saw while cutting.

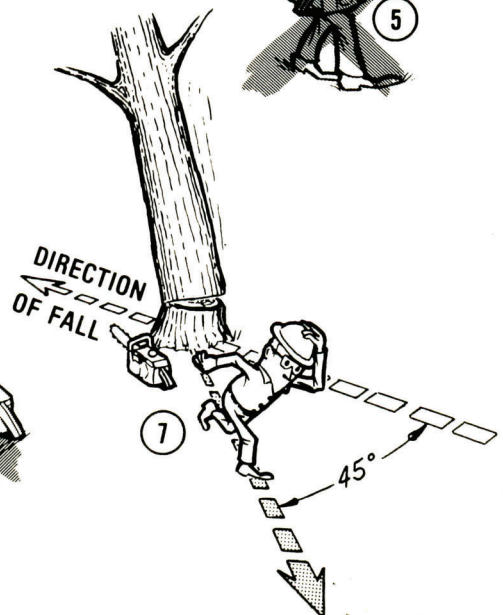
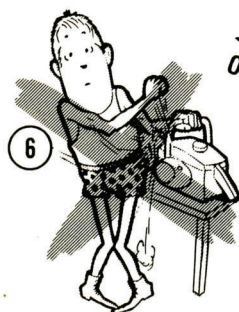
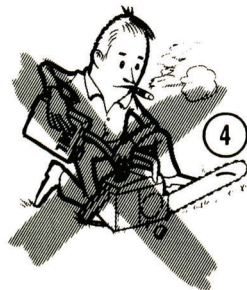
USE DEVICES such as low kickback chain, **CHAIN BRAKES**, and handguards which reduce the hazards associated with kickback.

DON'T FELL A TREE during high or changing winds.

USE WEDGES TO HELP CONTROL FELLING and prevent binding the bar and chain in the cut. ⑦

BE SURE OF YOUR FOOTING and pre-plan a safe exit from a falling tree or limbs. ⑦

DO NOT SET A HOT SAW DOWN in areas where flammable material is present.



WE STRONGLY RECOMMEND you do not attempt to operate the saw while **IN A TREE, ON A LADDER** or **ON ANY OTHER UNSTABLE SURFACE**. If you elect to do so, be advised that these positions are **EXTREMELY DANGEROUS**. ⑧

DON'T CUT IN AWKWARD POSITIONS (off-balance, out-stretched arms, one-handed, etc.).

WHEN CUTTING A LIMB THAT IS UNDER TENSION be alert for springback so that you will not be struck when the tension is released. ⑨

USE EXTREME CAUTION when cutting small size brush and saplings because slender material may catch the saw chain and be whipped toward you, or pull you off balance. ⑩

VIBRATION — Avoid prolonged operation of your chain saw and rest periodically, especially if your hands or arms start to have a loss of feeling, swell or become difficult to move. These conditions can

reduce your ability to control a saw.

EXHAUST FUMES — Do not operate your chain saw in confined or poorly vented areas.

OBSERVE ALL LOCAL FIRE PREVENTION REGULATIONS. We recommend that you keep a fire extinguisher and shovel close at hand whenever you cut in areas where dry grass, leaves or other flammable materials are present.

NOTE: Spark arrester screens are available for installation in your muffler where fire regulations require them. Check local regulations for your special requirements.

NEVER OPERATE YOUR CHAIN SAW WITHOUT A MUFFLER.

DO NOT CARRY THE SAW BY THE CHAIN BRAKE LEVER.

WHEN TRANSPORTING YOUR CHAIN SAW, use the appropriate guide bar scabbard.

TURN OFF YOUR SAW WHEN MOVING BETWEEN CUTS and before setting it down. Always carry the chain saw with the engine stopped, the guide bar and saw chain to the rear, and the muffler away from your body. ⑩

DON'T TOUCH or try to stop a moving chain with your hand. ⑪

DON'T ALLOW ANY OTHER PERSON or **ANIMAL CLOSE** to a running saw or where a tree is being cut down. ⑫

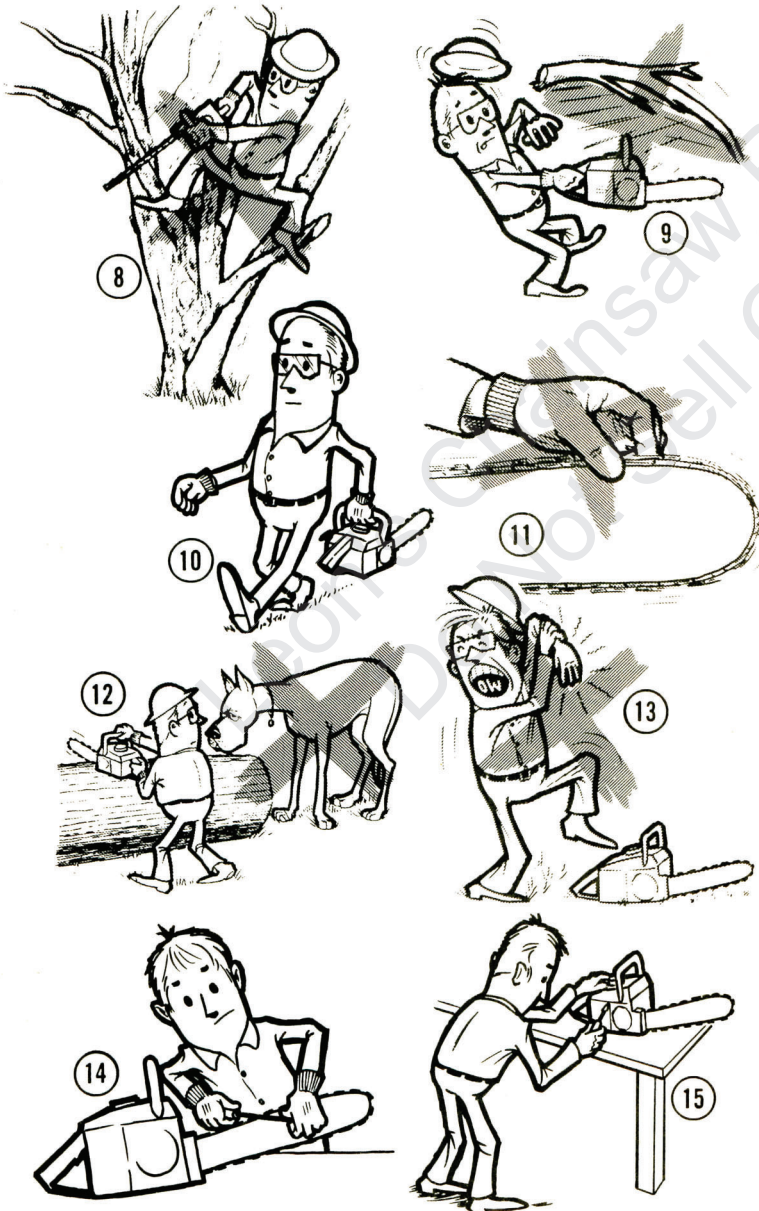
DON'T TOUCH or let your hand come in contact with a hot muffler, spark arrester, or a spark plug wire. Don't run the saw without a muffler, exhaust stack, or a spark arrester. Keep screens and baffles clean. ⑬

KEEP THE CHAIN SHARP and **SNUG** on the **GUIDE** bar. ⑭

DON'T ALLOW DIRT, FUEL or **SAWDUST** to build up on the engine or outside of the saw.

KEEP ALL SCREWS and **FASTENERS TIGHT**. Never operate a chain saw that is damaged, improperly adjusted, or is not completely and securely assembled. Be sure that the saw chain stops moving when the throttle control trigger is released. Keep the handles dry, clean and free of oil or fuel mixture. ⑮

DON'T OPERATE YOUR CHAIN SAW unless the chain stops when the engine idles. (Have corrected.)



GENERAL CUTTING INSTRUCTIONS

Before using your saw, you should review the safety precautions listed in your Owner's Manual, and all local regulations for the operation of your saw. These precautions and regulations are for your protection.

For all types of cutting, always hold saw firmly with both hands, with thumbs and fingers encircling saw handles.

Cut at high engine speeds (full throttle) only. Don't run the engine slowly at the start or during the cut.

Pre-plan a safe exit from a falling tree or limbs.

Cut wood only.

Test the operation of the CHAIN BRAKE before cutting.

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". The notch should be about 1/3 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". ⑩

When diameter of wood being cut is greater than bar length, make two cuts as shown. ⑪

BUCKING

When bucking on a slope, always stand on the up hill side.

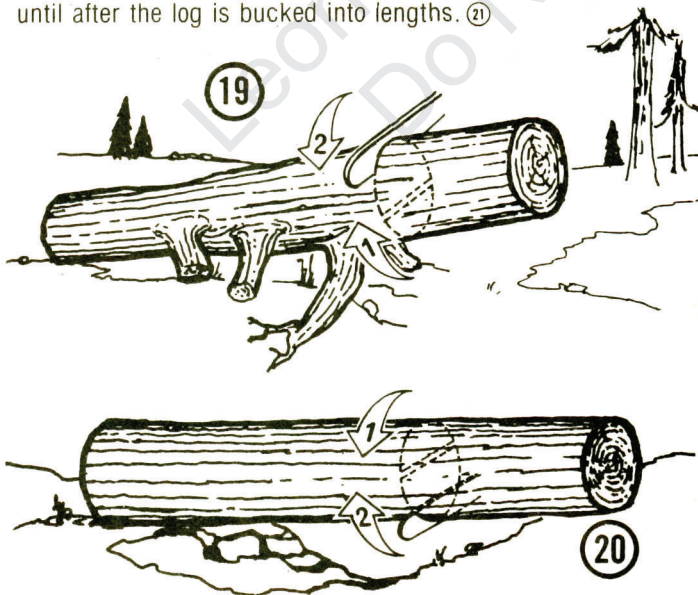
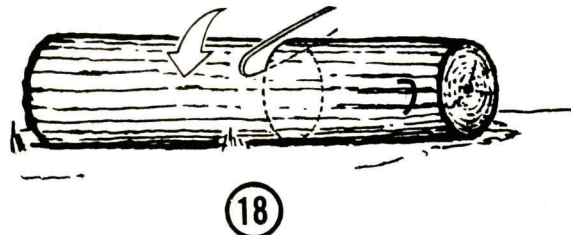
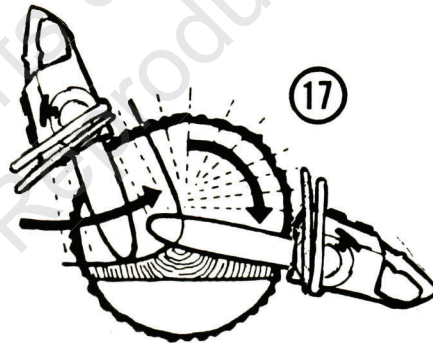
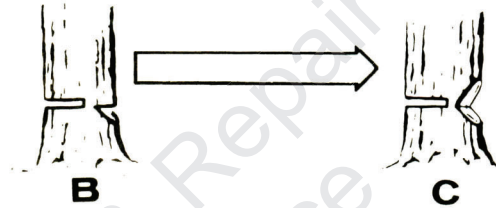
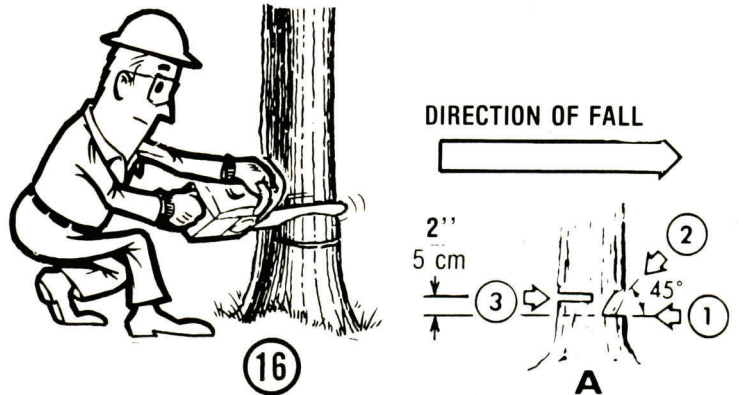
LOG SUPPORTED ALONG ENTIRE LENGTH: Cut from top (overbuck), being careful to avoid cutting earth. ⑫

LOG SUPPORTED ON ONE END: First cut from bottom (underbuck) 1/3 diameter of log to avoid splintering. Second, overbuck to meet first cut and avoid pinching. ⑬

LOG SUPPORTED ON BOTH ENDS: First overbuck 1/3 diameter of log to avoid splintering. Second, underbuck to meet first cut and avoid pinching. ⑭

LIMBING

Keep the log off the ground. Do not remove supporting limbs until after the log is bucked into lengths. ⑮



FUEL AND LUBRICATION

FUEL

Use only regular grade leaded gasoline. Do not use highly leaded, unleaded or low lead gasolines. Chain saw fuel is a mixture of gasoline and lubricating oil. The correct ratio of gasoline to oil is very important. Follow the ratios in the Fuel Mixture Table. McCulloch 40:1 Two-Cycle Custom Lubricant is recommended. If not available, use a good grade SAE 40 two-cycle oil at a ratio of 20 to 1.

MIXING FUEL

Mix fuel in a container equipped with a flexible spout and strainer. Pour half of the gasoline and all of the oil into the container. Shake the container vigorously! Add the rest of the gasoline and shake container vigorously again. Thoroughly mixed fuel makes your saw run better. Use the sight gauge through the fan housing for determining your fuel supply.

CAUTION: Fuel additives or special starting fluids should not be used because seals and other rubber composition parts may be damaged.

FUEL MIXTURE TABLE

Gasoline	McCulloch 40:1 Ratio Custom Lubricant	SAE 40 Two-Cycle Oil 20:1 Ratio
½ U.S. Gal.	1.6 oz. 48 ml (cc)	3.2 oz. 95 ml (cc)
1 U.S. Gal.	3.2 oz. 95 ml (cc)	6.4 oz. 190 ml (cc)
5 U.S. Gal.	16.0 oz. 475 ml (cc)	32.0 oz. 950 ml (cc)
1 Liter	0.9 oz. 25 ml (cc)	1.7 oz. 50 ml (cc)
5 Liter	4.3 oz. 125 ml (cc)	8.5 oz. 250 ml (cc)
20 Liter	17.0 oz. 500 ml (cc)	34.0 oz. 1000 ml (cc)
1 Imp. Gal.	4.3 oz. 125 ml (cc)	8.6 oz. 250 ml (cc)
2 Imp. Gal.	8.6 oz. 250 ml (cc)	17.1 oz. 500 ml (cc)
5 Imp. Gal.	21.4 oz. 625 ml (cc)	42.8 oz. 1250 ml (cc)
Mixing Procedure	40 parts gasoline to 1 part lubricant	20 parts gasoline to 1 part lubricant

1 ml = 1cc

CHAIN AND BAR LUBRICATION

Always refill the chain oil tank each time the fuel tank is refilled. 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°F (5°C) and SAE 10 non-additive motor oil at lower temperatures.

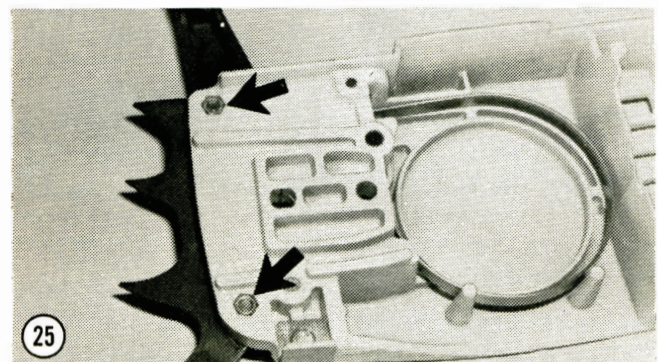
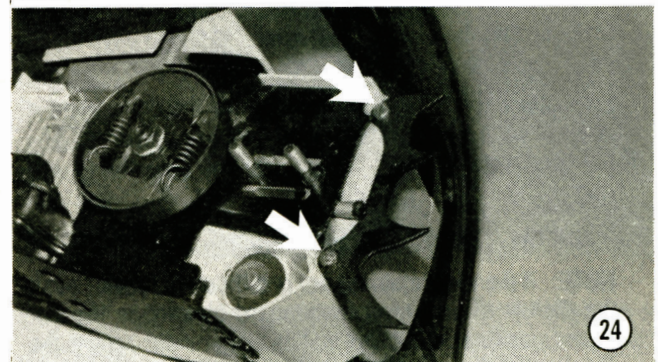
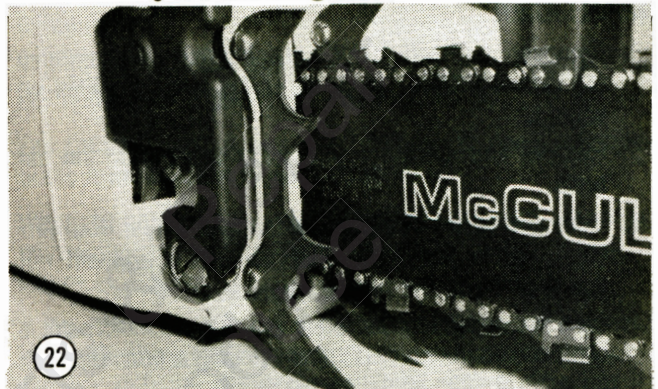
INSTALLATION INSTRUCTIONS

SPIKE INSTALLATION (PM 650)

Two spikes are included in the owners kit for the PM 650. The spikes, acting as wood grippers and fulcrum points, aid in cutting control. ⑳

To install spikes:

1. Remove the CHAIN BRAKE retaining nuts. Then remove the CHAIN BRAKE. ㉓
2. With the largest tooth at the bottom, fasten one spike to the oil tank with two of the screws provided. ㉔
3. Insert the two nuts into their holes in the CHAIN BRAKE housing with the locking tabs on the outside. ㉕
4. Again, with the largest tooth at the bottom, fasten the other spike onto the CHAIN BRAKE housing using the remaining two screws. ㉕



GUIDE BAR, SAW CHAIN AND CHAIN BRAKE INSTALLATION

CAUTION: Do not attempt to start or run the engine until the BAR, SAW CHAIN and CHAIN BRAKE have been installed.

WARNING: Handle the CHAIN BRAKE carefully when it is removed from the saw because the lever is under tension. Make certain the CHAIN BRAKE lever is pulled back to the disengaged position when installing or removing the CHAIN BRAKE.

WARNING: Always wear protective gloves when handling chain.

INSTALLATION

1. Remove the CHAIN BRAKE retaining nuts. Then remove the CHAIN BRAKE. (Only necessary when installed on saw). ⁽²⁶⁾
2. Remove and discard any spacing washers on the bar bolts.
3. Turn the chain tension adjustment screw counter-clockwise to move the chain tension adjustment nut (tang) as far to the rear as possible. ⁽²⁷⁾
4. Slide the slotted end of the bar over the bolts and push it back toward the sprocket until the tang is properly positioned in the bar adjustment hole. ⁽²⁸⁾
5. Spread the chain out in a loop with the cutting edges of the chain pointing clockwise around the loop. ⁽²⁹⁾
6. Guide the chain around and behind the drum (between the drum and the muffler) and onto the sprocket. ⁽³⁰⁾
7. Move the chain back and forth to make sure it is in proper mesh with the sprocket and lined up with the bar groove. ⁽³¹⁾
8. Guide the chain center links into the bar groove all the way around the bar. Remove the slack in the chain by turning the chain tension adjustment screw clockwise. ⁽³²⁾
9. Install the bar protector plate over the bar bolts with the flange away from the bar. ⁽³³⁾
10. Make certain the CHAIN BRAKE lever is pulled back to the disengaged position (chain can move). ⁽³⁴⁾
11. Install the CHAIN BRAKE, being certain the brake band is fitted carefully around the outside of the clutch drum, and the CHAIN BRAKE lever is set properly onto the CHAIN BRAKE. ⁽³⁵⁾
12. Install the retaining nuts finger tight.

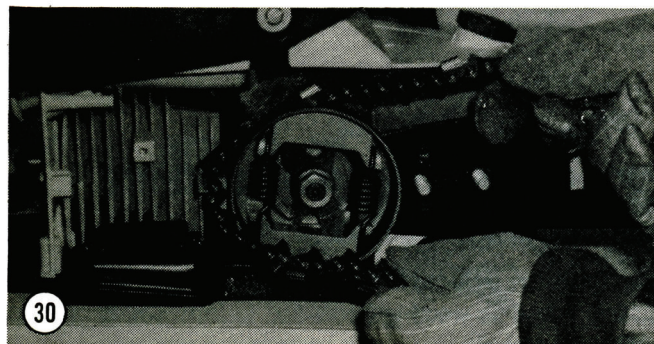
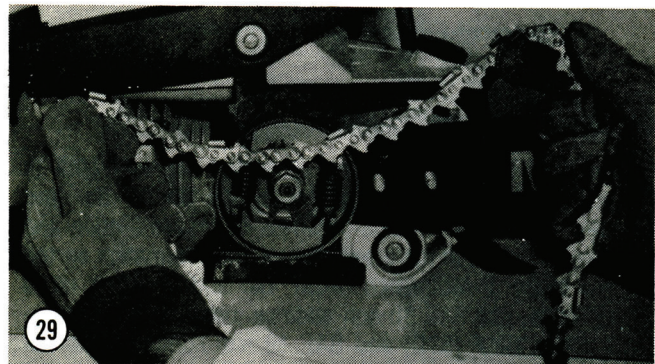
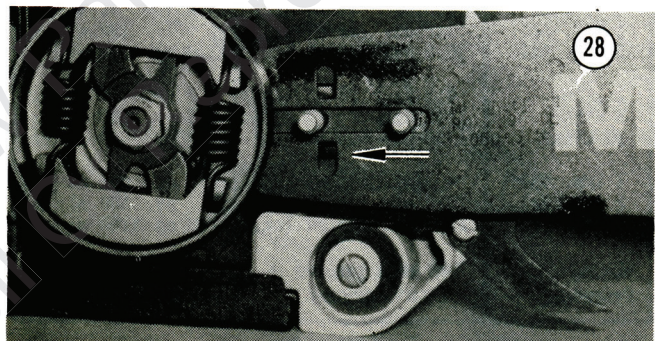
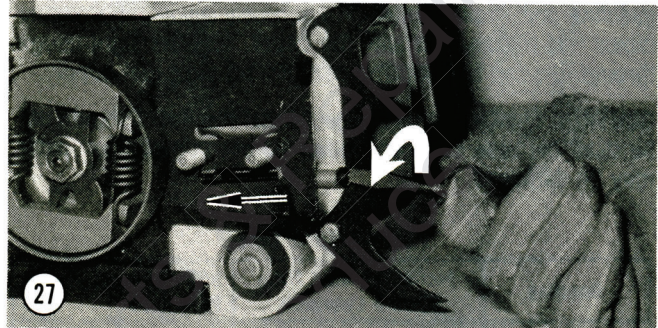
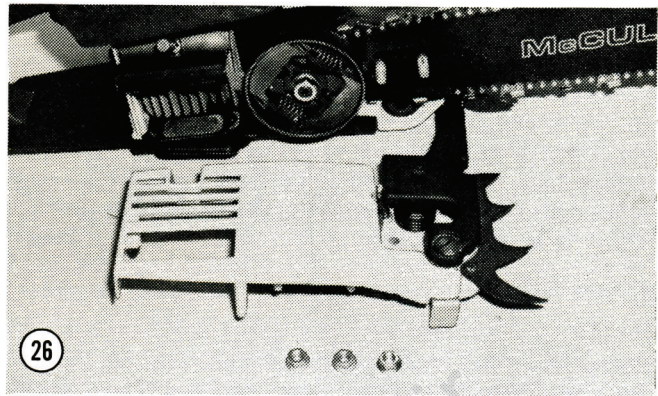
NOTE: If the rear retaining nut is difficult to install, push the CHAIN BRAKE lever/handguard forward to the engaged position. When the nut is finger tight return the CHAIN BRAKE lever/handguard back to the disengaged position.

13. Hold the nose of the bar up and turn the adjustment screw clockwise to tension the chain. It should be a snug fit all the way around the bar.

NOTE: The chain has the proper tension when, with the bar locked in the uppermost position, it has a snug fit all around and will pull around the bar easily by hand. No droop or sag of the chain is permitted.

14. While holding the nose of the bar up, tighten the retaining nuts securely.

15. Install and tighten the nut that secures the CHAIN BRAKE lever/handguard to the CHAIN BRAKE lever.



OPERATING INSTRUCTIONS

CHAIN BRAKE OPERATION

Your chain saw is equipped with a CHAIN BRAKE that reduces the possibility of injury due to "kickback." The brake is actuated if pressure is applied against the lever when, as in the event of "kickback," the operator's hand strikes the lever. When the brake is actuated, chain movement stops abruptly.

CAUTION: Purpose of the CHAIN BRAKE is to reduce the possibility of injury due to "kickback" but it can not provide the measure of protection intended if the saw is operated carelessly.

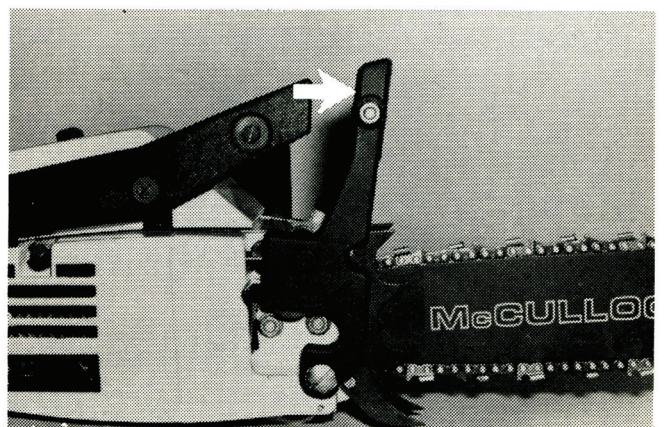
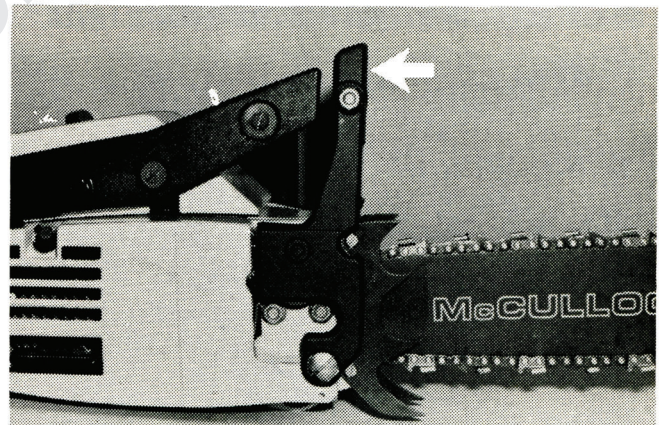
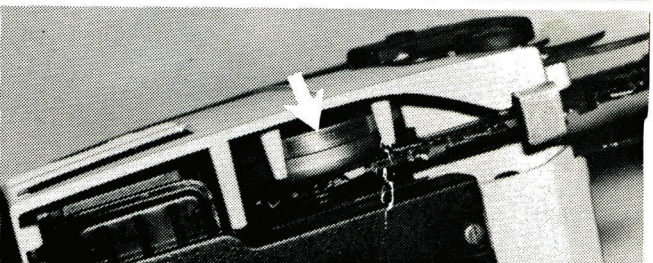
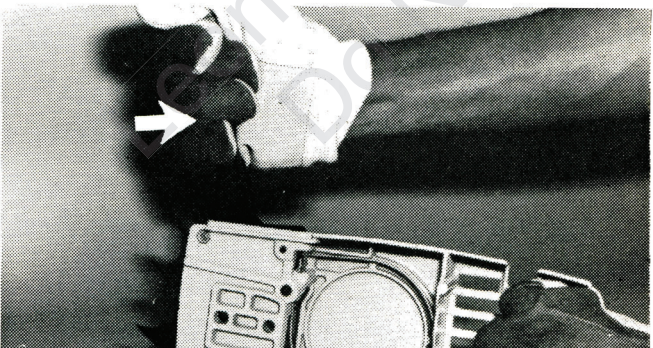
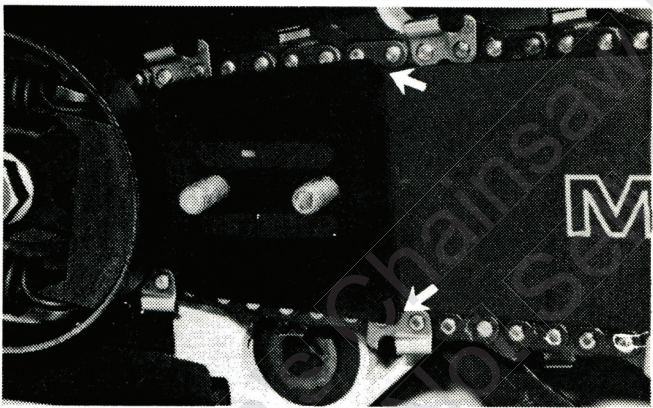
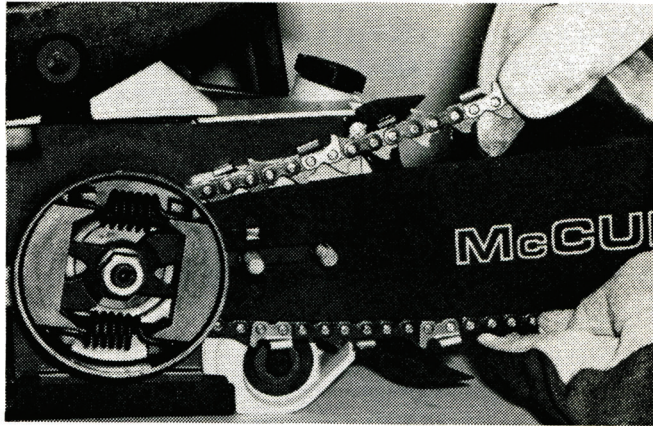
The CHAIN BRAKE is disengaged (the chain can move) when the brake lever is pulled back and locked. (36)

The CHAIN BRAKE is engaged (chain is stopped) when the brake lever is in the forward position. (37)

When the brake has been tripped and engaged (chain stops) immediately release the throttle trigger to prevent damage to engine or clutch.

If the CHAIN BRAKE has been actuated and the engine is idling, grasp the brake lever firmly and pull back to the locked position while controlling the saw with a hand grasping the rear handle. Be careful not to squeeze the throttle trigger.

NOTE: Do not attempt to start or operate the engine with the brake engaged (chain is stopped). Do not allow the engine to idle for long periods of time when the brake is engaged as this tends to build up heat in the sprocket bearing.



Before cutting with your saw, test the CHAIN BRAKE as follows:

1. Place the saw on a firm flat surface.
2. Follow the correct procedures to start the engine.
3. Grasp the rear handle firmly with the right hand. (38)
4. With the left hand, hold the front handle (not the CHAIN BRAKE lever) firmly. (38)
5. Squeeze the throttle trigger so that the chain begins to move, then activate (push forward) the CHAIN BRAKE lever. (38)

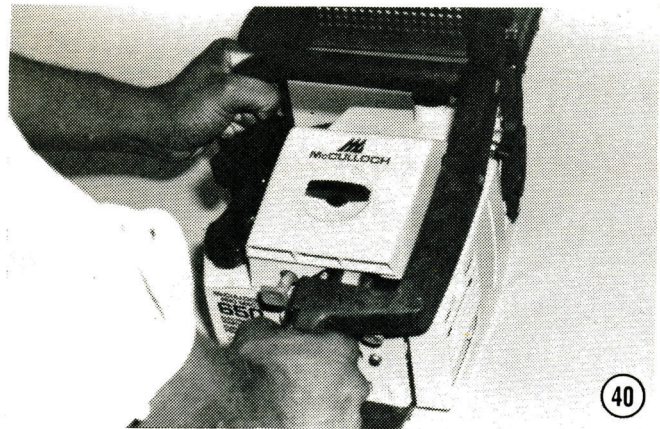
CAUTION: Activate the **CHAIN BRAKE SLOWLY** and **DELIBERATELY**. Be careful to keep chain from touching surface: don't let saw tip forward.

6. The chain should stop abruptly. When it does, release the throttle trigger immediately.

NOTE: If the chain does not stop, turn off the engine and check to be sure the CHAIN BRAKE is properly installed. If the installation is correct, take the saw to your McCulloch dealer for repair or replacement of the CHAIN BRAKE assembly.

The CHAIN BRAKE lever (hand-guard) provides the best protection against kickback when the saw is held at the top of the front handle. As the left hand moves around the front handle (toward the bottom of the saw) the CHAIN BRAKE becomes increasingly difficult to activate. However, the CHAIN BRAKE lever will act as a hand-guard if the saw is being held at any point on the front handle. (39) (40)

DO NOT HOLD THE SAW BY THE CHAIN BRAKE LEVER.

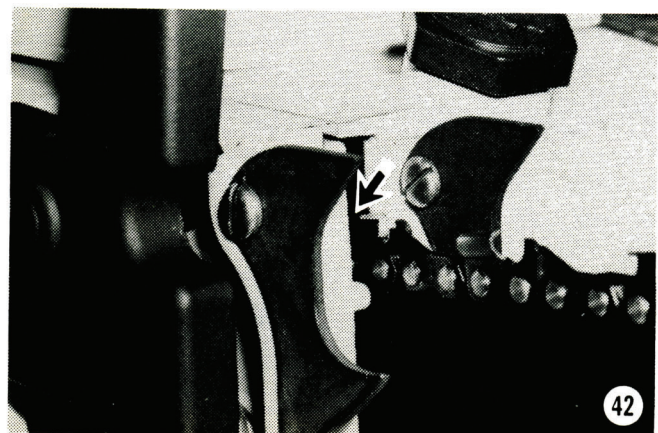
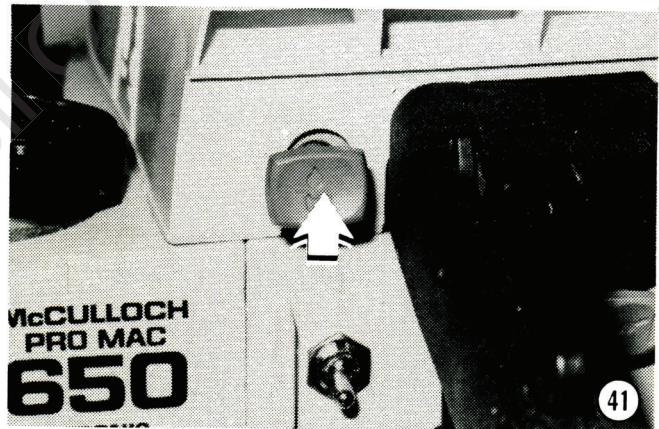


STARTING AND STOPPING

Your new McCulloch Chain Saw is equipped with a combination Safety Trigger and Throttle Latch.

Pre-start Checks

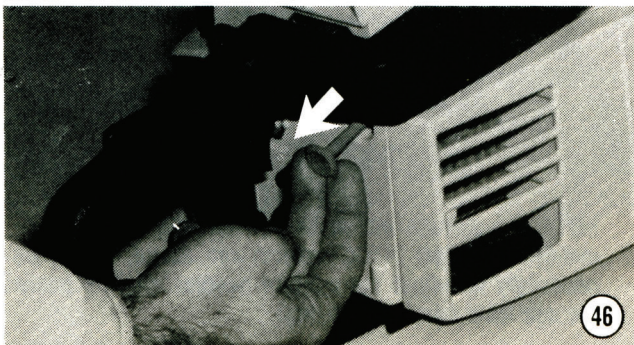
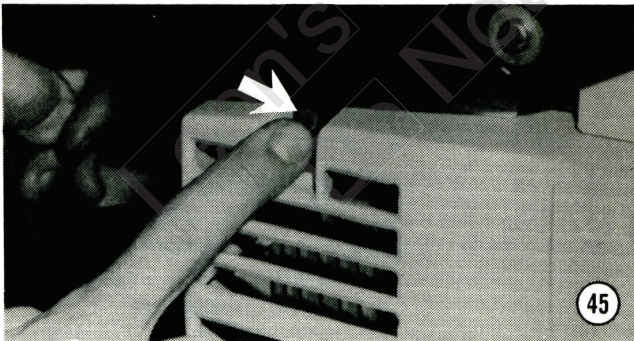
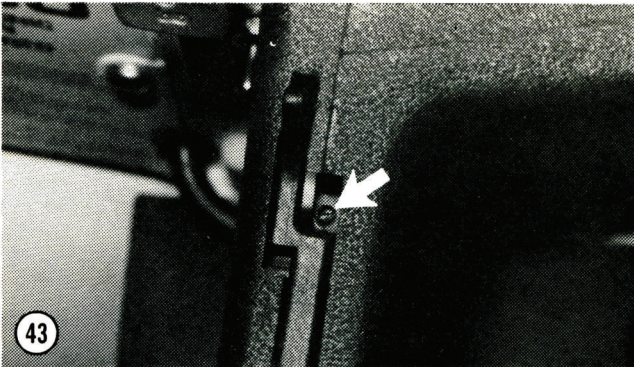
1. Fill the fuel tank with correct fuel mixture. Be certain not to spill fuel on the saw and, if you do, allow saw to dry out thoroughly before attempting to start or operate.
2. Fill the chain oil tank with the correct chain oil and pump manual oiler until oil is seen at top of bar just forward of the CHAIN BRAKE. (41) (42)
3. Make sure the chain has correct tension and the bar is tight on saw.
4. Make sure CHAIN BRAKE is in the disengaged (chain can move) position.



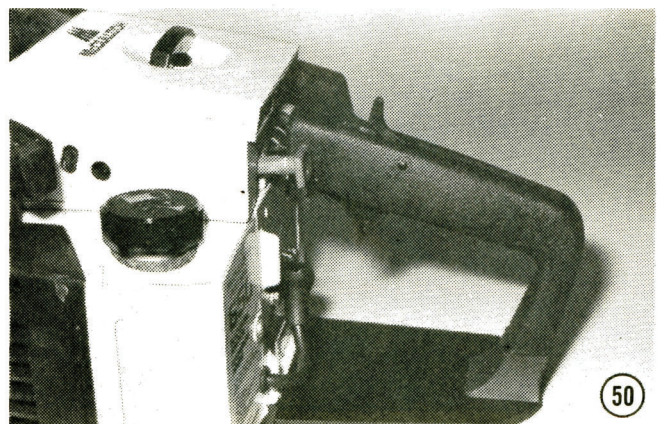
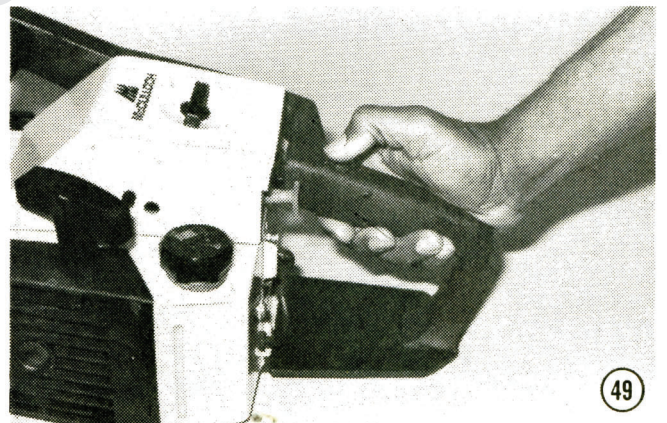
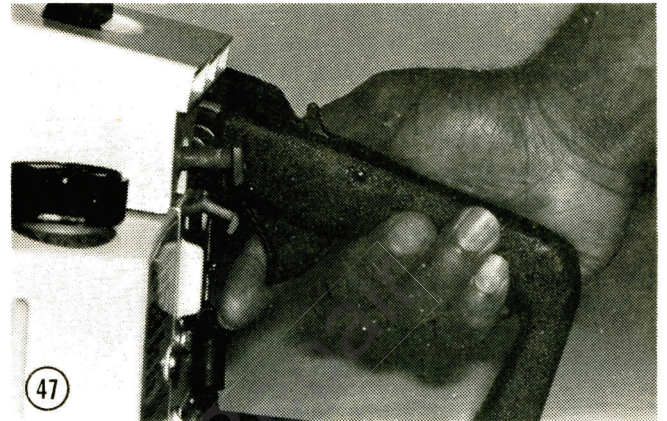
To Start

The throttle trigger has an adjustable screw to set the starting idle speed. It has been set for best performance by the factory. Should you need to readjust it, turning it counterclockwise will increase the starting idle speed. Conversely, turning it clockwise will decrease the starting idle speed. (43)

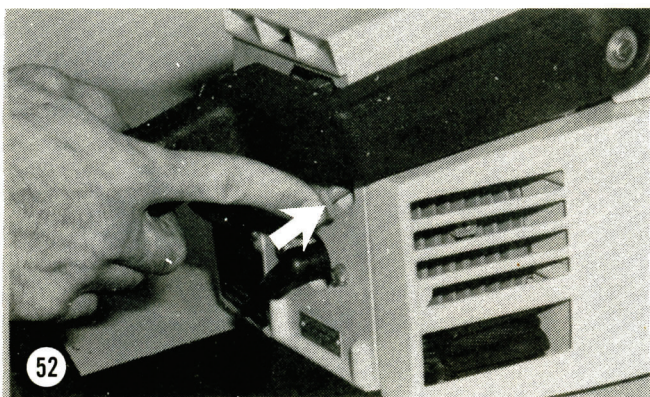
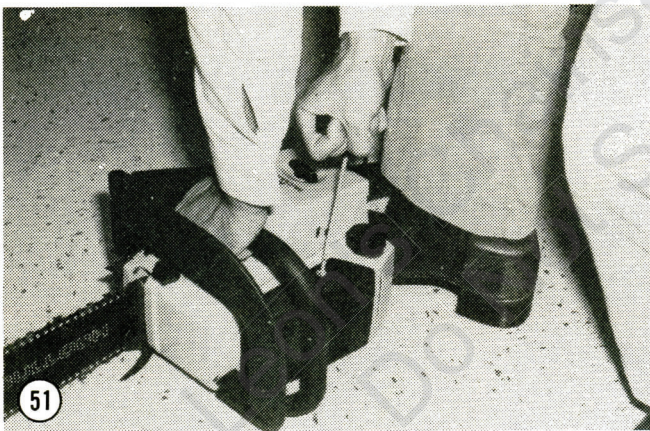
1. Place saw on a clear, firm and flat surface.
2. Move ignition/stop switch up to the "START" position. (44)
3. Push the control button for the compression release (DSP) valve in to the open position (if saw is equipped with DSP valve). (45)
4. Pull the choke button out to the closed position (cold engine only). (46)



5. Depress the safety trigger with the palm of your hand, then squeeze the throttle trigger open. (47) (48)
6. With thumb, pull back on the throttle latch, then release the throttle trigger. Throttle is now partially open. (49) (50)



7. Hold the saw down firmly by the front handle (not CHAIN BRAKE lever/handguard). Place your right foot in the "boot loop" formed by the rear handle and bottom shroud. Keep all parts of the body clear of the bar and chain. ⁽⁵¹⁾
8. Pull the starter handle slowly until you feel the starter engage, then pull with a smooth, rapid, short-stroke motion. Allow the starter rope to rewind slowly. Never let the starter rope snap back from the extended position. Repeat until engine first fires. ⁽⁵¹⁾
9. When the engine first fires, push the choke button in to the open position. The control button for the DSP valve will move out automatically, closing the valve. ⁽⁵²⁾
10. If the engine fires but does not continue to run, leave the choke pushed in to the open position, push the DSP control button in again to the open position, then pull the starter handle again. Repeat until engine starts.
11. After the engine starts, release the throttle latch as quickly as possible. A movement of the throttle trigger will release the throttle latch allowing the engine to return to idle speed.
12. To keep the engine running after first starting, it may be necessary to pull the choke button to a slightly closed position while alternately squeezing and releasing the throttle trigger. Continue to squeeze and release the throttle trigger as required until the engine is running smoothly without hesitation.
13. Push choke button in to open position and allow the engine to run slowly until it is warmed up. Do not run the engine at full throttle unless you are cutting wood.

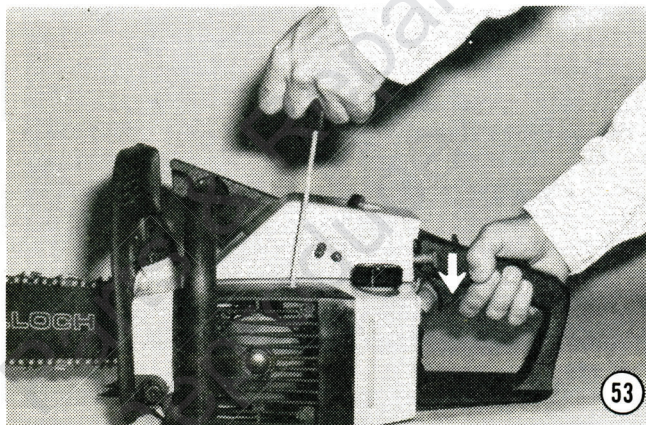


To Stop

1. Release the throttle trigger and allow the engine to return to idle speed.
2. Place the saw on a clear, firm and flat surface.
3. Pull the starter handle out slowly about 6 inches (15 to 30 cm) and move the ignition/stop switch down to the "STOP" position. ⁽⁵³⁾

NOTE: The stopping procedure stated above should be followed under normal circumstances in order to prevent unnecessary wear of the starting mechanism.

CAUTION: When it is necessary to stop the saw immediately, simply move the ignition/stop switch down to the "STOP" position.



CARBURETOR ADJUSTMENT ⁽⁵⁴⁾

General Instructions

For best results, we suggest you have your authorized McCulloch Servicing Dealer make required carburetor adjustments. He has the training, experience, and tools necessary to properly prepare your saw to meet Factory performance specifications. However, if it becomes necessary for you to make carburetor adjustments yourself, be certain to observe the following.

1. When seating needles (turning them all the way in), be careful to do so very gently. The needles and needle seats are precision machined. Therefore, they can be damaged if forcefully seated.
2. Never operate the engine with a too lean fuel/air mixture (needles not backed out sufficiently). The fuel/air mixture supplies lubrication, power, and partial cooling to the engine. Severe overheating and permanent damage to the engine can result if the mixture is too lean.

NOTE: At altitudes near sea level always be sure that the low speed mixture needle is backed out at least one turn and the high speed mixture needle is backed out at least 7/8 turn. These needles are designated "Lo" and "Hi".

NOTE: As altitude increases substantially, to approximately 5,000 feet (1500 meters) and above, it may be necessary to adjust the mixture needles slightly below the sea level minimum settings.

3. Before making or checking carburetor adjustments, install the bar and chain and be sure that the chain is being lubricated properly. A properly lubricated chain will throw a fine spray of oil off the nose of the bar when the chain is moving at operating speeds.
4. Before checking carburetor adjustments, be sure that the air filter is clean and securely in place on the air box.
5. All engines lose power as altitude increases. This is due to the "thin" air (less oxygen in the atmosphere at higher altitudes). The rate of power loss is approximately 3% per 1,000 feet (300 meters) of elevation. Therefore, an engine will develop only 85% of its sea level power at an altitude of 5,000 feet (1,500 meters), and only 70% at 10,000 feet (3,000 meters). Other factors, such as temperature and humidity, will affect power output also.

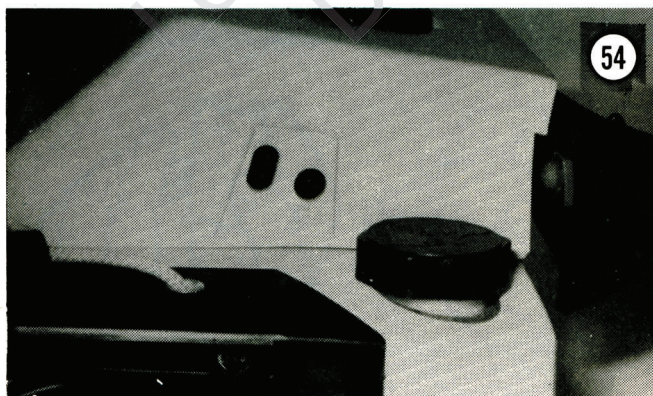
Adjustment Procedures

NOTE: The PM 650 has a built-in, automatic high speed governor. This governor is pre-set at the factory to provide the best engine RPM for power and overall engine performance, including best fuel economy. The governor also prevents the engine from running at excessive RPM's which can cause severe engine damage. Tampering with the governor is considered abuse and will void the warranty. ⁽⁵⁵⁾

1. Gently turn the LOW SPEED and HIGH SPEED MIXTURE NEEDLES in (clockwise) until they seat, then turn both needles out (counterclockwise) one full turn.
2. Adjust the IDLE SPEED SCREW until the throttle plate is just slightly open.
3. Start the engine and let it warm up thoroughly at low speed.

CAUTION: When making carburetor adjustments or testing the unit for full throttle operation, never run the engine at full throttle without a cutting load for more than a few moments. Excessive full throttle operation while not cutting can cause serious engine damage.

4. Accelerate the engine several times, adjusting the LOW SPEED MIXTURE NEEDLE to obtain a smooth, rapid acceleration without hesitation or falter. If the needle is turned in too far, the engine will hesitate or falter when accelerated. If the needle is turned out too far, the engine will run rough and smoke heavily when accelerated.



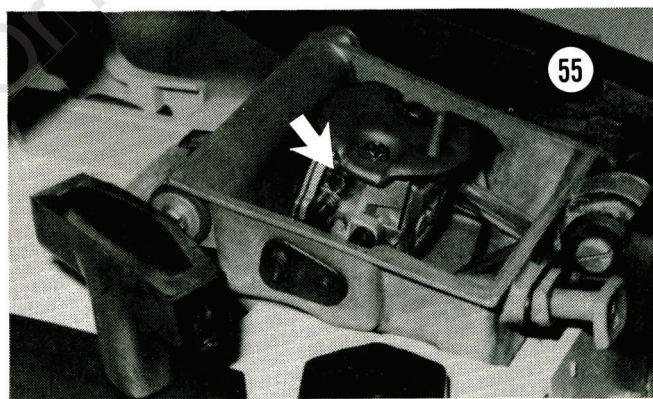
NOTE: for PM 650 units only, when HIGH SPEED MIXTURE NEEDLE is correctly set at 1 to 1-1/8 turns open (slightly less at altitude), you will notice a lightly surging RPM at wide open throttle with a free running chain but not while under a cutting load.

5. Adjust the IDLE SPEED SCREW so that the engine idles without any chain movement.
6. Check saw performance:

CAUTION: Engine performance is determined by the cutting speed and ease of operation under load. Therefore, do not adjust the carburetor for maximum sound level as this is likely to result in a lean running condition which can cause engine damage.

- A. With the throttle wide open, make a test cut in a log. If the carburetor is properly adjusted and the chain is properly sharpened, the saw will cut quickly, smoothly, and with minimum operator effort.
- B. If the engine sounds rough and slows down in the cut, turn the HIGH SPEED MIXTURE NEEDLE clockwise slightly to increase cutting speed and smoothness.
- C. If the saw has speed but lacks power to continue a smooth cut, turn the HIGH SPEED MIXTURE NEEDLE counterclockwise slightly to increase power.

NOTE: It may take several test cuts to arrive at the most satisfactory adjustment.



BREAKING IN A NEW ENGINE

Breaking in a new chain saw engine is very important. 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. Check chain tension frequently and use the manual oiler button often.

It is advisable to use a slightly richer fuel mixture during the break-in period. Turn the high speed mixture needle about one-eighth turn counterclockwise from the normal preliminary starting position. After about an hour's operation, turn the adjusted needle back one-eighth turn clockwise.

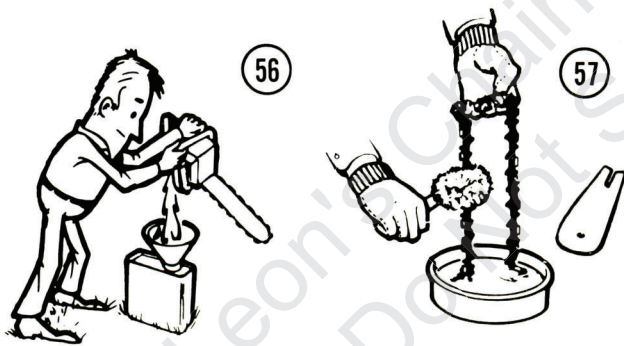
STORING A CHAIN SAW

Ideally the saw should be operated for a short period of time (5 minutes) every 30 days. When storing the saw for short periods or transporting it with fuel in the tank, always keep the saw level and with the fuel cap up to avoid leakage from the tank or cap vent.

Never store a chain saw for over 30 days without performing the following procedures:

1. Drain the fuel tank in a safe area. (56)
2. Start the saw and run at idle speed until the engine stops. This will remove most of the fuel from the fuel system.
3. Remove the spark plug with a spark plug wrench and pour a teaspoonful of oil through the spark plug hole into the combustion chamber. Pull the starter rope slowly several times to distribute the oil throughout the engine. Replace the spark plug tightly.
4. Remove and clean the bar and chain (use gloves when handling chain). (57)
5. Store the chain in a container with oil covering the chain.
6. Apply a heavy film of oil over the entire bar including the groove for the chain. Cover with heavy paper, cloth or plastic.
7. Clean the outside surfaces of the saw.
8. Place a light, protective cloth or plastic covering over the saw, and store the saw and bar in a dry place.

CAUTION: The covering should be loose to allow for proper ventilation. Always store away from possible sources of ignition such as furnaces, heaters, etc.



REMOVAL FROM STORAGE

Remove the spark plug with a spark plug wrench. Pull the starter rope briskly to clear the cylinder of excess oil. Clean and gap the spark plug or install a new spark plug. Fill the fuel tank with the correct fuel mixture and fill the chain oil tank with McCulloch Chain, Bar and Sprocket Oil.

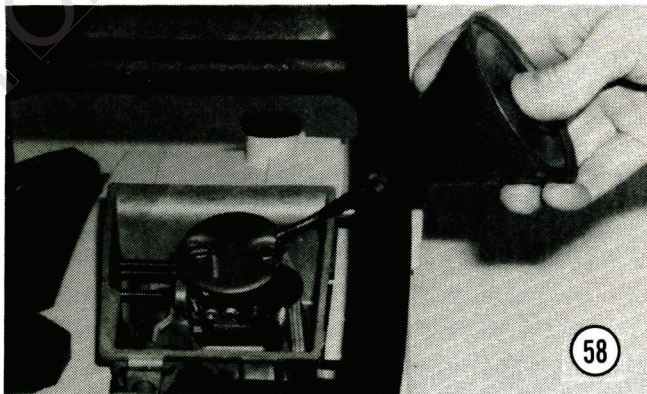
A Hint For Easier Starting (58)

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 a half teaspoon of the proper fuel mixture through the carburetor air intake using an oil can filled with the proper fuel mixture. 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, stop the engine and replace the air filter and air filter cover. Never do any cutting with the air filter and air filter cover off the engine.

Caution: Do not inject fuel while pulling the starter rope or with the engine running.

NOTE: DO NOT USE THIS METHOD FOR REGULAR STARTING!



MAINTENANCE

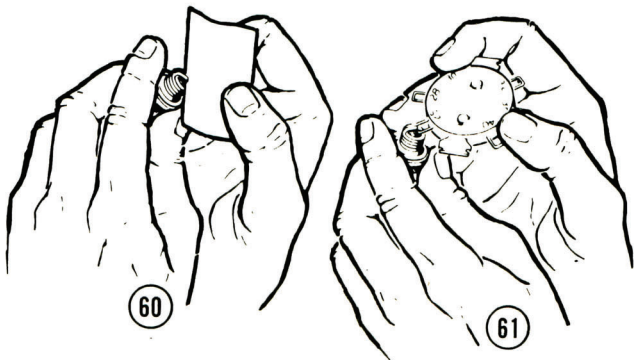
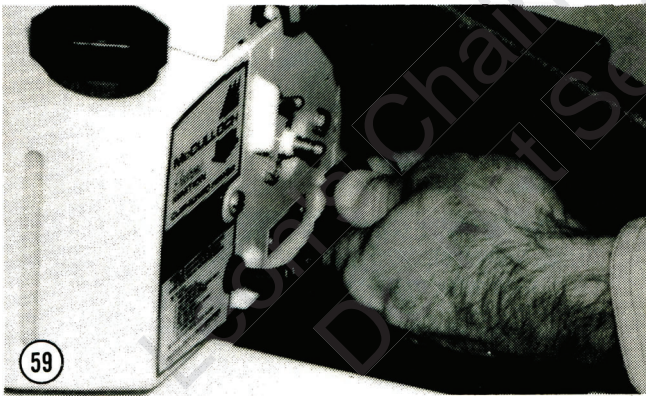
All chain saw service, other than the items listed here in your Owner's Manual maintenance instructions, should be performed by your authorized McCulloch Servicing Dealer.

Keep the saw, bar and chain clean. Do not allow the filters, muffler, and cylinder fins to become plugged or covered with saw dust, dirt or other foreign material. Never put dirty fuel or chain oil into the saw.

SPARK PLUG

For efficient operation of the saw engine, the spark plug must be kept clean and properly gapped.

1. Move ignition/stop switch to "STOP" position.
2. Disconnect the black rubber connector on end of the wire from the spark plug by twisting and pulling at the same time. ⁽⁵⁹⁾
3. Remove spark plug with spark plug wrench. Do not use any other tool.
4. Clean electrodes with emery cloth or fine sandpaper. Blow all dust away. Do not use a grit-type cleaning machine. Wear eye protection during this operation. ⁽⁶⁰⁾
5. Adjust the electrode air gap to 0.025 in. (0.635mm) by bending side electrode only. ⁽⁶¹⁾
6. Re-install spark plug (snug but don't overtighten) and black rubber spark plug connector.
7. For replacement spark plugs of different heat ranges, see your McCulloch dealer.



AIR FILTER

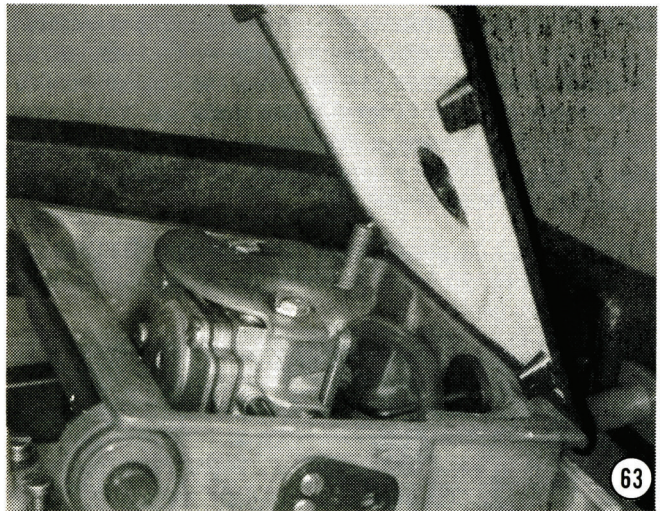
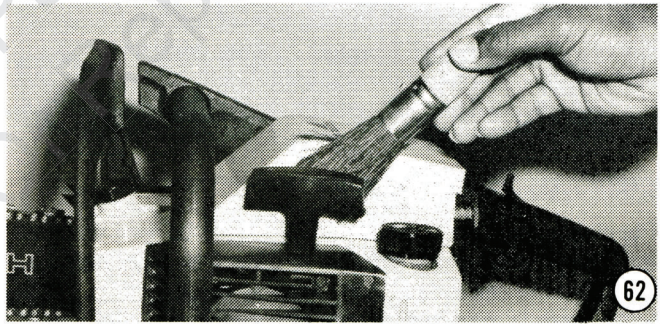
Never operate saw without the air filter, or dust and dirt will be sucked into the engine and damage it. The air filter must be kept clean. If it becomes damaged, install a new filter as follows:

1. Remove dirt from around the air filter cover to prevent dirt from falling into the airbox. ⁽⁶²⁾
2. Remove the air filter cover and air filter. Shake or gently tap the filter against a stump or other piece of wood to remove loose dirt and dust particles. ⁽⁶³⁾
3. Wash the air filter in a clean solvent only.

CAUTION: When using solvents, follow solvent manufacturer's instructions.

4. When the air filter has dried, re-install it, being certain the four locating bosses are aligned **inside** the corners of the air box.
5. Re-install the air filter cover, being certain the assembly is securely mounted.

NOTE: When cutting under dusty conditions, it is advisable to carry several clean filters and change the filter as needed throughout the working day. A felt air filter is recommended for use in highly abrasive conditions. It may be obtained from your McCulloch dealer.



FUEL CAP

The fuel tank cap is vented to prevent build-up of either pressure or vacuum in the tank. Both conditions will affect operation of the engine. The vent can become plugged through the use of dirty fuel or dirt falling into the fuel tank during refueling operations. If pressure or vacuum develops, have your McCulloch dealer service the saw.

FUEL TANK FILTER

The fuel tank filter prevents 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 any condition affects the filter, install a new filter. However, if a new filter is not available the filter can be cleaned for temporary use.

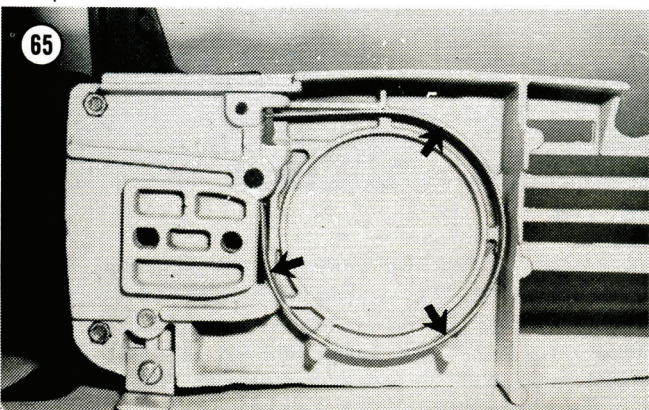
1. Remove the fuel tank cap and lift out the free end of the fuel line. ⁽⁶⁴⁾
2. Pull the filter off with a twisting motion. ⁽⁶⁴⁾
3. Wash the filter in a clean solvent. If the filter is water-soaked, it must be thoroughly dried. Be sure to follow solvent manufacturer's instructions.
4. Replace the filter. Never operate the saw without the fuel filter!



CHAIN BRAKE MAINTENANCE

The clutch drum and CHAIN BRAKE should be kept as clean and free of sawdust as possible to allow free movement and full contact of the brake band. And, as the thickness of the brake band is important to the effectiveness of the CHAIN BRAKE, it should be inspected daily for any signs of measurable wear or for any noticeable variation in the thickness of the band. The inspection can be part of the daily preventive maintenance program of rotating the guide bar for longest service life (See Preventive Maintenance Schedule). If such wear is noted the brake band should be replaced by your McCulloch Servicing Dealer. ⁽⁶⁵⁾

Your McCulloch Servicing Dealer has wear specifications for the band and will be happy to advise you regarding the need to replace the band.



SPROCKET, CLUTCH AND CLUTCH DRUM

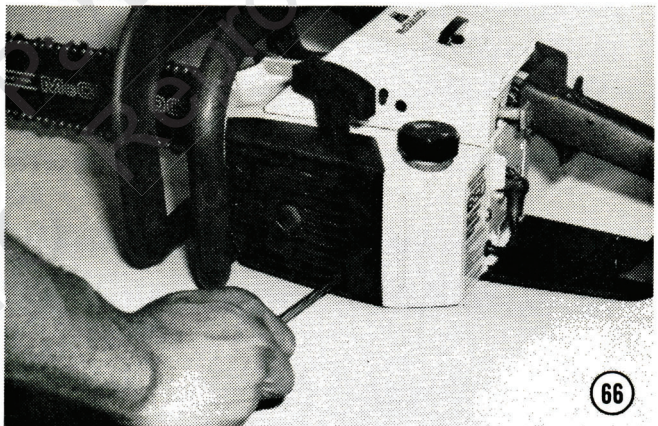
You should always install a new sprocket when a new chain is installed. A damaged or worn sprocket must be replaced with a new one. The saw should never be operated with excessive clutch slippage. Evidence of slippage is shown when the chain moves very slowly or stops when the engine is running at full throttle while cutting wood. This will result in a rapid and damaging heat build-up in the clutch and the clutch drum. If the clutch begins to slip, the saw should be taken to a McCulloch Dealer for servicing.

The clutch and clutch drum should be kept as clean and free of sawdust as possible. If sawdust is allowed to build up the clutch may drag causing the chain to move while the saw is idling.

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.

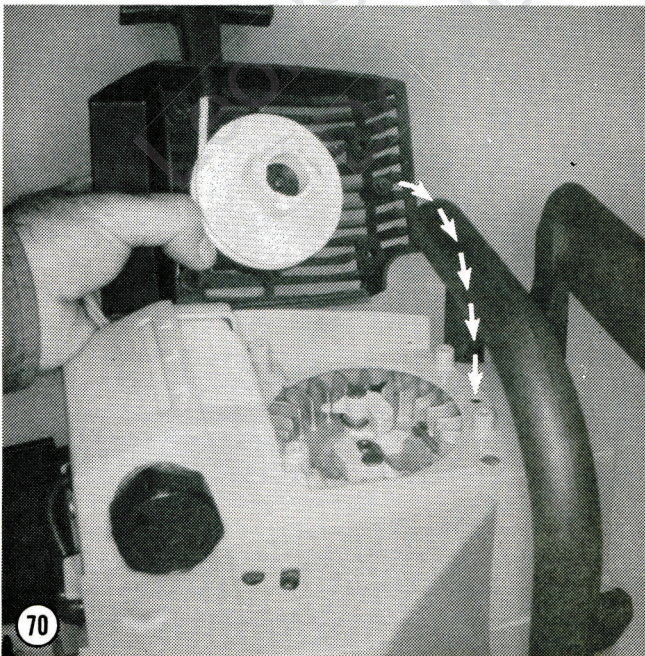
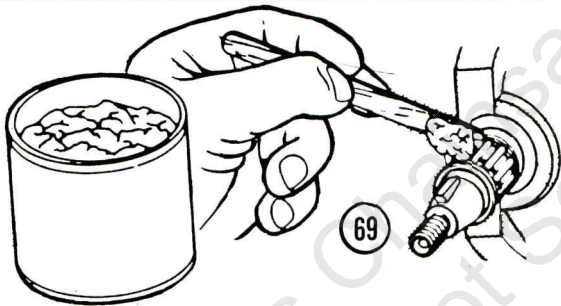
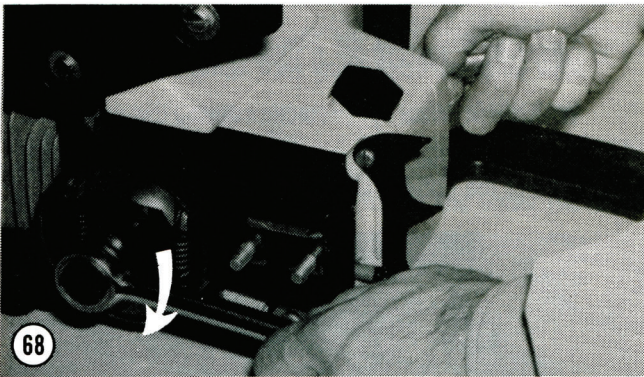
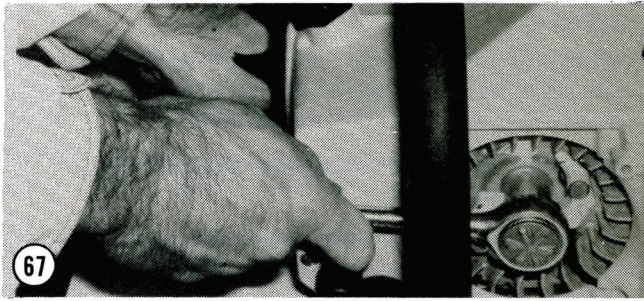
SPROCKET REPLACEMENT

1. Disconnect spark plug wire.
2. Remove spark plug using spark plug wrench.
3. Remove the CHAIN BRAKE, bar and chain, and the starter cover. ⁽⁶⁶⁾



4. Remove the clutch nut by holding an 11/16 inch (17 mm) socket wrench on the flywheel nut to act as a backup to an 11/16 inch wrench on the clutch nut. ^{(67) (68)}
5. Remove the clutch nut by turning clockwise (left hand thread). ⁽⁶⁸⁾
6. Remove the sprocket and drum assembly and the sprocket bearing. Lubricate the bearing with a good grade of non-fibrous chassis grease whenever replacing the bearing or the sprocket and drum assembly. ⁽⁶⁹⁾
7. Install the bearing, sprocket and drum assembly, clutch and the clutch nut. Ensure the sprocket is installed with the smooth side against the clutch drum. Lock the crankshaft as explained in Step 4, above, turning the nut in a counterclockwise direction. Tighten the nut securely. Torque specifications can be found in the back of this manual.
8. Place the starter cover in position but do not force it against the starter pawls. Be certain the guide post is positioned in the locating hole in the fan housing. ⁽⁷⁰⁾

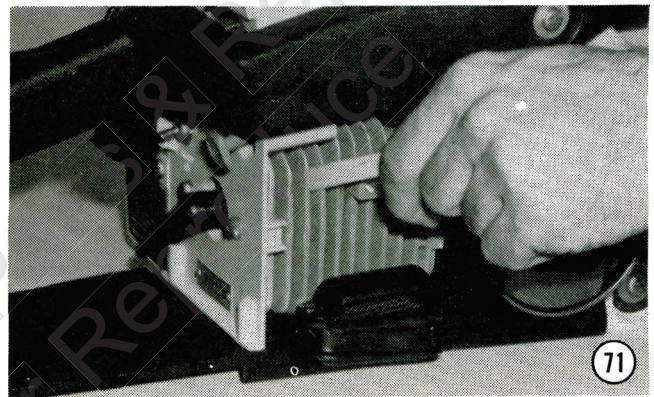
9. Pull the starter rope gently until the starter ratchet engages the pawls on the flywheel, and the starter housing settles against the saw. Install the starter housing screws and tighten securely.
10. Re-install the bar and chain and the CHAIN BRAKE, followed by installing the spark plug and spark plug wire.



SAWDUST GUARD AND COOLING FINS

The air inlet openings of the sawdust guard and the cylinder cooling fins must be kept clean or the engine will become overheated during cutting operations. Cooling fins are easily cleaned after removing the CHAIN BRAKE.

1. Remove the starter cover and clean out the openings in the sawdust guard. Use a small wooden scraper to remove dirt and sawdust packed into the openings. Use a soft bristle brush to finish cleaning the guard. Make sure the starter shaft turns freely and easily.
2. Clean the vanes on the flywheel and the other parts of the engine that became visible when the starter cover was removed.
3. When re-installing the starter cover, pull the starter rope slowly so the starter can engage the flywheel properly, and be certain the guide post is positioned in the locating hole in the fan housing. ⁽⁷⁰⁾



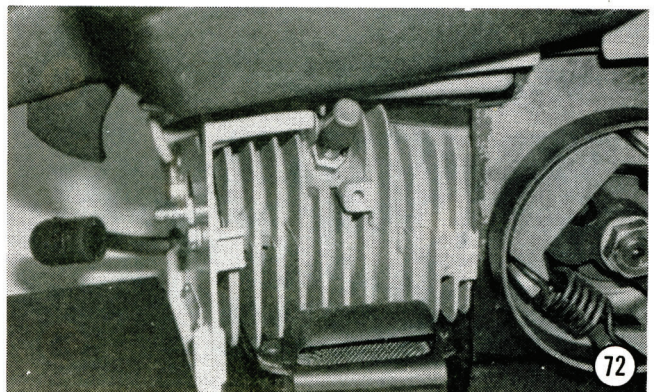
4. Remove the CHAIN BRAKE. Remove all dirt, grass, wood chips, etc. from the cooling fins on the cylinder head. Use a thin scraper or a stiff brush. ⁽⁷¹⁾

DSP VALVE (PM 650)

If the valve does not close during acceleration to wide open throttle, the DSP valve should be removed and inspected. After removing the CHAIN BRAKE, remove the DSP valve using a 7/16 inch deep socket wrench. ⁽⁷²⁾

The valve seat area should be free of carbon. The valve assembly can be washed in a clean solvent to remove carbon accumulation at the valve seating area.

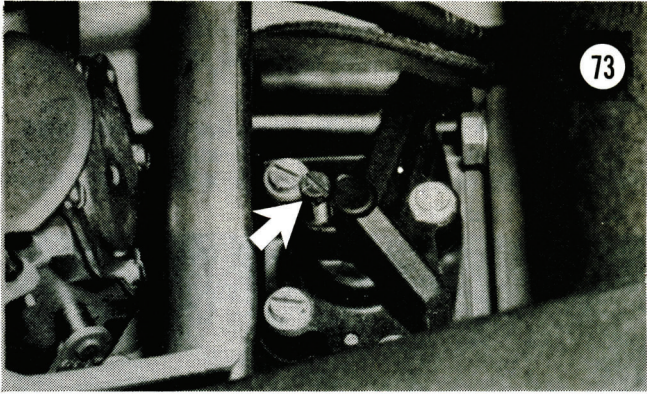
CAUTION: Do not submerge the plastic knob as some solvents will dissolve plastic.



AUTOMATIC CHAIN OILER

The automatic chain oiler may be adjusted to increase or reduce the oil output volume. To adjust this volume, proceed as follows:

1. Remove the air cleaner cover.
2. Turn the adjustment 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 because the oil output is sensitive to small adjustments. ⁽⁷³⁾



MUFFLER AND EXHAUST PORT

Operating the saw with a dirty or faulty muffler can lead to damage of the engine. Never run the engine without a muffler.

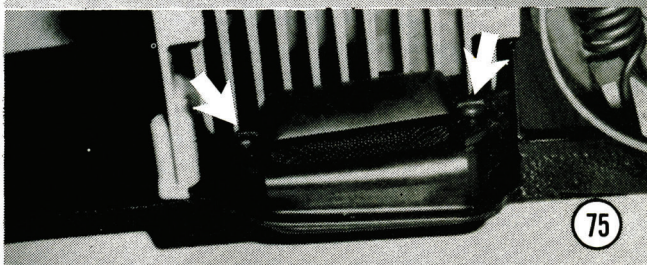
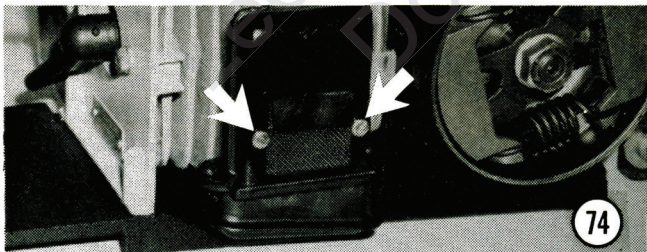
Periodically it is advisable to remove, clean and inspect the muffler. At the same time, any carbon should be removed from the exhaust port. It is also recommended that the spark arrester screen be inspected daily and replaced if wear or corrosion is observed.

WARNING: Always ensure that the saw is cool before maintenance is performed on the muffler.

To remove the spark arrester screen

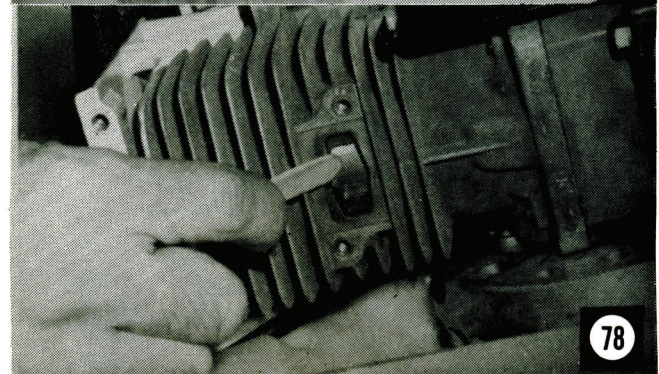
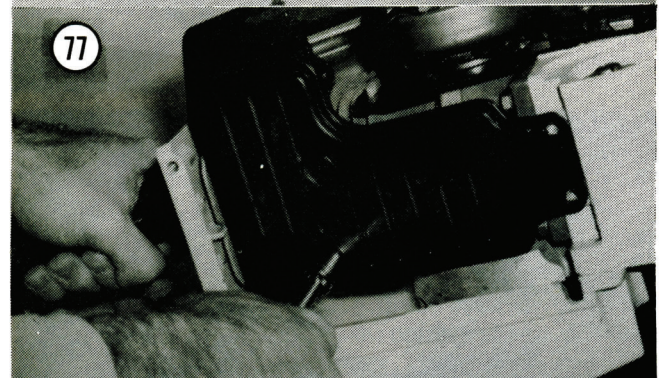
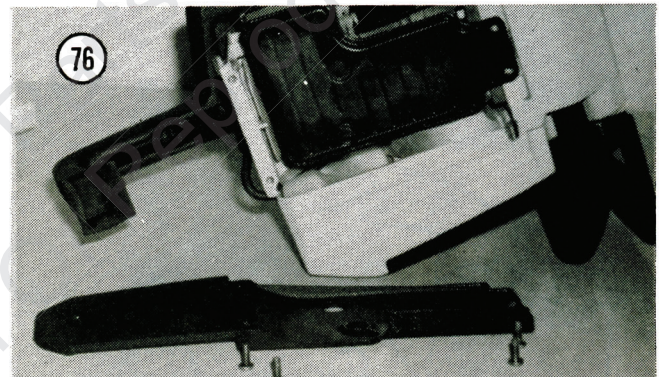
For models having the chamber type muffler, remove the CHAIN BRAKE and two screws that hold the cover to the chamber. ⁽⁷⁴⁾

For models not having the chamber type muffler, remove the CHAIN BRAKE and two screws that hold the muffler outlet and deflector plate to the muffler. ⁽⁷⁵⁾



To remove the muffler:

1. Remove the bottom shroud from the saw. ⁽⁷⁶⁾
 2. Remove the muffler. ⁽⁷⁷⁾
 3. Clean away all carbon deposits with a scraper blade, wire brush, or by washing with a clean solvent. Replace any broken or damaged element. Be sure to follow solvent manufacturer's instructions.
 4. While the muffler and spark arrester are removed from the saw, examine the exhaust port for evidence of carbon around the port. Clean the port as follows:
 - A. Pull the starter rope slowly until the piston covers the port completely. ⁽⁷⁸⁾
 - B. Use a wooden scraper and clean in and around the port. Do not use any metal or sharp-edged tool that might slip and scratch the piston or rings. ⁽⁷⁸⁾
 - C. After cleaning, turn the saw exhaust side down and blow loose particles away with compressed air.
- WARNING:** Wear eye protection during this operation.
5. Replace the muffler (ensuring the exhaust side gasket is intact) and the bottom shroud.



GUIDE BAR MAINTENANCE

Bar wear: Turn bar over frequently (at regular intervals) to ensure even wear on top and bottom of bar.

Bar groove: Bar groove should be cleaned every time chain is removed. Run depth gauge tang or similarly sized instrument along the groove until all residue is cleared. (79)

Oil Passages: Oil passages at base of bar should be cleaned periodically to ensure proper lubrication of chain and bar groove. This can be done with depth gauge tang or any instrument small enough to insert into passages. (80)

NOTE: New McCulloch depth gauges are designed with a tang which is ideally suited for cleaning bar groove and oil passages.

The condition of the oil passages should be checked before each use of the saw. While running the saw, press manual oiler button a few times. If passages are clear, the chain will give off a spray of oil with a momentary acceleration of the throttle.

Lubrication of Sprocket Tip: For most non-professional usage the sprocket tip will not require lubrication. However, lubrication is necessary for professional usage and under the following circumstances:

1. Continuous cutting of dry or highly abrasive wood.
2. Continuous boring cuts.
3. Continuous cutting with the bar tip.
4. Continuous cutting in wet or snowy conditions.

Under these circumstances lubrication is recommended after one hour of hard usage or after three (3) tanks of gas are consumed.

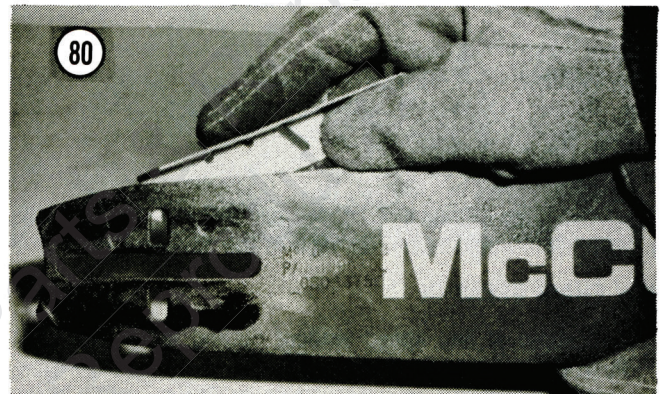
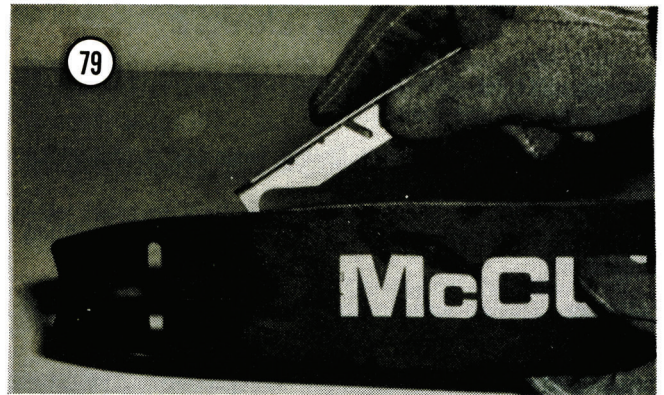
NOTE: Thoroughly clean bar tip before lubrication.

Three methods of lubrication for the sprocket tip may be used:

1. **Needle Nose Grease Gun:** Clean lubrication hole. Using a general purpose chassis lubricant of No. 1 consistency, force grease into lubrication hole on one side of bar while covering the lubrication hole on the other side. Rotate sprocket and apply grease until it appears at edge of sprocket. Repeat on other side of bar. (81)

NOTE: Lubri-Gun, P/N 68090, is recommended by McCulloch Corporation for applying grease to sprocket tip. Its small nozzle is necessary for efficient application of grease to sprocket tip.

2. **Oil Can:** Squirt the appropriate weight motor oil (SAE 10 in cold weather, SAE 30 in hot weather) into lubrication hole while turning sprocket. Repeat on other side of bar.
3. **Oil Soak:** Fill a small container with clean oil and submerge bar tip in oil. Rotate sprocket several revolutions. Bar tip may be submerged overnight for maximum lubrication.



CHAIN MAINTENANCE

How you care for your chain saw determines the kind of service you will get from it.

The use of McCulloch Depth Gauge Tools and a McCulloch File Guide is recommended.

Chain should be kept clean and sharp for maximum cutting efficiency.

CAUTION: Always wear protective gloves when handling chain.

CHAIN TENSION

Check the chain tension frequently and adjust as often as necessary to keep chain snug on the bar, but loose enough to be pulled around the bar by hand.

Over a period of time the moving parts of saw chain become worn which results in what is referred to as "chain stretch". When it is no longer possible to obtain the correct chain tension adjustment, a link will have to be removed to shorten the chain. See your McCulloch Servicing Dealer to have this repair performed.

CAUTION: Never have more than three (3) links removed from a chain. This could cause damage to the sprocket.

NEW CHAIN BREAK-IN

1. Run chain at low speed without cutting for 5 minutes. Push manual oiler button every 10 to 15 seconds to provide extra oil.
2. After 5 minutes, shut off engine and recheck and adjust chain tension.
3. Keep the chain well lubricated.
4. Restart and after 10 minutes, shut off engine and check chain tension. Adjust if necessary. Repeat chain tension check often during the first few hours of cutting.

CHAIN LUBRICATION

Make sure manual and automatic oiler are working. Keep oiler tank filled with clean McCulloch Chain, Bar and Sprocket Oil.

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

FILE SIZE TABLE

CHAIN	FILE
PM 350	3/16 in. (4,7mm)
PM 403	7/32 in. (5,4mm)
PM 503	1/4 in. (6,25mm)
SM 403	7/32 in. (5,4mm)
PM 370G	7/32 in. (5,4mm)
PGR 370G	3/16 in. (4,7mm)
SPR 370G	7/32 in. (5,4mm)
SPR 378G	7/32 in. (5,4mm)
SPR 403	7/32 in. (5,4mm)

CHAIN SHARPENING ⁽⁸²⁾

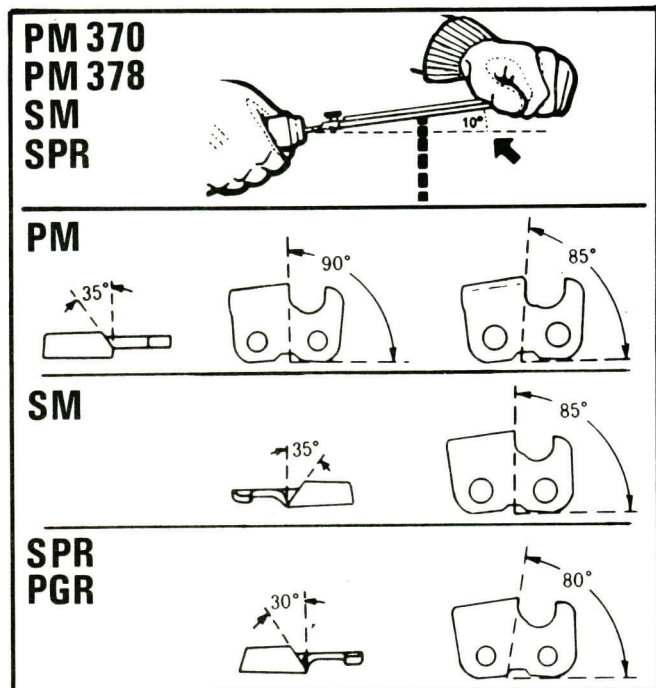
McCulloch saw chain is a precision manufactured cutting attachment and requires regular inspection and care to maintain peak cutting efficiency. Touch up sharpening may be required once or twice during a day's wood cutting. In some areas where sand or other abrasives have become embedded in the bark of trees, cutter teeth dull more rapidly and more frequent sharpening may be required.

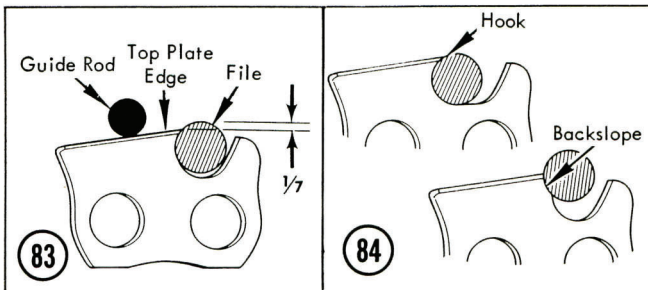
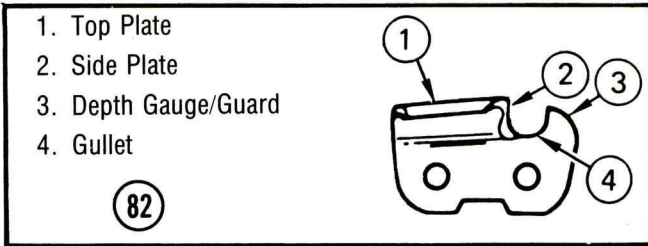
WARNING: Always wear protective gloves when handling chain.

NOTE: In addition, all saw chains should be periodically machine sharpened to maintain correct cutting angles.

1. Chain can be sharpened on saw by placing the bar in a bench vise while resting the saw on the bench.
2. Use a round file of the proper size for all PM, SM, SPR and PGR chains, and a file guide marked for the correct filing angle. Refer to the file size table and the filing angles illustrated for the types of chain. If filing without the file guide, place file on tooth to be sharpened with one-seventh of the file above the top plate edge. Avoid holding the file too low or too high and causing a "hook" or a "backslope." Always file toward the outside of the chain. ⁽⁸³⁾
3. Hold the file at the correct top plate filing angle, apply pressure against the face of the tooth, and push the file toward the outside of the tooth. Release pressure on the cutting edge on the return stroke. ⁽⁸⁵⁾
4. 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 the tooth.
5. 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.

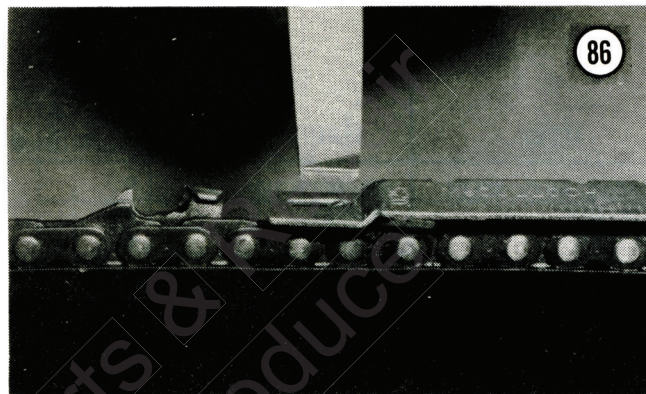
Hold the file level for all PM chains except PM 378.






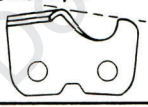
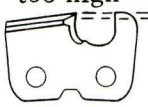

LOWERING DEPTH GAUGES

1. Place depth gauge tool over two cutter teeth with depth gauge on first cutter projecting through desired clearance of depth gauge tool. ⁸⁶
2. Remove projecting part of depth gauge with a flat file. ⁸⁶
3. After lowering all depth gauges, round off their leading edges. 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.



COMMON FILING ERRORS

All of these errors must be corrected by refiling.

<u>Cutter Fault</u>	<u>Cause</u>	<u>Result</u>
Hook 	(a) File too small. (b) Handle held too high.	Dulls quickly and will not cut smoothly.
Backslope 	(a) File too large. (b) Handle held too low.	Cuts slowly and requires extra pressure.
Depth Gauges too high 	Not filed down.	Cuts slowly, requires extra pressure and leads to cutter damage.
Depth Gauges too low 	Too much filing.	Rough cutting, requires more power (cuts too deep).

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, under 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.

PREVENTIVE MAINTENANCE CHECK CHART		FREQUENCY			
ITEM	MAINTENANCE	DAILY	WEEKLY	MONTHLY	AS REQD
		SCREWS, NUTS, BOLTS	INSPECT & TIGHTEN	●	
CONTROLS	INSPECT	●			
AIR FILTER	CLEAN	●			
	REPLACE		●		
SAWDUST GUARD	CLEAN	●			
CHAIN	INSPECT & SHARPEN	●			
BAR	CLEAN & TURN	●			
SHOCK MOUNTS	INSPECT	●			
	REPLACE*				●
SPROCKET	INSPECT	●			
	REPLACE				●
FUEL FILTER	REPLACE				●
OIL SCREEN	CLEAN		●		
MUFFLER	CLEAN			●	
MUFFLER SCREEN	CLEAN	●			
	INSPECT & REPLACE				●
SPARK PLUG	CLEAN & ADJUST		●		
	REPLACE				●
CYLINDER FINS	CLEAN		●		
STARTER ROPE	INSPECT		●		
	REPLACE*				●
CARBURETOR	CLEAN*			●	
FUEL TANK	CLEAN			●	
LAMINATION GAP	CLEAN & ADJUST*			●	
EXHAUST PORTS	CLEAN*			●	
FUEL, OIL & PRESSURE HOSES	CHECK*	●			●
CARBURETOR DIAPHRAGM	REPLACE ONCE A YEAR*				●
CRANKSHAFT SEALS	REPLACE ONCE A YEAR*				●
DSP VALVE	CLEAN			●	

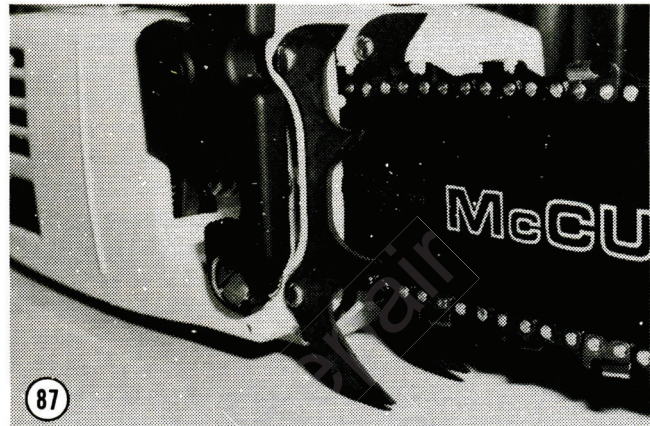
*Recommended for maintenance by an authorized McCulloch Dealer.

*After the first 7 days or 15 hours of operations, 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 needs. The recommended first 7-day or 15-hour checkup and a follow-up of regular, periodic checkups and tune-ups at your McCulloch Dealer's shop will be minimal in cost and will assure long, satisfactory service from your McCulloch chain saw.

ACCESSORIES

SPIKE KIT

Spikes, which act as wood grippers and fulcrum points for cutting control, are accessory items available from your McCulloch dealer for the PM 610. Spikes are included in the PM 650 owners kit. (87)

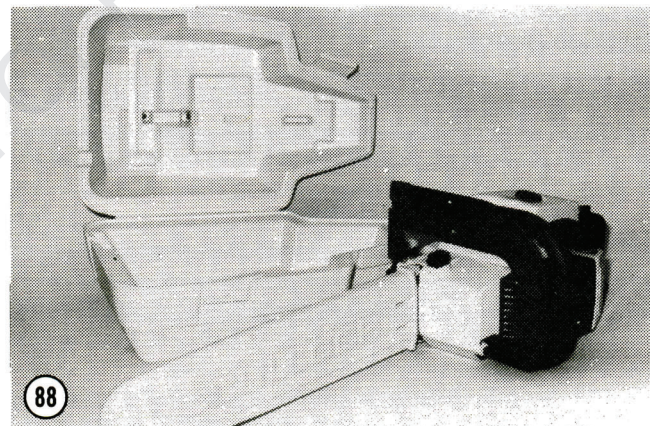


(87)

CARRYING CASE

The design of McCulloch carrying cases permits the bar guard portion of the case to separate from the main body of the case. When the chain saw is lifted out of the case, the bar guard is in its protective position on the bar. (88)

Both the carrying case and bar guard are made of heavy-duty yellow plastic for long life, rugged use. The case is double-walled for maximum protection of the saw. Plenty of room inside for accessories and tools.



(88)

CHAIN, BAR and SPROCKET OIL

For special lubrication properties, we recommend use of McCulloch Chain, Bar and Sprocket Oil which is superior to regular oil. The dependable and safe operation of your rugged McCulloch Chain Saw can be enhanced by continued use of this oil, available at your McCulloch dealer.

FEATURES and SPECIFICATIONS

FEATURES

1. Wrap-around CHAIN BRAKE lever/Handguard
2. Safety Trigger
3. Chain Catcher
4. Throttle Latch (Fast idle)
5. Large-volume, Low-tone muffler with shield
6. Anti-vibration design
7. Electronic Ignition
8. Boot Loop for starting
9. D.S.P. (PM 650 only) (Compression Release)
10. Metric Design
11. Good Balance
12. Easy to service

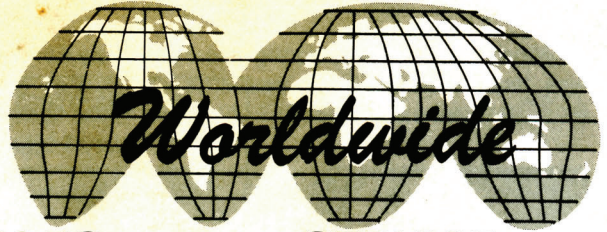
SERVICE SPECIFICATIONS

Displacement:	60cc (3.7 cu. in.)
Bore & Stroke:	47mm x 35mm (1.9 x 1.5 in.)
Spark Plug:	AC CS 45T/CH RDJ6
Spark Plug Gap:	53mm (.025 in.)
Fuel Tank Capacity:	510cc (17.3 oz.)
Oil Tank Capacity:	430cc (14.6 oz.)
Intake System:	3rd port, piston timed
Clutch Engagement Speed:	2800 to 3000 R.P.M.
Lamination Gap:	.30 to .40mm (.011 to .015 in.)
Ignition:	Capacitive discharge (C.D.I.)
Timing:	26° BTDC
Main Bearings:	Needle & Ball
Connecting Rod Bearings:	Needle
Sprocket Type:	Floating rim, 7 tooth, .375 pitch
Weight PM 610 P.U.O.:	6.65 kg (14.7 lbs.)
Weight PM 650 P.U.O.:	6.70 kg (14.8 lbs.)

IMPORTANT TORQUE VALUES

Connecting Rod Screws:	65 to 70 lb. x in. (7.3 to 7.9 N.m.)
Clutch Nut:	160 to 170 lb. x in. (18.1 to 19.2 N.m.)
Flywheel Nut:	265 to 325 lb. x in. (29.9 to 36.7 N.m.)

McCULLOCH



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McCULLOCH CORPORATION

P.O. BOX 92180, LOS ANGELES, CALIFORNIA 90009

INTERNATIONAL DIVISIONS:

LOS ANGELES, CALIFORNIA, P.O. BOX 92181

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