OWNER'S MANUAL

McCULLOCH® CORPORATION

POWER MAC 310/320/330/340 CHAIN SAWS



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94103-R8

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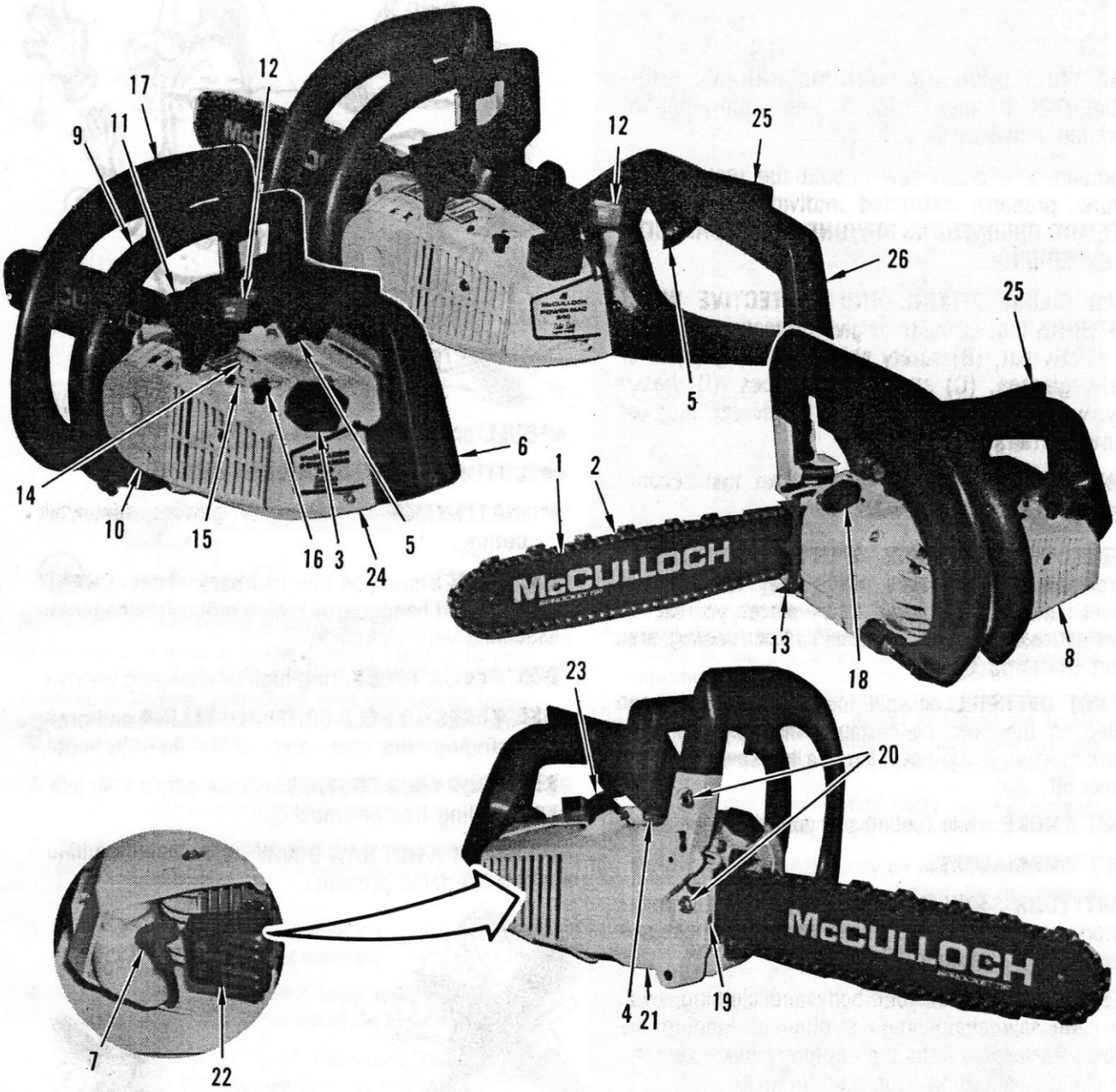
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NOTE: Throughout this manual, a number circled in black indicates the illustration which corresponds to the text where the number appears.

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IDENTIFICATION



1. Guide Bar
2. Saw Chain
3. Fuel Tank Cap
4. Manual Oiler Knob
5. Throttle Trigger
6. Rear Handle (PM 310, 320)
7. Spark Plug Cover
8. Air Cleaner Cover
9. Front Handle
10. Starter Cover
11. Starter Handle
12. Ignition/Stop Switch
13. Spike (PM 320, 330, 340)
14. Throttle Latch Knob
15. Carburetor Controls
16. Choke Knob
17. CHAIN BRAKE Lever/Handguard
18. Oil Tank Cap
19. Saw Chain Tension Adjustment Screw
20. CHAIN BRAKE Retaining Nuts
21. CHAIN BRAKE
22. Muffler
23. AUTO SHARP (PM 320, 340)
24. Fan Housing
25. Safety Trigger
26. Rear Handle (Boot Loop) (PM 330, 340)

The serial number is attached under the saw. Since it is possible that the saw may be lost or stolen, you may want to etch your own unique marking on the saw and record it along with the serial number and the model number.

NOTE: Many threaded fasteners on your saw are metric. For replacement see your McCulloch dealer to obtain correct metric or American standard sizes. Metric tools can be used on these fasteners in many cases, so tool sizes are shown in both metric and American standard.

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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) sturdy 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

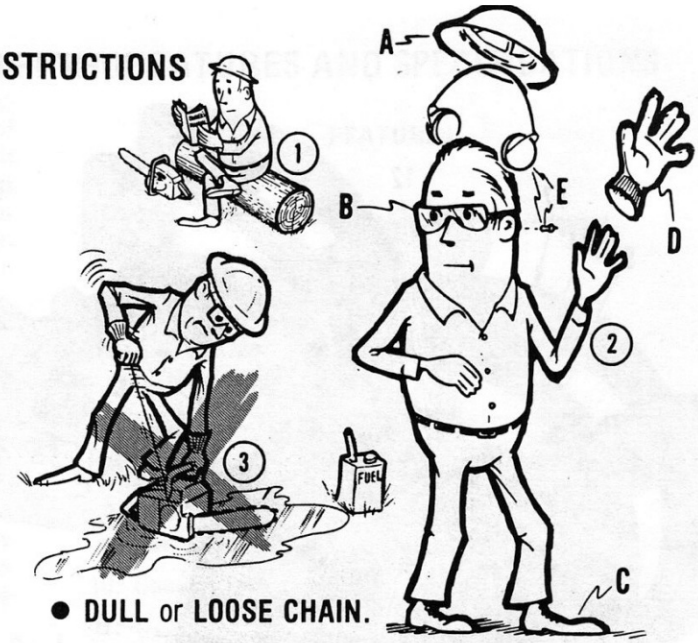
DON'T WORK ALONE.

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.

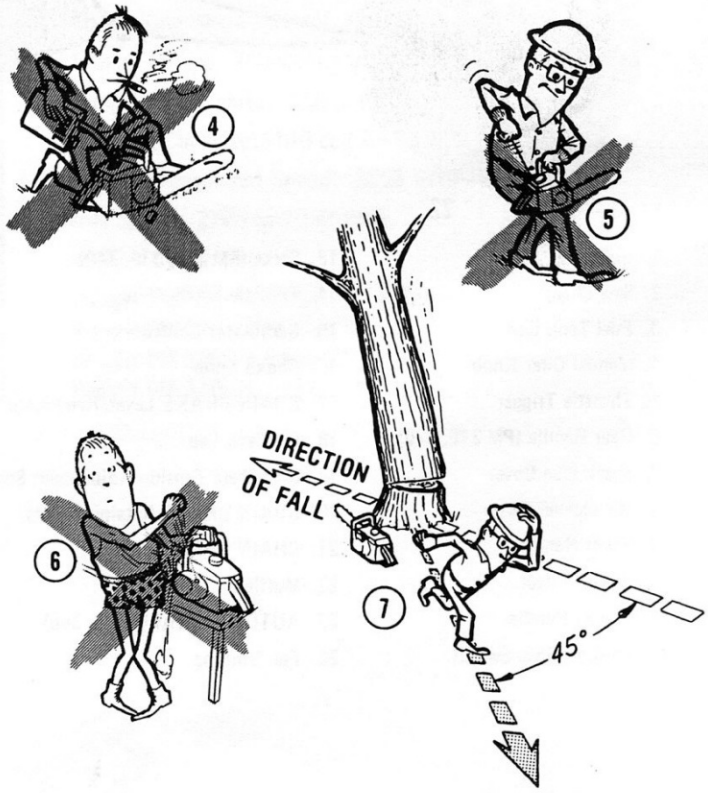
USE DEVICES such as low kickback chain, **CHAIN BRAKES,** and handguards which reduce the hazards associated with kickback.

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.



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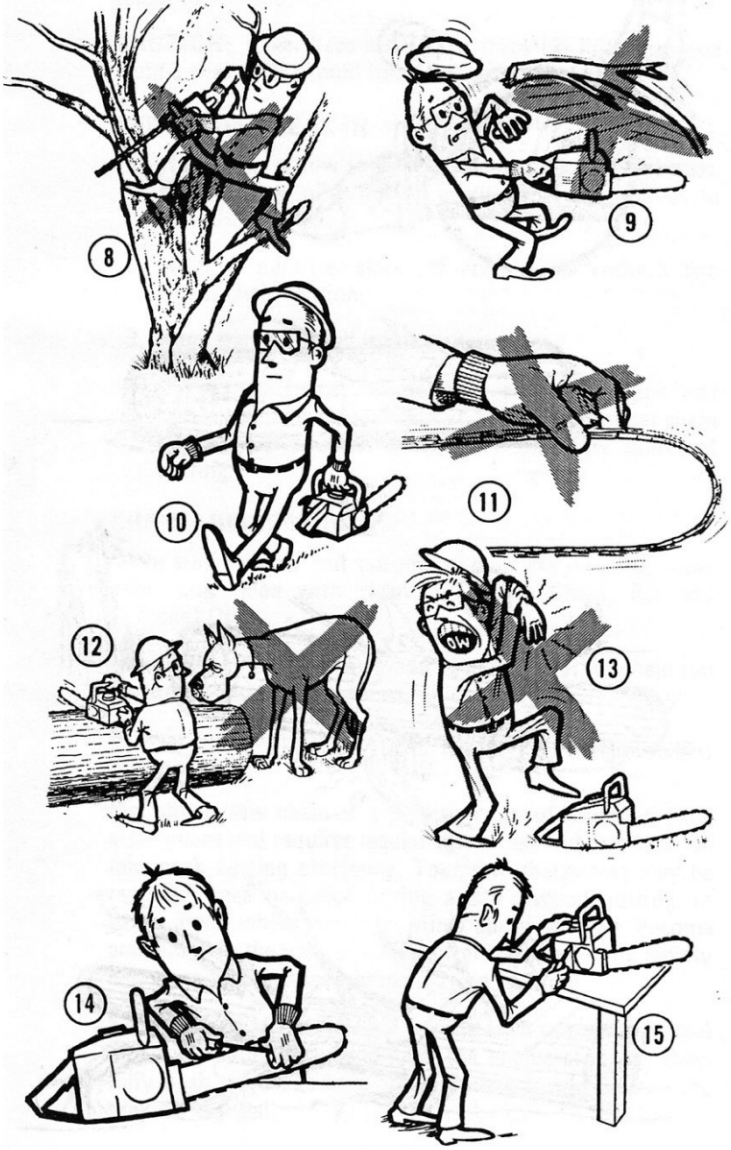
WE STRONGLY RECOMMEND you do not attempt to operate the saw while **IN A TREE, ON A LADDER** or **ON ANY OTHER UNSTABLE SURFACE.** If you elect to do so, be advised that these positions are **EXTREMELY DANGEROUS.** ⑧

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. ⑨

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.)

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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". ⑯

When diameter of wood being cut is greater than bar length, make two cuts as shown. ⑰

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. ⑱

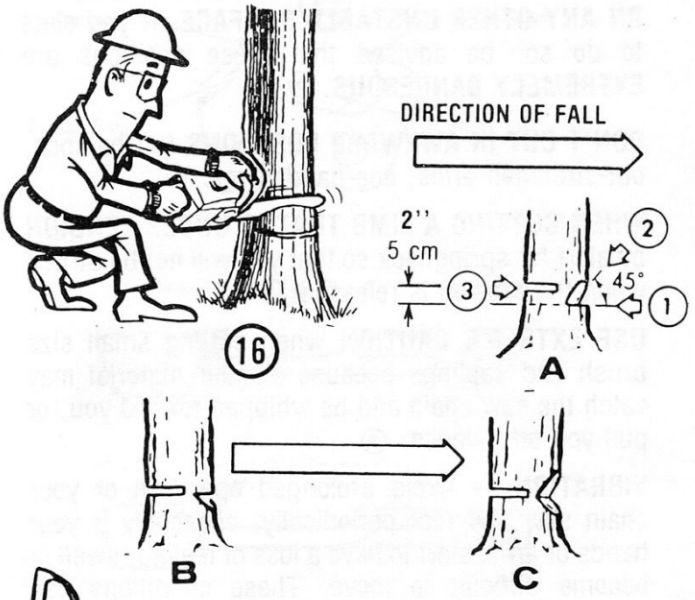
LOG SUPPORTED ON ONE END: First cut from bottom (underbuck) 1/3 diameter of log to avoid splintering. Second, overbuck to meet first cut and avoid pinching. ⑲

LOG SUPPORTED ON BOTH ENDS: First overbuck 1/3 diameter of log to avoid splintering. Second, underbuck to meet first cut and avoid pinching. ⑳

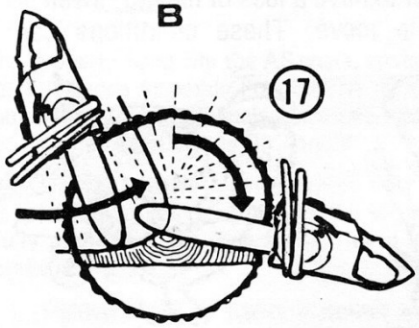
LIMBING

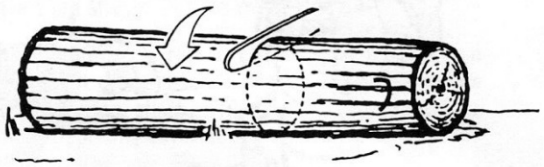
Keep the log off the ground. Do not remove supporting limbs until after the log is bucked into lengths. ㉑

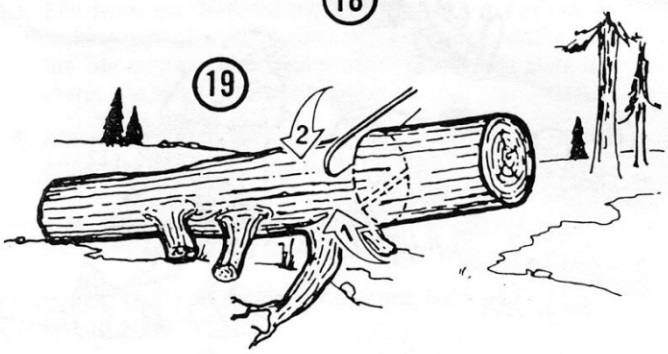
This consumer chain saw is intended for general homeowner use, and such general applications as clearing, pruning, and cutting firewood.



⑯

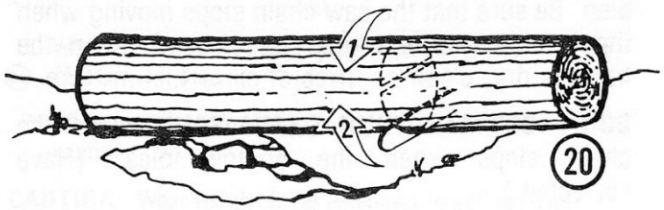

⑰


⑱



⑲





⑳

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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.

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

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.

NOTE: AUTO SHARP must be removed from the saw before installing or removing the **BAR, SAW CHAIN** and **CHAIN BRAKE.** This is necessary only when the **AUTO SHARP** is assembled on the unit (PM 320, PM 340).

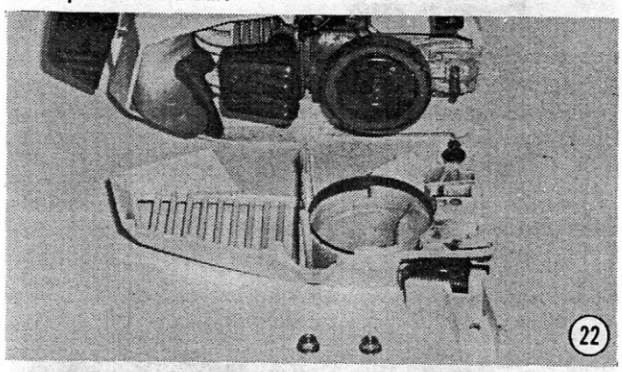
WARNING: Handle the **CHAIN BRAKE** carefully when it is removed from the saw because the lever is under tension. Make certain the **CHAIN BRAKE** lever is pulled back to the disengaged position when installing or removing the **CHAIN BRAKE.**

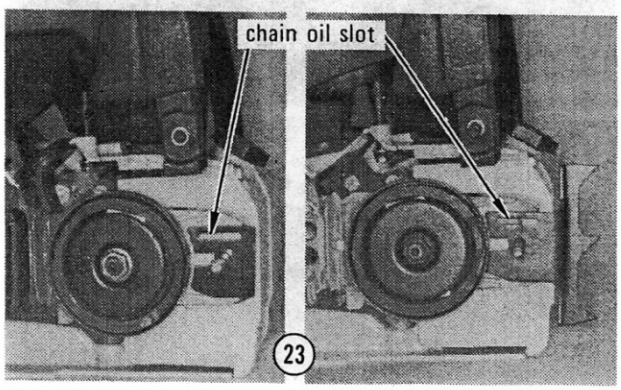
WARNING: Always wear protective gloves when handling chain.

1. Remove the upper retaining nut and bolt, and the lower retaining nut. Remove the **CHAIN BRAKE.** This is only necessary when the **CHAIN BRAKE** is assembled on the unit. (22)
2. Place the bar pad spacer over the bar bolt and onto the bar pad. If a spike is to be used, **DO NOT** use the bar pad spacer.

   CAUTION: When installing the bar pad spacer or spike, be certain the chain oil slot is at the top so that chain oil can enter the top oil passage in the guide bar. (23)
3. When using a spike, place it over the bar bolt and ensure a snug fit against the bar pad. (23)

   CAUTION: You must use a bar pad spacer or spike but not both; this will ensure correct alignment of the sprocket and bar.





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4. Slide the slotted end of the bar over the bar mounting bolt and push it back toward the sprocket as far as it will go. (24)

5. Spread the chain out in a loop with the cutting edges of the chain pointing clockwise around the loop. (25)

6. Tilt the top of the chain away from you so that you can slide it edgewise over the top of the drum (under the saw housing and bracket). (26)

7. Guide the chain around and behind the drum (between the drum and the muffler) and onto the sprocket. (27)

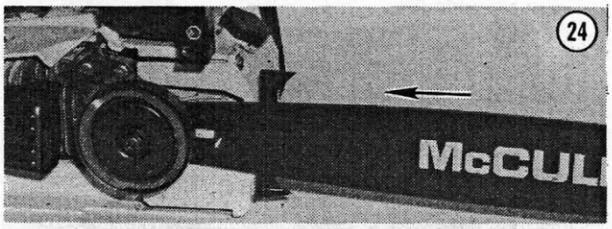
8. Move the chain back and forth to make sure it is in proper mesh with the sprocket and lined up with the bar groove. (27)

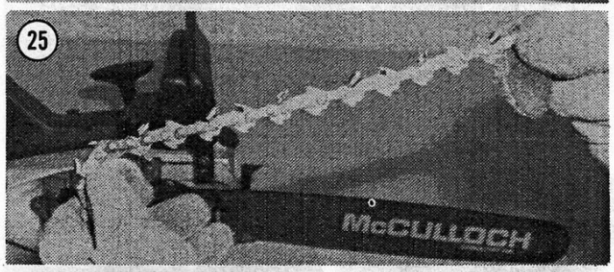
9. Guide the chain center links into the bar groove all the way around the bar. Pull the nose of the bar out to take up all the slack in the chain. (28)

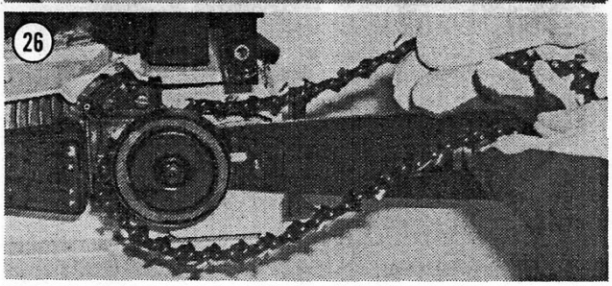
10. Make certain the **CHAIN BRAKE** lever is pulled back to the disengaged position (chain can move). (29)

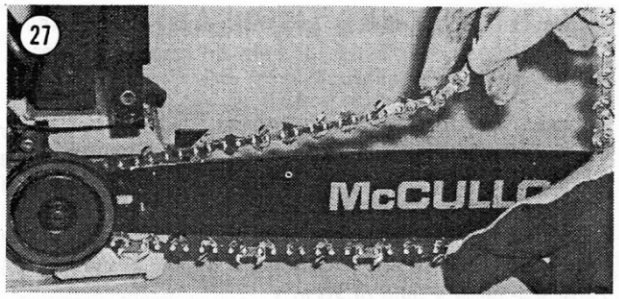
11. Install the **CHAIN BRAKE,** being certain the ridge at the bottom rear of the brake housing is positioned between the fuel tank and the spark plug wire, the brake band is fitted carefully around the outside of the clutch drum, and the **CHAIN BRAKE** lever is set properly onto the **CHAIN BRAKE.** (30)(31)

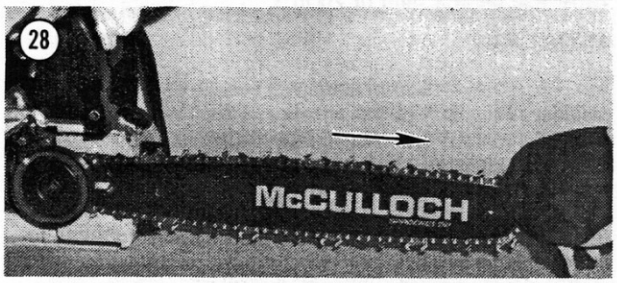
CAUTION: THE CHAIN BRAKE CAN BE CRACKED OR BROKEN if carelessly installed. The chain tension adjustment nut (tang) **must** be properly positioned in the adjustment hole in the bar before tightening the lower retaining nut. There should be no large gaps between the **CHAIN BRAKE** and the saw housing, and the front should fit snug against the bar. (31)

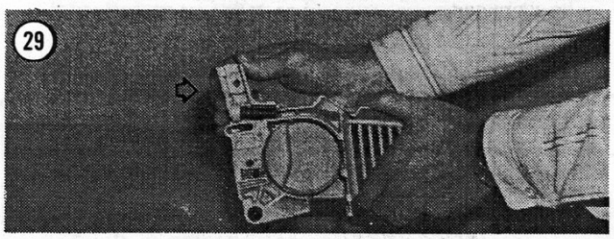


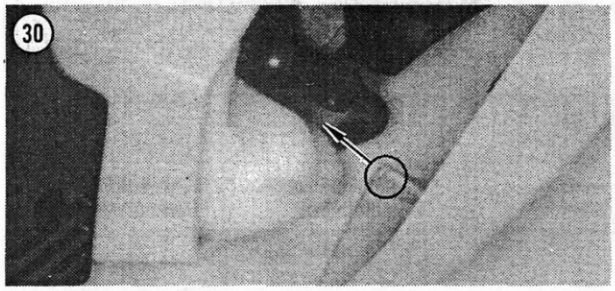


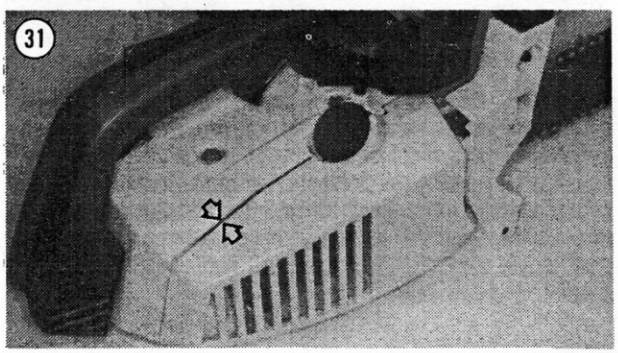


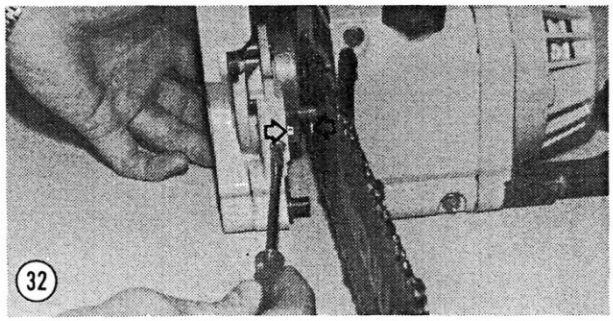












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12. Turn the chain tension adjustment screw in or out to align the nut with the bar hole. (32)

13. Install the lower retaining nut finger tight.

14. Hold the nose of the bar up and turn the adjustment screw clockwise to tension the chain. It should be a snug fit all around the bar. (33)

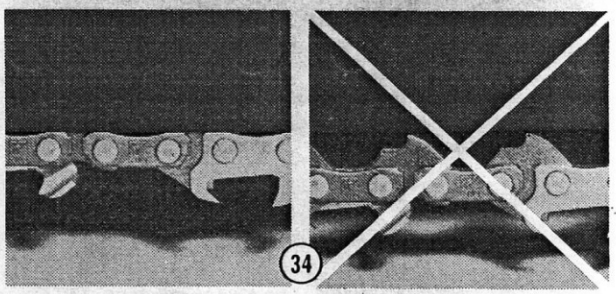
    NOTE: The chain has the proper tension when, with the bar locked in the uppermost position, it has a snug fit all around and will pull around the bar easily by hand. No droop or sag of the chain is permitted. (34)

15. Holding the nose of the bar up, tighten the lower retaining nut securely.

16. Install the retaining bolt and nut to the brake lever and tighten securely.



(33)


(34)

AUTO SHARP INSTALLATION (PM 320, PM 340)

1. Be certain the bar, chain and **CHAIN BRAKE** are correctly installed before installing the **AUTO SHARP** assembly.

2. Remove the **AUTO SHARP** assembly from its package. Rotate the knob clockwise until it separates from the body. (35)

3. Align the ears on the assembly with the slots in the mounting bracket on the unit. (35) (36)

4. Push the assembly firmly in place and turn the entire assembly clockwise approximately 1/4 turn or until snug. (37)

5. Using a screwdriver, place in notch and engage the serrations on the body and gently continue turning the assembly clockwise approximately 1.6 to 2.4 mm (1/16 to 3/32 inch) until fully engaged. **DO NOT APPLY TOO MUCH FORCE.** (38)

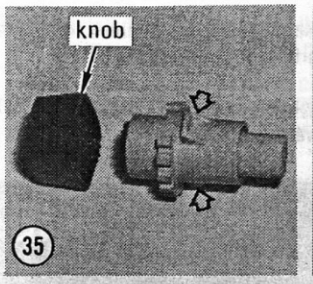
6. Place the two hooked ends of the bail in two serrations, exactly opposite one another, also ensuring they are set through the bracket. (39)

7. Holding the looped portion of the bail, swing it up and over the body. (40)

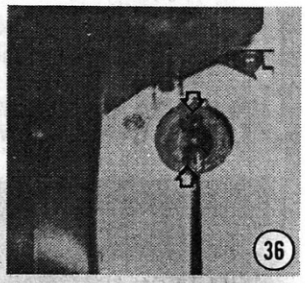
8. Snap the bail over the side of the body into its final position. (41)

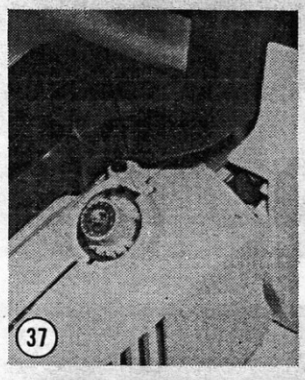
9. To attach the knob onto the body, engage the ratchet teeth, depress the knob and turn counterclockwise a few turns until the knob and body "catch". Now, gently continue turning the knob until it will no longer turn; you are now ready to use the **AUTO SHARP.**

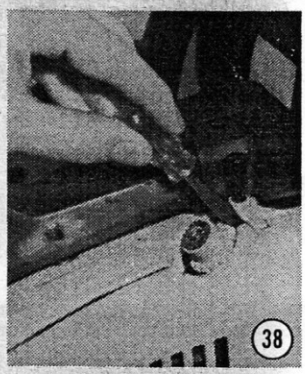
DO NOT FORCE THE KNOB BEYOND THIS POINT.

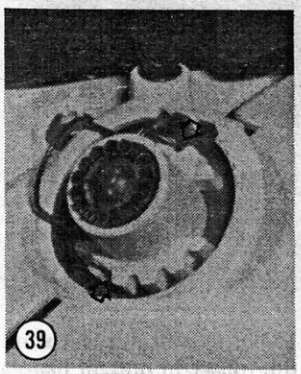


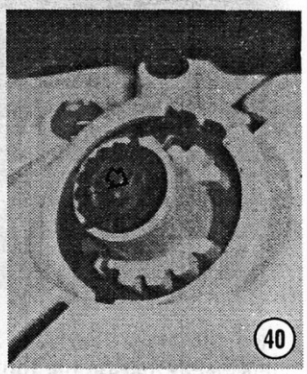
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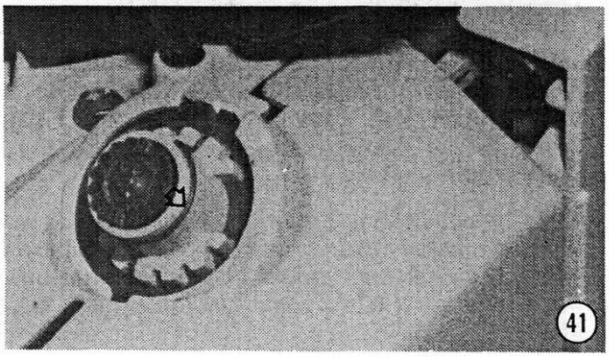

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OPERATING INSTRUCTIONS

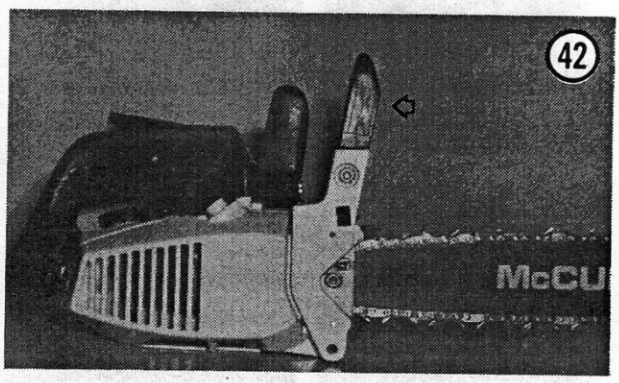
CHAIN BRAKE OPERATION

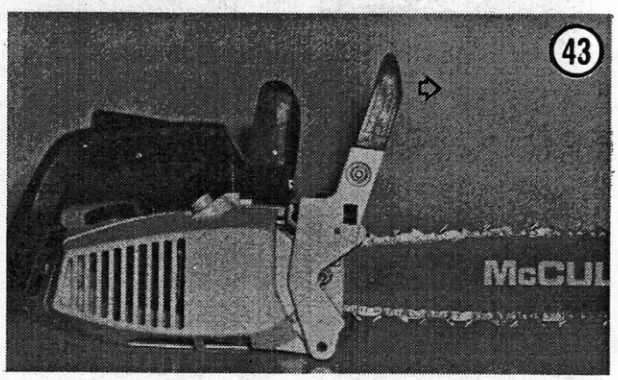
Your chain saw is equipped with a **CHAIN BRAKE** that reduces the possibility of injury due to "kickback." The brake is actuated if pressure is applied against the brake lever when, as in the event of "kickback," the operator's hand strikes the lever. When the brake is actuated, chain movement stops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

CAUTION: Purpose of the **CHAIN BRAKE** is to reduce the possibility of injury due to "kickback" but it cannot 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. ㊷

The **CHAIN BRAKE** is engaged (chain is stopped) when the brake lever is in the forward position. ㊸





When the brake lever has been tripped, the 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.

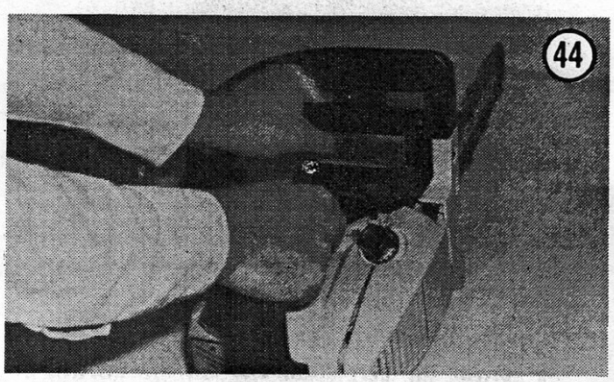
NOTE: Do not attempt to start or operate the engine with the brake engaged (chain is stopped). Do not allow the engine to idle for long periods of time when the brake is engaged as this tends to build up heat in the sprocket bearing.

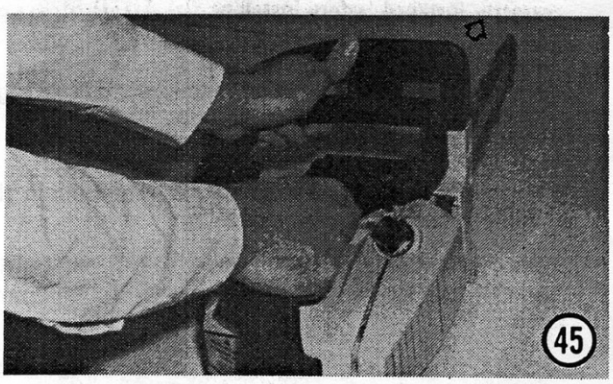
Before cutting with your saw, test the **CHAIN BRAKE** as follows:

1. Place the saw on a clear, firm and flat surface.
2. Follow the correct procedures to start the engine.
3. Grasp the rear handle firmly with the right hand. ㊹
4. With the left hand, hold the front handle (not the **CHAIN BRAKE** lever) firmly. ㊹
5. Squeeze the throttle trigger so that the chain begins to move, then activate (push forward) the **CHAIN BRAKE** lever. ㊺

   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/handguard 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 requires increasingly more force 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. ㊻

DO NOT HOLD THE SAW BY THE CHAIN BRAKE LEVER.

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7. Pull the starter handle slowly until you feel the starter engage, then give a smooth, rapid and short pull. Allow the starter rope to rewind slowly. Never let the starter rope snap back from the extended position. Repeat until the engine first fires. (52)

8. Push the choke knob in after the engine first fires. Pull the starter. If the engine fires and does not continue to run, pull the choke knob out and pull the starter until the engine starts. Then push the choke knob in.

9. Squeeze the throttle trigger slightly to release the throttle latch button.

10. Use the choke and throttle trigger to keep the engine running until it is warmed up. Do not run the engine at full throttle unless you are cutting wood.

To Stop

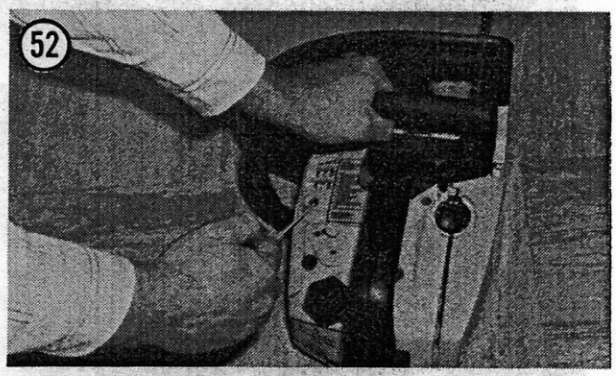
1. Release the throttle trigger and allow the engine to return to idle speed.

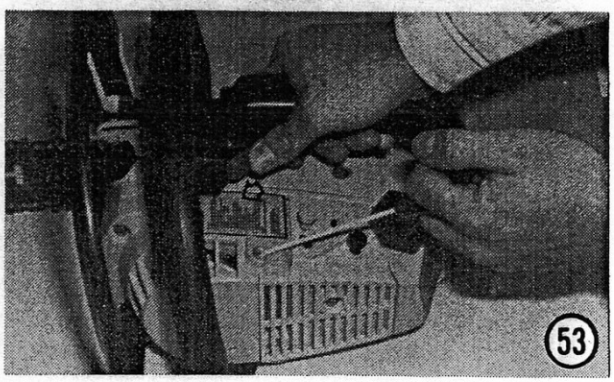
2. Place the saw on a clear, firm and flat surface.

3. Pull the starter handle out slowly about 15 to 30 cm (6 inches) and move the ignition/stop switch 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 to the **"STOP"** position.





CARBURETOR ADJUSTMENT (54)

Carburetor adjustment is critical and if done carelessly can damage the carburetor and engine.

NOTE: Before making any adjustments make sure the air filter is clean. Very often a dirty air filter will make the engine operate as though the carburetor needed adjustment.

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

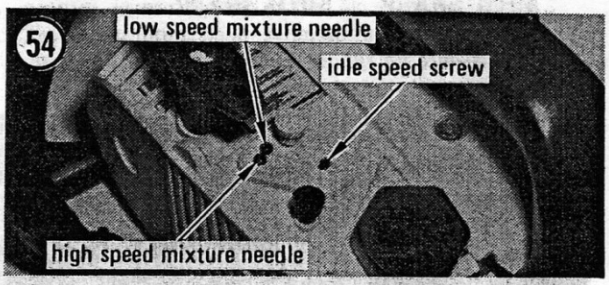
2. Start the engine and let it warm up at low speed. If the engine will not idle without stopping, turn the idle speed screw clockwise until it does.

3. 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.

4. Adjust the high speed needle for best power under load. Do not judge by the sound; judge by the way the saw cuts. Final position of the high speed needle will usually be about 1 turn open.

5. Check idle operation again. It may be necessary to re-adjust slightly for smooth idle and acceleration.

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 condition which can cause engine damage.



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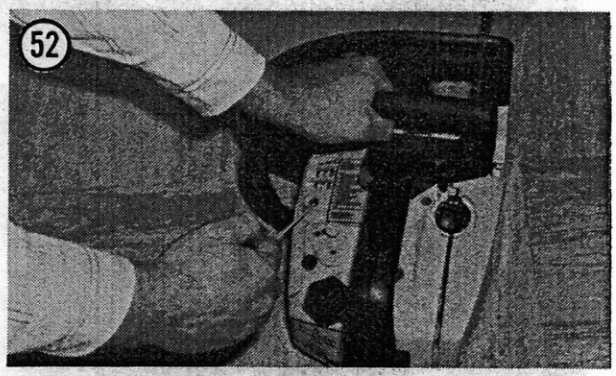
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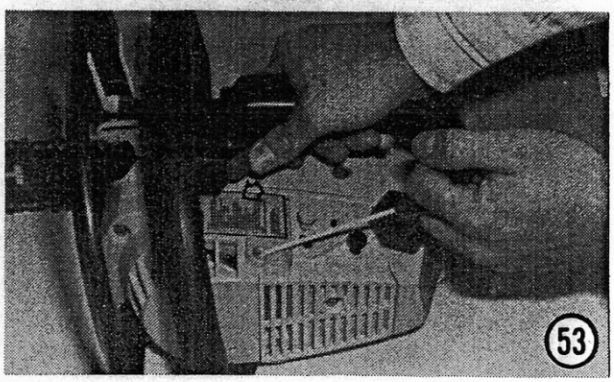
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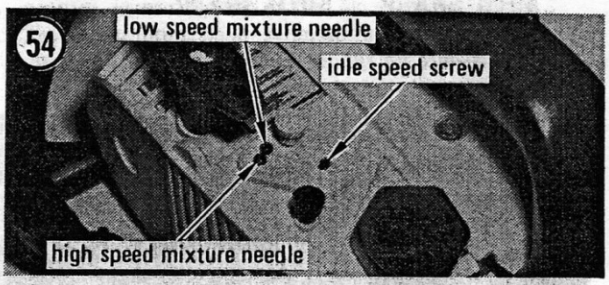
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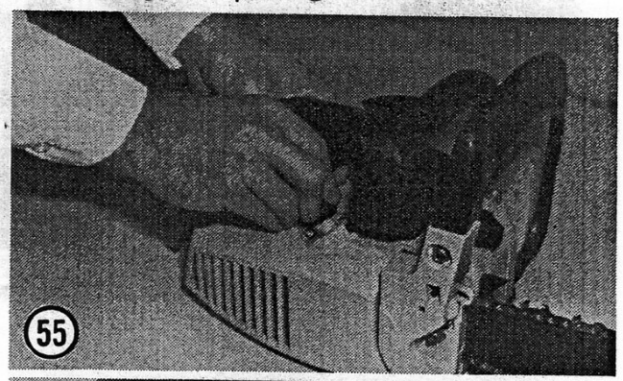
AUTO SHARP OPERATION (PM 320, PM 340)

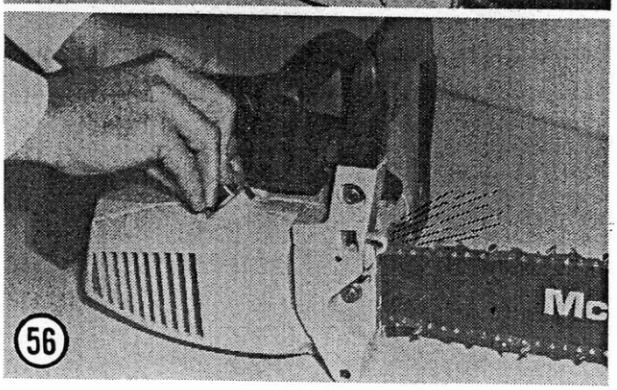
Your McCulloch Chain Saw is equipped with an **AUTO SHARP** Assembly which allows you to sharpen your saw chain automatically. The **AUTO SHARP** system requires the use of McCulloch AS370G saw chain. The **AUTO SHARP** system will not work with any other type saw chains.

The PM 310 and PM 330 can be converted to use an **AUTO SHARP** assembly. See your authorized McCulloch Dealer for information on how this is done.

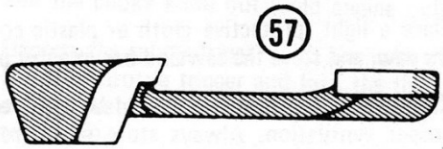
Always be certain the chain is snug on the bar before using **AUTO SHARP.** Attempting to operate **AUTO SHARP** with a loose chain can damage the sharpening stone and/or the chain.

1. Start the engine on a clear, firm and flat surface and allow it to warm up.
2. Grasp the rear handle firmly with the left hand and adjusting knob with the fingers of the right hand. Keep hand and fingers away from the hot rear portion of the **CHAIN BRAKE.** (55)
3. While running the engine between 1/2 and 2/3 throttle (the correct engine speed for sharpening the chain), press down on the adjusting knob and turn clockwise one click at a time until you see sparks, hold down for 10 or 15 seconds. (56)
4. Release the knob and stop the engine.
5. If the grinding stone has been properly adjusted, the entire top edge of the cutter will be shiny. If any portion of the top edge is not shiny or does not reflect a sharpened condition, the adjusting knob must be pushed down and turned one or more clicks until the entire edge is sharpened. (57)





The amount of sparks which fly out during the sharpening operation is an indication of correct adjustment of the stone. A light flow of sparks indicates proper adjustment; no sparks or heavy flow of sparks indicates wrong 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.

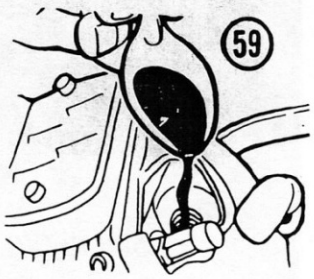
STORING A CHAIN SAW

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. (58)
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. (59)
4. Remove and clean the bar and chain (use gloves when handling chain).





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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

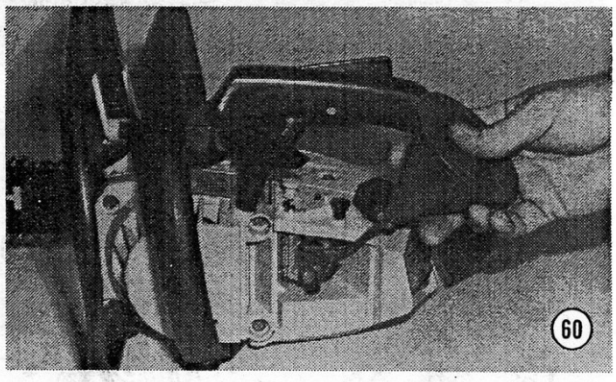
Remove the spark plug with a spark plug wrench. Pull the starter rope briskly to clear the cylinder of excess oil. Clean and gap the spark plug or install a new spark plug. Fill the fuel tank with the correct fuel mixture and fill the chain oil tank with McCulloch Chain, Bar and Sprocket Oil.

A Hint For Easier Starting

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, 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.

NOTE: DO NOT USE THIS METHOD FOR REGULAR STARTING!



MAINTENANCE

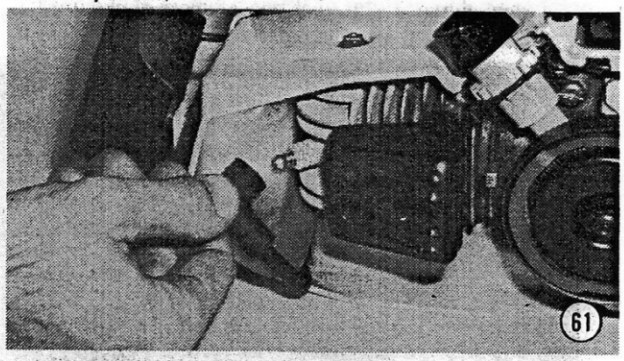
All chain saw service, other than the items listed here in your Owner's Manual maintenance instructions, should be performed by your authorized McCulloch Servicing Dealer.

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

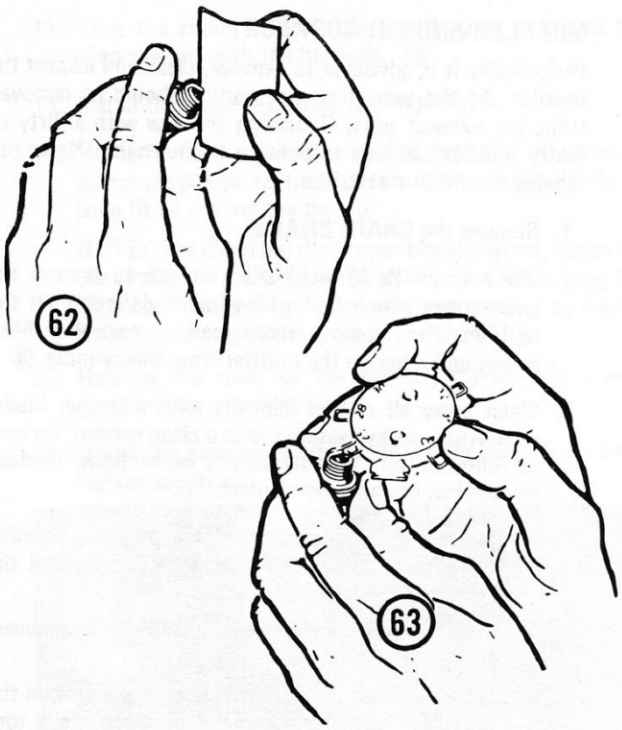
SPARK PLUG

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. Remove the **CHAIN BRAKE.**
3. Disconnect the black rubber connector on end of the wire from the spark plug by twisting and pulling at the same time.
4. Remove spark plug with spark plug wrench. Do not use any other tool.
5. Clean electrodes wtih emery cloth or fine sandpaper. Blow all dust away. Do not use a grit-type cleaning machine. **WEAR EYE PROTECTION DURING THIS OPERATION.**
6. Adjust the electrode air gap to 0.635 mm (0.025 in.) by bending side electrode only.
7. Re-install spark plug and black rubber spark plug wire assembly.
8. For replacement spark plugs of different heat ranges, see your McCulloch dealer.



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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.

1. Remove the fuel tank cap and lift out the free end of the fuel line.
2. Pull the filter off with a twisting motion. (64)
3. Replace the filter. Never operate the saw without the fuel filter!



AIR FILTER

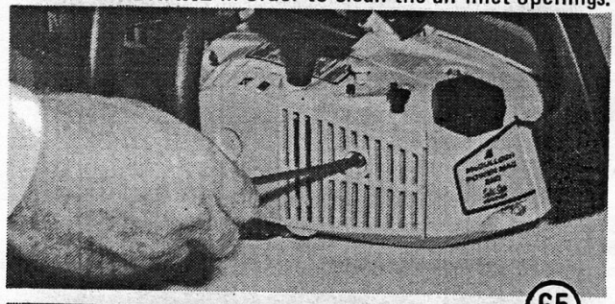
Never operate the saw without the air filter, or dust and dirt will be sucked into the engine and damage it. The air filter must be kept clean.

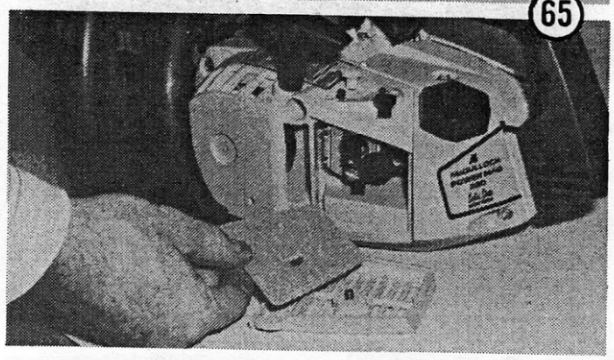
To clean the air filter:

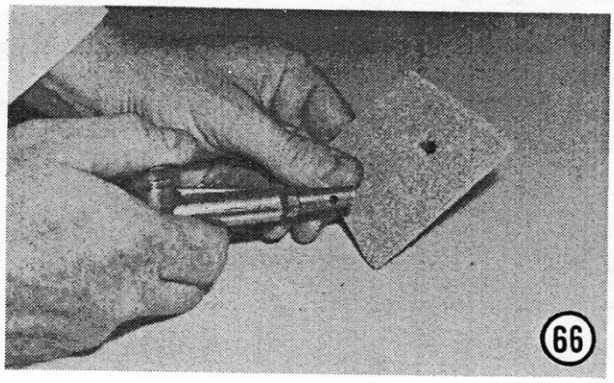
1. Remove the air filter cover by loosening the screw. Then lift off the air filter. (65)
2. Wearing eye protection, blow the filter clean with low air pressure or wash it in a clean solvent. Dry it in the open air and away from any open flame. Follow the solvent manufacturer's instructions. (66)
3. Re-install the air filter and cover, being certain the top edge of the cover fits onto the retaining ridge on the air box cover. Make sure the cover is secure. When cutting under dusty conditions, it is advisable to carry several clean filters and change the filter as needed throughout the working day.

STARTER COVER AND COOLING FINS

The air inlet openings of the starter cover and the cylinder cooling fins must be kept clean or the engine will become overheated during cutting operations. Cleaning can easily be accomplished by removing the starter cover and then the **CHAIN BRAKE** in order to clean the air inlet openings.







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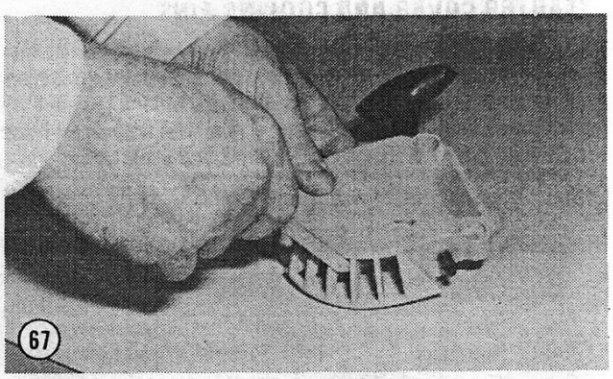
1. Remove the starter cover and use a small wooden scraper to remove dirt and sawdust packed into the openings. Use a soft bristle brush to finish cleaning the cover. Make sure the starter pulley turns freely and easily. (67)

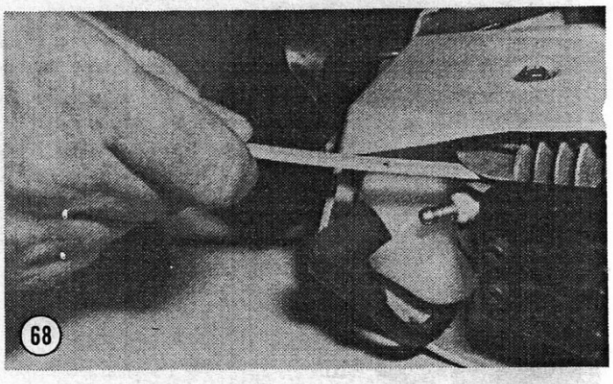
2. Clean the vanes on the flywheel and the other parts of the engine that became visible when the starter cover was removed.

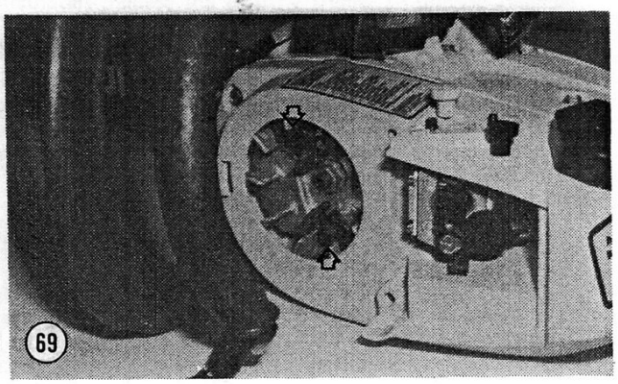
3. Remove the **CHAIN BRAKE,** chain and bar. Scrape all dirt, grass, wood chips, etc. from the cooling fins on the cylinder head. Use a thin scraper or stiff brush. (68)

4. Re-install the bar, chain, and **CHAIN BRAKE.**

5. When re-installing the starter cover, ensure that the starter pawls are aligned at the top and bottom of the saw. Slide the cover into position lining up the screw holes and making sure that the retaining guide overlaps the housing at the front of the saw. (69)







MUFFLER AND EXHAUST PORT

Periodically it is advisable to remove, clean and inspect the muffler. At the same time any carbon should be removed from the exhaust port. Operating the saw with a dirty or faulty muffler can lead to damage to the engine. Never run the engine without a muffler.

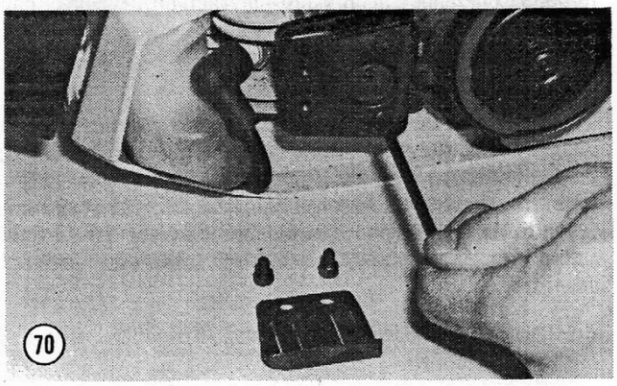
1. Remove the **CHAIN BRAKE.**

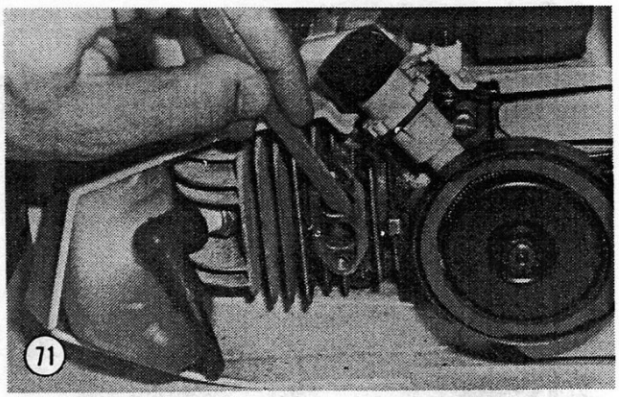
2. Use a 4 mm (5/32 inch) allen wrench to remove the two screws which hold the exhaust deflector on the muffler. Then remove the remaining two allen head screws and separate the muffler from the cylinder. (70)

3. Clean away all carbon deposits with a scraper blade, wire brush, or by washing with a clean solvent. Be sure to follow solvent manufacturer's instructions. Replace any broken or damaged element. (71)

4. While the muffler is 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.
   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. (71)
   C. After cleaning, turn the saw exhaust side down and blow loose particles away with compressed air. Wear eye protection during the operation.

5. Replace the muffler.



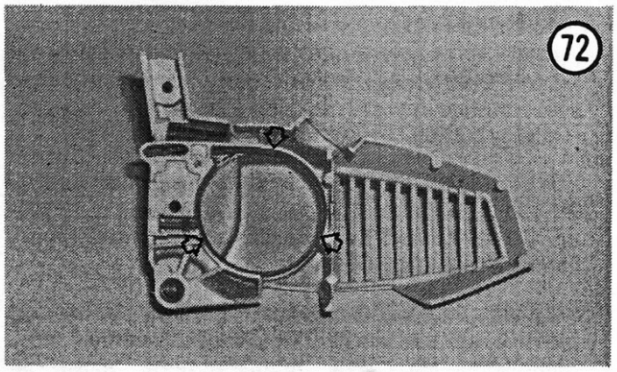


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CHAIN BRAKE MAINTENANCE

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. (72)

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.

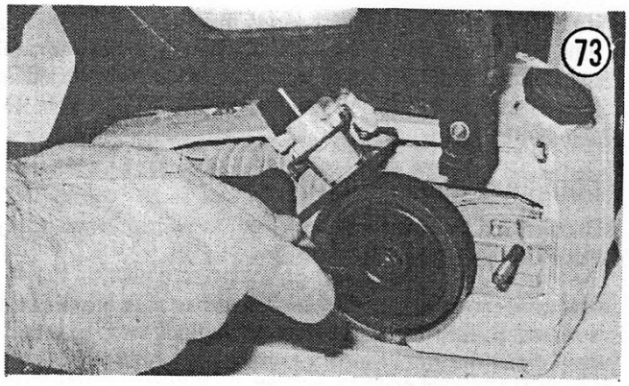
Evidence of slippage is shown when the chain moves very slowly or stops when the engine is running at full throttle.

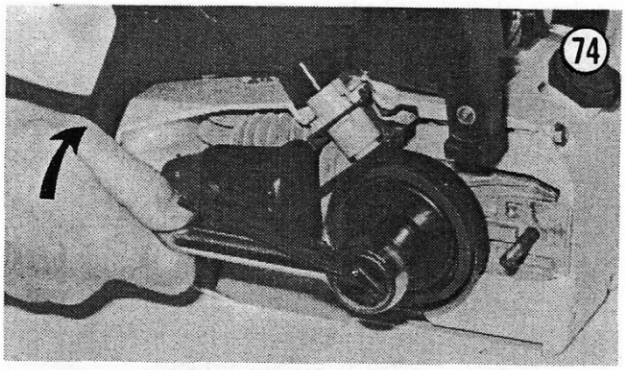
This will result in a rapid and damaging heat build-up in the clutch and the clutch drum. If the clutch begins to slip, the saw should be taken to a McCulloch Dealer for servicing.

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.

Sprocket Replacement:

1. Remove the **CHAIN BRAKE** assembly, bar and chain, and the starter housing:
2. Disconnect spark plug wire.
3. Remove spark plug using spark plug wrench.
4. Sight the flywheel by looking over the clutch drum. Pull the starter handle until a hole appears in the flywheel. Insert a 4 mm (5/32 inch) rod, which is at least 75 mm (3 inches) long, along the channel (seen above the clutch and cylinder) and into the flywheel locking it in place. Care should be taken not to pinch the wires in that area. **Loosen** the clutch nut using a 13 mm (1/2 inch)* socket wrench. (73) (74)



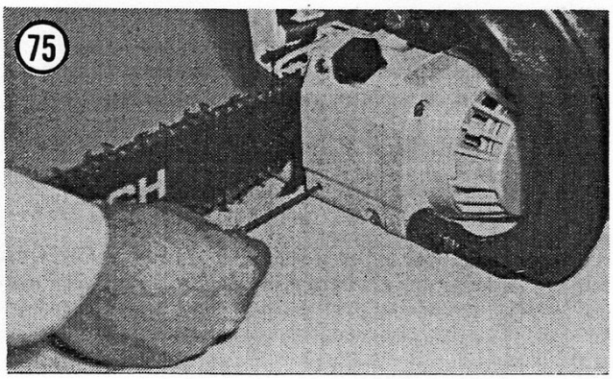


5. Remove the clutch nut by turning it clockwise, then remove the dust plate and clutch. (74)
6. Remove the sprocket and drum assembly. Lubricate the bearing with a good grade of non-fibrous chassis grease whenever replacing the sprocket and drum assembly.
7. Install the sprocket and drum assembly, the clutch, the dust plate and clutch nut.
8. Lock the crankshaft as explained in step 4 above. Tighten the clutch nut securely by turning it in a counterclockwise direction.

**13 mm socket is .012 inches larger than 1/2 inch.*

AUTOMATIC OILER ADJUSTMENT

The automatic oiler is adjusted at the factory for average cutting conditions. Oil flow may be adjusted, however, for special conditions or individual requirements. Turn the adjustment screw clockwise to reduce oil flow and counterclockwise to increase it. (75)



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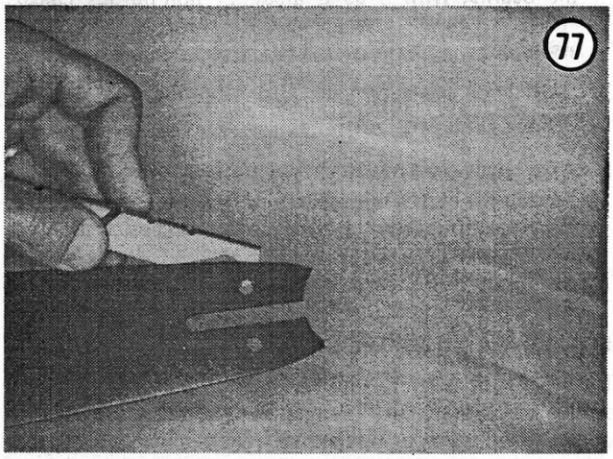
Do not turn the adjustment screw more than 1/4 turn at a time. Check oil flow after each adjustment. When more oil is needed for short periods, it is better to use the manual oiler as a supplement and make no adjustment to the automatic oiler screw.

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. ⑯





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. ⑰

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 every hour of hard usage or after three (3) tanks of gas are consumed.

NOTE: Thoroughly clean bar tip before lubrication.

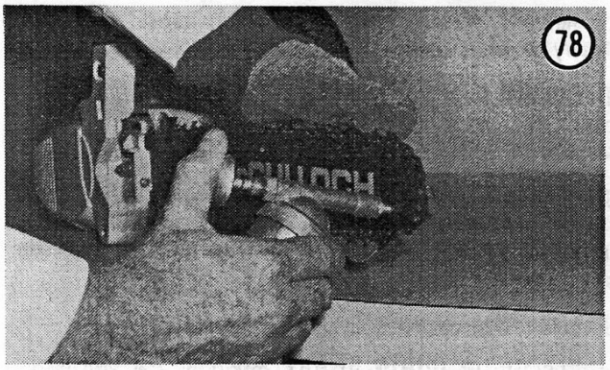
Three methods of lubrication for the sprocket tip may be used.

1. **Needle Nose Grease Gun:** Clean lubricant of No. 1 consistency, force grease into lubrication on one side of bar while covering the lubrication hole on the other side. Rotate sprocket and apply grease until it appears at edge sprocket. Repeat on other side of bar. ⑱

   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 (SAE10 in cold weather, SAE30 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 by hand. Bar tip may be submerged overnight for maximum lubrication.



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CHAIN MAINTENANCE

How you care for your saw chain 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.

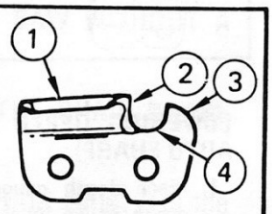
CHAIN SHARPENING (FOR SAWS WITHOUT AUTO SHARP) (79)

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.

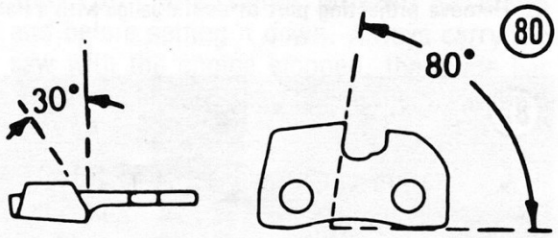
NOTE: The **CHAIN BRAKE** can be used to hold the chain in position for sharpening with the engine stopped. Carefully push the brake lever forward until it releases and the brake is engaged.

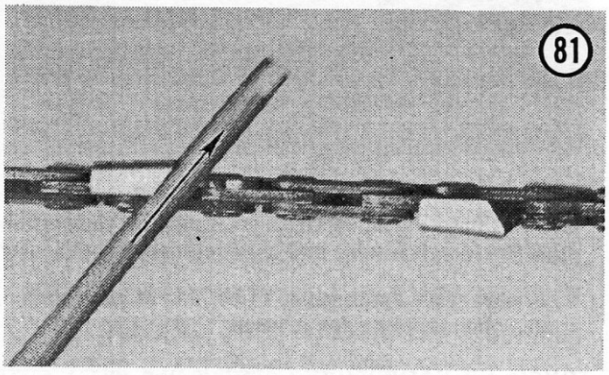
1. Chain can be sharpened on saw by placing the bar in a bench vise while resting the saw on the bench.
2. Use a 3.9 mm (5/32 inch) round file and a file guide marked for a 30^{0} top filing angle. (80)
3. Hold the file at the correct top filing angle, apply pressure against the face of the tooth, and push the file toward the outside of the tooth. Release pressure on the cutting edge on the return stroke. (81)
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.

1. Top Plate
2. Side Plate
3. Depth Gauge/Guard
4. Gullet



79

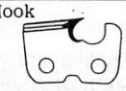
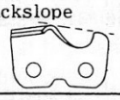
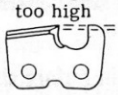
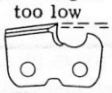




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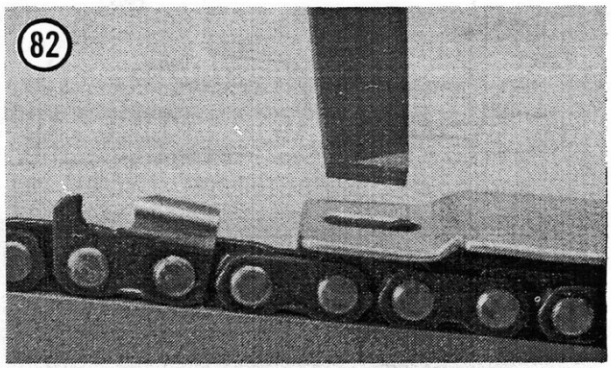
COMMON FILING ERRORS

All of these errors must be corrected by refiling.

Cutter Fault	Cause	Result
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).

LOWERING DEPTH GAUGES (FOR SAWS WITHOUT AUTO SHARP)

1. Place depth gauge tool over two cutter teeth with depth gauge on first cutter projecting through desired clearance of depth gauge tool. (82)
2. Remove projecting part of depth gauge with a flat file. (62)



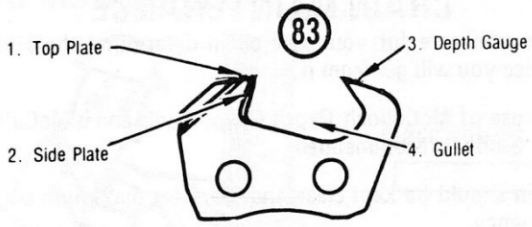
3. After lowering all depth gauges, round off their leading edges. Maintain same profile as on original depth gauge.
4. Always place depth gauge to be filed at same place on bar when lowering depth gauges.

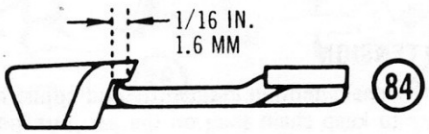
TOUCH UP HAND FILING (FOR SAWS WITH AUTO SHARP) (83)

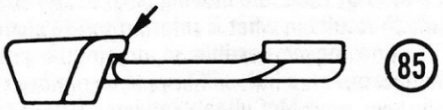
While the **AUTO SHARP** system will reduce hand filing to a minimum, the chain will require occasional touch up with a file:

1. When the side plate projects approximately 1.6 mm (1/16 inch) ahead of the top plate. (84)
2. When the cutting edge of the side plate becomes rounded. (85)

CAUTION: Wear tough gloves whenever handling chain.



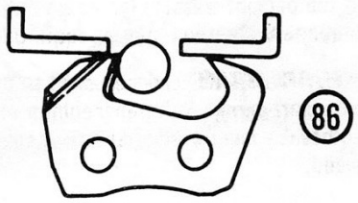




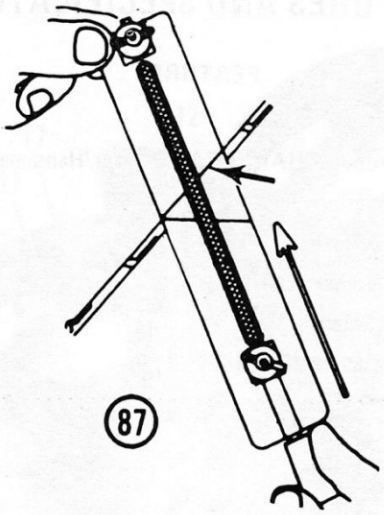
To properly hand file the AS chain, we recommend the use of File Guide Assembly P/N 90607A. The file guide is available from your McCulloch dealer and comes complete with 5/32 inch round file and file handle.

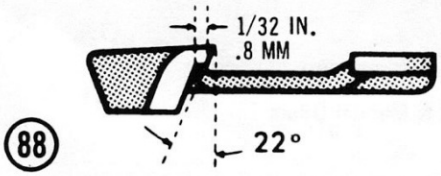
NOTE: The **CHAIN BRAKE** can be used to hold the chain in position for sharpening with the engine stopped. Carefully push the brake lever forward until it releases and the brake is engaged.

1. Tighten chain on bar so it cannot lean over under filing pressure. After each cutter is filed, move chain so that cutters are always filed at middle of bar.
2. Place the file guide on top of cutter so it rests on top plate and depth gauge and 22 degree guide line on file guide is parallel to chain. This gives proper side plate angle of 22 degrees. Never touch the top of teeth with file. Hold file level. (86) (87)
3. File from the inside of the cutter toward the outside, making light strokes forward and releasing pressure on the file on the back stroke until edge of side plate is sharp. Use same number of strokes on the other cutters.
4. Always leave at least .8 mm (1/32 inch) of side plate projecting ahead of top plate or chain will not cut properly. In the event the side plate projection is less than .8 mm (1/32 inch) it can be corrected by sharpening chain with **AUTO SHARP**. (88)
5. Touch up file all cutters on one side before filing cutters on other side.
6. Do not let file cut into the chrome underside of the top plate or it will become dull faster.



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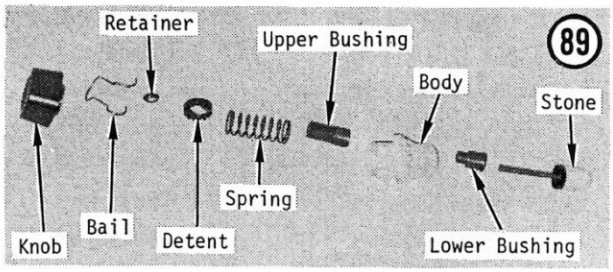


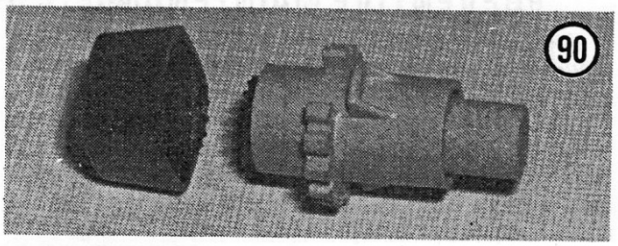


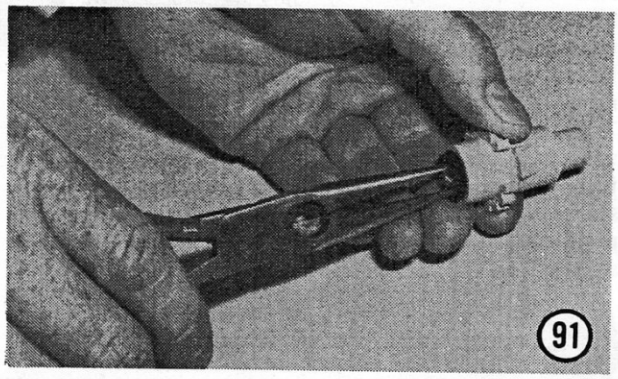
AUTO SHARP GRINDING STONE (89)

McCulloch recommends a new grinding stone with each new chain installation. The **AUTO SHARP** feature is designed to sharpen your chain until you can no longer adjust the knob without it separating from the assembly. When this occurs, it is time to replace the grinding stone.

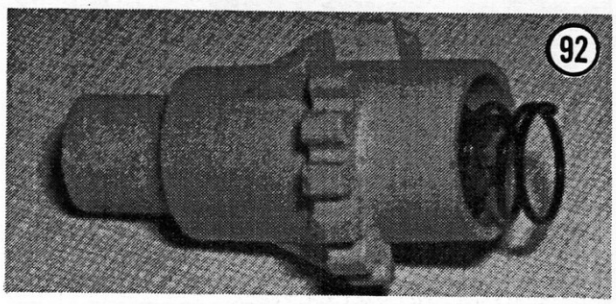
1. To replace the **AUTO SHARP** grinding stone, the **AUTO SHARP** assembly must be removed.
2. The knob is already separated from the assembly, or can be by rotating the knob clockwise until it separates from the assembly. (90)
3. Remove the bail wire by snapping it up and over the **AUTO SHARP** body until it separates.
4. Remove the **AUTO SHARP** body from the saw by turning it counterclockwise out of the bracket.
5. With a pair of pliers "grab" the retaining washer and squeeze. This buckles or breaks the retainer so it can be readily removed. Wear eye protection during this procedure. (91)
6. Remove the grinding stone and discard.
7. Before installing the new grinding stone, make certain upper and lower bushings are in place. (89)

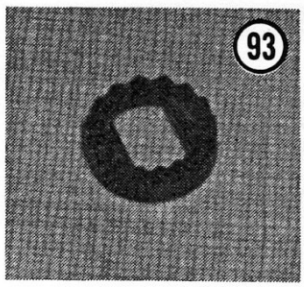


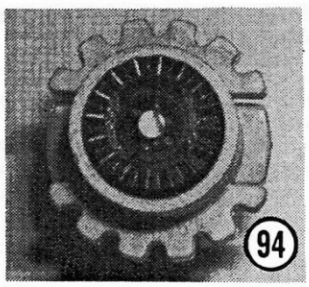




8. Install a new stone and place spring in position. (92)
9. Install detent with teeth up onto the upper bushing making certain the detent matches the flats on the upper bushing. (93)
10. Compcompress the spring with detent and push the retaining washer which is supplied with new stone onto the spindle until it bottoms out on the upper bushing. (94)
11. Grinding stone should rotate freely, but not have up and down movement.
12. Replace **AUTO SHARP** body on saw, followed by the bail and adjustment knob. Adjust for subsequent sharpenings.







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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.

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 check-ups and tune-ups as well as the recommended first 7-day or 15-hour checkup will assure long, satisfactory service from your McCulloch chain saw. This service will be performed at your McCulloch servicing outlet at existing service rates.

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	●			
CHAIN BRAKE	INSPECT BAND	●			
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			●	
CARBURETOR BOOT	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*				

*Recommended for maintenance by an authorized McCulloch Dealer.

FEATURES AND SPECIFICATIONS

FEATURES

1. Wrap-around CHAIN BRAKE Lever/Handguard
2. Anti-vibration Design
3. Safety Trigger
4. Chain Catcher
5. Muffler Shield
6. Throttle Latch (Fast Idle)
7. Electronic Ignition
8. Easy Starting
9. Metric Design
10. Good Balance
11. Light Weight
12. Easy to Service
13. AUTO SHARP (PM 320, PM 340)
14. Automatic & Manual Oilers

SERVICE SPECIFICATIONS

Displacement: 35 cc (2.1 cu. in.)
Bore & Stroke: 38 mm x 30 mm (1.5 x 1.2 in.)
Sparkplug: CH RDJ8, AC CS 45T
Main Bearings: Needle
Connecting Rod Bearings: Needle
Intake System: Third Port
Fuel Tank Capacity: 330 cc (11.2 oz.)
Oil Tank Capacity: 100 cc (3.4 oz.)
Clutch Engagement Speed: 3800 RPM
Idle Speed: 2700 to 2900 RPM
Ignition: Electronic
Weight PM 310: 4.49 kg (10.0 lbs)
Weight PM 320: 4.54 kg (10.1 lbs)
Weight PM 330: 4.72 kg (10.4 lbs)
Weight PM 340: 4.76 kg (10.5 lbs)

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