McCULLOCH
CHAIN SAW

#61390 MARCH 1964

MANUFACTURER'S SUGGESTED
LIST PRICE 50 CENTS

Owner's Manual

MODEL 250

MODEL 300

POWER UNIT WARRANTY

We warrant to each original retail purchaser (hereinafter called Purchaser) each part (except bar, chain, sprocket and spark plug) of each new McCulloch chain saw to be free under normal use and service from defects in material and/or workmanship for a period of thirty (30) days from the date of sale to the Purchaser provided that such saw is used and maintained in accordance with the McCulloch Owner's Manual accompanying each saw.

Our obligation under this Warranty is limited to supplying (without charge to such Purchaser) a genuine replacement part in exchange for any part which, in our sole judgment, is defective, if the part is returned for our examination (at Purchaser's expense) through an authorized McCulloch Distributor or Dealer.

This Warranty shall not apply to any new McCulloch chain saw, or any part thereof, that has been tampered with or has been subject to misuse, negligence, or accident, or which has its serial number altered or removed, or which has been altered or repaired outside of an authorized McCulloch service station, or where other than genuine McCulloch parts or accessories have been used.

This Warranty is expressly in lieu of all other warranties, express or implied, and shall not become effective unless the 'Warranty notice' attached to the Warranty accompanying the chain saw is mailed to us within five (5) days after delivery. We do not assume or authorize any person to assume for us, any other obligation or liability in connection with the sale of McCulloch chain saws.

McCULLOCH CORPORATION

BAR AND SPROCKET WARRANTY

We warrant to each original retail purchaser (hereinafter called Purchaser) each McCulloch bar, or components thereof, and each McCulloch sprocket to be free from defects in material and/or workmanship for a period of thirty (30) days from the date of sale to the Purchaser.

Our obligation under this Warranty is limited to supplying (without charge to such Purchaser) a genuine McCulloch bar, or component thereof, or a genuine McCulloch sprocket in exchange for any such bar, or component thereof, or any such sprocket which in our sole judgment, is defective, if such bar, or component thereof, or such sprocket, as the case may be, is returned for our examination (at Purchaser's expense) through an authorized McCulloch Distributor or Dealer.

This Warranty shall not apply to any new McCulloch bar, or any components thereof, or any new McCulloch sprocket that has been tampered with or has been subject to misuse, negligence, accident, improper application, alteration, or which has been repaired in any manner except for installation of McCulloch repair kits on McCulloch Speed-Tip, Roller-Mac, and Auto-Mac bars, by an authorized McCulloch service station.

This Warranty is expressly in lieu of all other warranties, express or implied. We do not assume or authorize any other person to assume for us any other obligation or liability in connection with the sale of McCulloch bars or sprockets.

McCULLOCH CORPORATION

WARRANTY INSTRUCTIONS

Do not return parts to the factory. Any chain saw part or parts returned for exchange under the above Warranties must be returned through an authorized dealer or distributor of McCulloch products and not to the factory (see distributor list on back cover of manual).

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

SERVICE

Service on McCulloch Corporation products is provided by McCulloch distributors and their authorized dealers located throughout the entire world. Each McCulloch distributor and his dealers carry a stock of parts for McCulloch products and are equipped with special tools for servicing in order to provide expert repair service. Factory representatives keep distributors and their dealers fully informed as to the latest design advances and service techniques.

Service Manager
McCulloch Corporation
6101 W. Century Boulevard
Los Angeles 45, California

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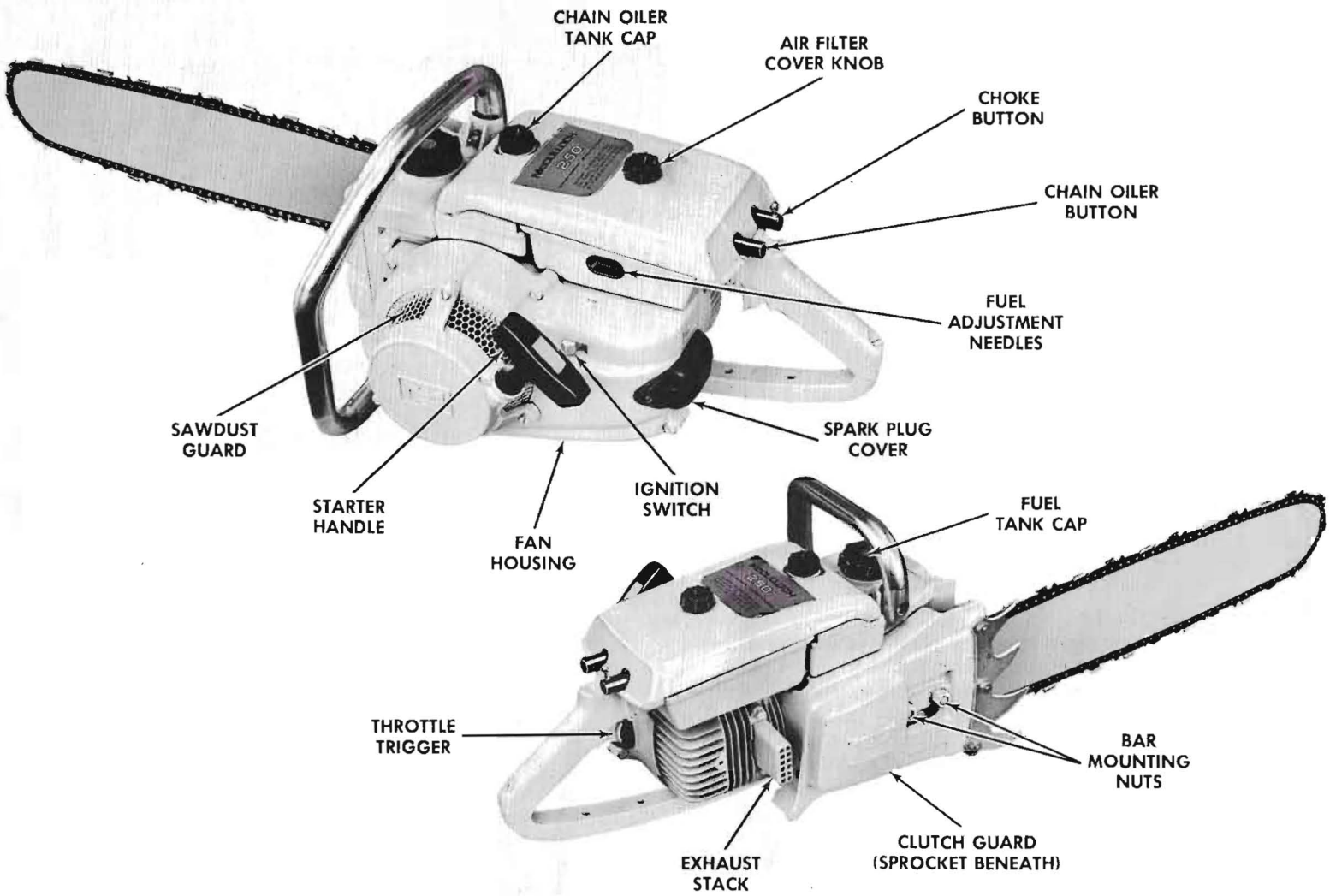
INTRODUCTION

Your new McCulloch chain saw is designed and constructed to give you the very best service and performance. The finest materials and the most advanced manufacturing methods have been used in its construction. In order to take full advantage of these high standards, you should study this Manual. Do not just read part of it or glance through it. You will find the information it contains will help you to obtain the long service life and excellent performance built into your new McCulloch chain saw.

Each of the Models 250 and 300 chain saws covered in this manual is shown in a separate illustration (figures 1 and 2). These illustrations properly identify the controls and features of each model. Thereafter, the illustrations show typical features common to both models although there may be differences in minor detail. Where significant differences occur, separate illustrations are used to show them, and appropriate note is made in the text.

Along with this Manual you should receive with your new chain saw, a Warranty Card, and a combination wrench and screwdriver. Make sure the Warranty Card is properly filled out and mailed to the factory. The serial number of your chain saw is stamped underneath the crankcase. Write the serial number down and keep it in a safe place so that you'll be able to identify your chain saw if it's lost or stolen, and recovered.

LOCATION OF CONTROLS AND FEATURES OF MODEL 250



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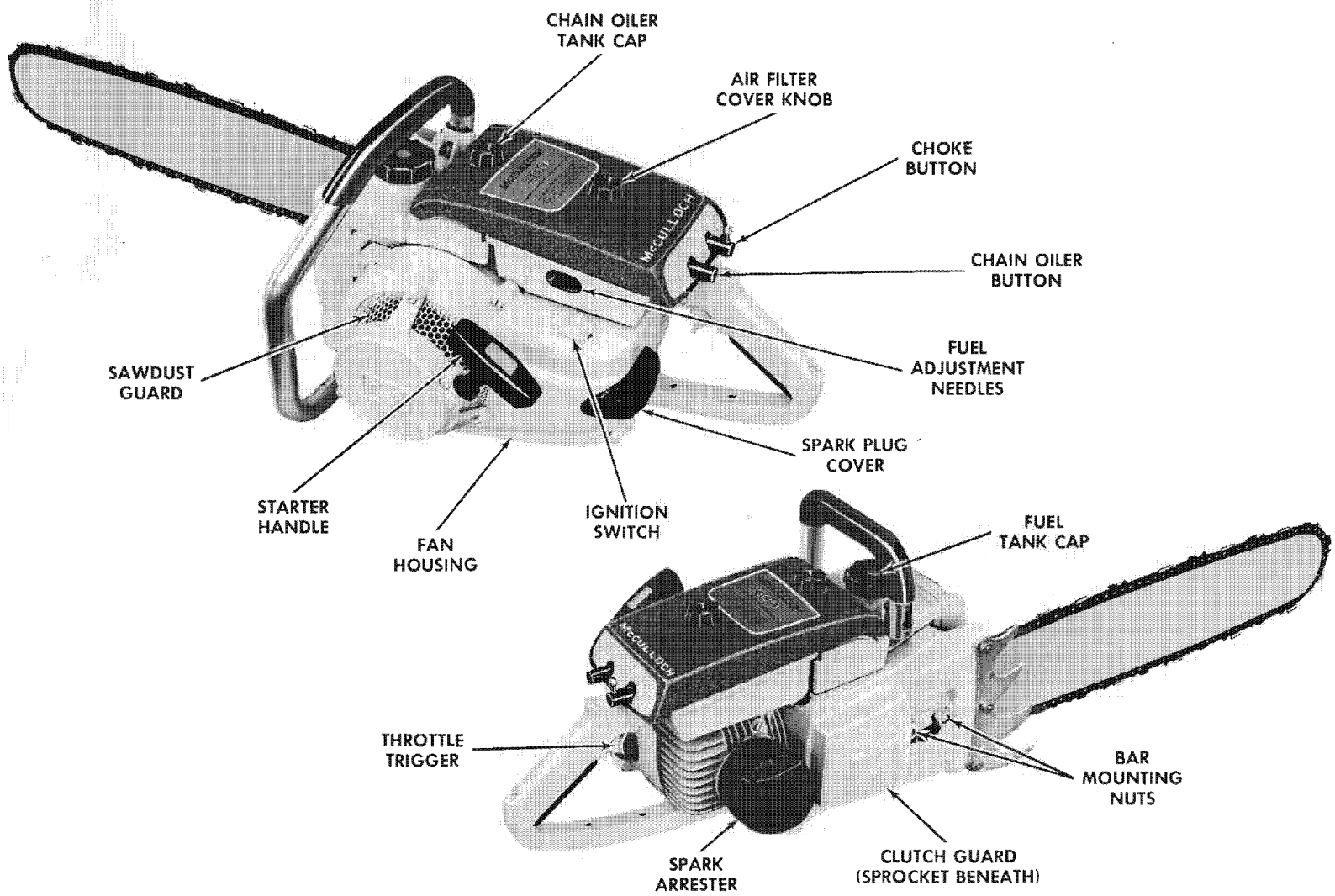
LOCATION OF CONTROLS AND FEATURES OF MODEL 300



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INSTALLATION OF BAR AND CHAIN

The bar used on your chain saw fits between the clutch guard and the bar mounting pad on the side of the fuel tank (figure 3). The slot in the end of the bar slides over the two studs projecting from the side of the bar mounting pad. The bar is secured on the bar mounting pad by the clutch guard when the two mounting nuts are tightened. Use care when installing the clutch guard, and be sure that the stud on the bar adjusting nut is properly engaged with the hole in the bar. Install the bar mounting nuts but do not tighten them until the chain tension is adjusted. The bar is adjusted for correct chain tension by turning the chain tension adjustment screw. Turning the screw clockwise tightens the chain; turning the screw counterclockwise loosens it. It will be necessary to loosen the bar mounting nuts whenever you adjust chain tension and to re-tighten them after the chain tension is correctly adjusted.

Before installing your new chain, soak it for at least five minutes in clean SAE 30 motor oil. This will help to make your chain last longer.

Follow these steps for correct installation of your bar and chain.

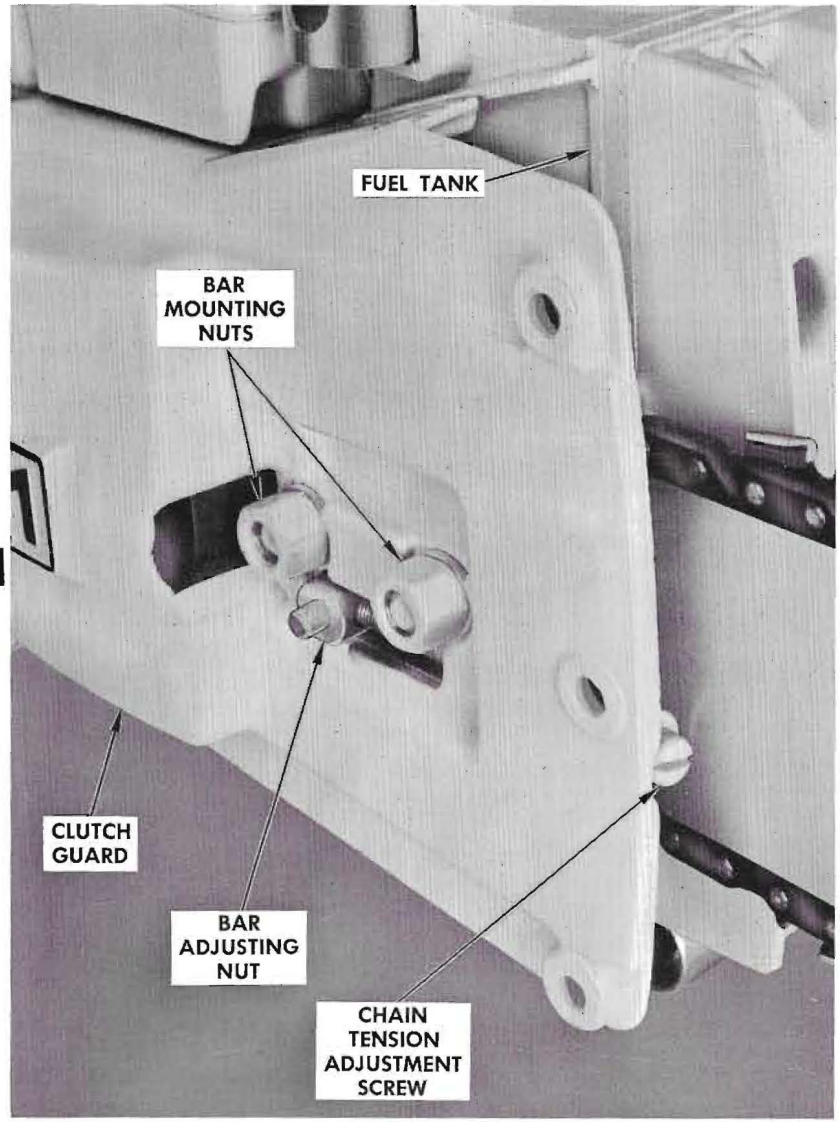
1. Remove the bar mounting nuts (figure 3) and the clutch guard.

2. Put the bar on the studs with the slot in the bar fitting over the two studs.

3. Fit the center link tangs of your oil-soaked chain into the groove on the upper edge of your bar. Make sure the cutting edges of the chain teeth point toward the nose or rounded end of your bar (figure 4).

4. Slide the engine (or rear) end of the chain over the sprocket (the colored gear just back of the slotted end of your bar) and around the sprocket so that it hangs down beneath your chain saw. Make sure the center link tangs fit between the teeth of the sprocket.

5. Replace the clutch guard and tighten the bar mounting nuts just enough to hold the bar in place.



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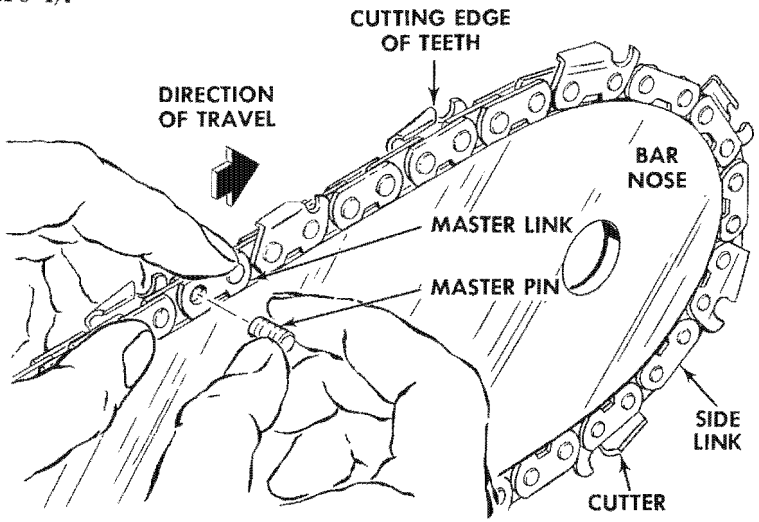
6. Turn the chain tension adjustment screw until the projection on the chain adjustment nut fits into the recess in the side of the bar.

7. Pull the chain along the bottom groove of the bar and up around the bar nose. Fasten the chain ends together with the master pin (figure 4).



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IMPORTANT

To get maximum service life from your chain, keep it snug to the guide bar at all times and use plenty of oil on both bar and chain to keep them well lubricated. Make sure you check your chain for proper tension often!

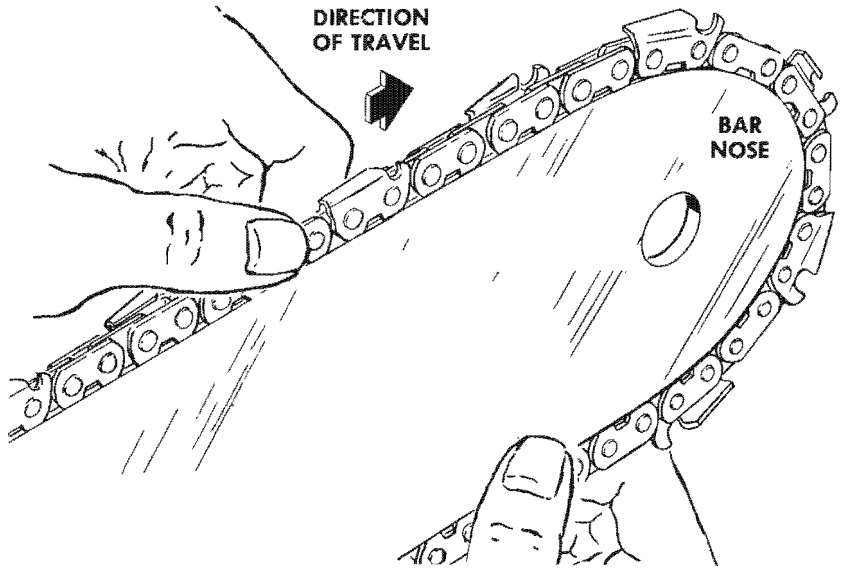
Adjust chain tension as follows:

1. Turn the chain tension adjustment screw clockwise until all slack has been removed.

2. While holding the nose of the bar up as far as the bar mounting studs will allow, continue tightening the chain until resistance is felt, then tighten the bar mounting nuts securely.

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. There should be no droop or sag of the chain permitted (figure 5).



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3. Move your oil-soaked chain around the bar several times and squirt additional oil onto the chain so that bar and chain are thoroughly lubricated. Now your bar and chain are ready for cutting.

Caution

It's normal for a new chain to lengthen or "stretch" as it heats up during break-in. Keep a close check on chain tension during break-in and throughout the life of the chain. Adjust chain tension as required, to maintain a snug fit on the bar. Remember to pump plenty of oil onto the chain when cutting.

FUEL AND LUBRICATION

GASOLINE

Lubrication of the internal moving parts of your chain saw is obtained by mixing a measured quantity of lubricating oil with the gasoline. Use regualr grade gasoline with as low an octane rating as you can find. "ETHYL" and high-octane gasolines are not good for chain saw engines and their continued use will result in poor operation. Mix oil and gasoline in the quantities shown in the Fuel Mixture Table.

Prepare only the quantity of oil and gasoline that you will use within a day or two. Do not prepare large quantities of mixed fuel and store the fuel over long periods. Temperature and humidity changes will cause condensation of moisture on the inside of the storage can and will result in adding water to the fuel. Gasoline stored over long periods looses its higher fractions into the atmosphere and, when used in your chain saw, will make your engine hard to start. Thoroughly mix the oil and gasoline together before putting them in your fuel tank. When mixing oil and gasoline, pour half of the gasoline and all of the oil into your container. Cap the container and shake the container to mix the oil and gasoline. Then add the balance of the gasoline and shake the container again.

DO NOT AT ANY TIME, USE EXOTIC FUELS OR ADDITIVES TO AID IN STARTING OR RUNNING THIS ENGINE.

OIL

McCulloch Chain Saw Oil is the best oil to use when mixing your fuel. It is specially compounded for use in two-cycle, air-cooled engines and it lubricates better than other oils at the high internal temperatures at which air-cooled engines operate. This means that less McCulloch Oil is required to a gallon of gasoline in the fuel mixture. If McCulloch oil is not available, use a good two-cycle outboard engine oil. Do not use automotive engine or reclaimed oils.

FUEL MIXTURE TABLE

OIL TO GASOLINE RATIO			
Mixed with McCulloch High Performance 40/50 Two-Cycle Motor Oil (1:40)		Mixed with SAE #40 Motor Oil (1:16)	
Oil	Gasoline	Oil	Gasoline
		1/2 U.S. pint 1/2 Imp. pint 1/4 liter	1 U.S. gallon 1 Imp. gallon 4 liters
6 oz. (can)	2 U.S. gallons 1-1/2 Imp. gallons 7 liters		
		1 U.S. pint 1 Imp. pint 1/2 liter	2 U.S. gallons 2 Imp. gallons 8 liters
16 oz. (can)	5 U.S. gallons 4 Imp. gallons 19 liters	1 U.S. quart 1 Imp. quart 1 liter	4 U.S. gallons 4 Imp. gallons 16 liters

Caution

If you run your chain saw with less oil in the fuel mixture than the Table calls for, your engine will become overheated and may be severely damaged. If you add too much oil, your chain saw engine will run unevenly and may lack power.

CHAIN LUBRICATION

Your saw chain must be properly lubricated when it's running or it will wear out very fast. Fill the chain oiler tank of your chain saw with clean oil every time you fill the fuel tank. Use a good grade of SAE 30 motor oil when temperatures are above 40° F., (4.4°C) and SAE 10 motor oil when temperatures go below 40° F., (4.4° C). Avoid the use of reclaimed or dirty oils.

When cutting wood containing pitch, you can mix kerosene with the chain oil, but never use more kerosene than oil in the mixture.

When cutting in sandy areas, use your chain oiler more frequently so that the oil can reduce chain wear and help to keep your chain clean.

STARTING YOUR ENGINE

See figures 1 and 2 for location of controls.

1. Fill the fuel tank of your chain saw with the correct fuel mixture.

2. Fill the oiler tank with the correct grade of oil.

3. Make sure your bar is tightly clamped into place and that your chain is correctly tensioned.

4. Move the ignition switch to the "ON" position.

5. Push the choke button in and hold it in the choked position.

6. Pull the starter handle with a smooth rapid stroke. Do not release the handle so that the rope rewinds itself for this will damage the rope. Instead, guide the rope back into the starter. Your engine should start within two or three pulls. A new engine or one that has been in storage will require additional pulls to draw the fuel mixture from the tank into the engine.

7. When the engine starts, release the choke button. Push it in only enough to keep the engine running.

8. Use the throttle as necessary until the engine is warm enough to run at idle speed without further throttling. Do not run the engine at full speed to make it warm up faster. If the engine is warm, do not use the choke, and keep the throttle closed when pulling the starter handle.

OPERATING INSTRUCTIONS

OPERATING YOUR ENGINE

Pay attention to the following suggestions and your chain saw will last much longer.

1. Never run your engine with the throttle pulled full back, unless you are cutting wood.

2. Never run your engine with the spark arrester off.

3. Never do any cutting with the air filter removed from your engine for dirt can be sucked into the crankcase and cylinder and can cause rapid wear of the moving parts of your engine.

STOPPING YOUR ENGINE

1. Release the throttle trigger.

2. Move the ignition switch to the "STOP" position.

IGNITION AND SPARK PLUG CHECK

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

Remove the spark plug. Clean and dry the spark plug electrodes if they are wet. Ground the metal side of the spark plug against the paint-free metal surface of the engine. Do not ground the electrodes directly over the spark plug hole. Pull the starter rope sharply to spin the flywheel and watch to see if a spark jumps the spark plug gap while the flywheel is turning. If no spark can be seen, install a new spark plug and recheck. If there is still no spark, refer to the Trouble Shooting Chart for the probable causes.

IF THE ENGINE FLOODS

1. Place the engine on its side with the spark arrester down.

2. Hold the throttle trigger full back and pull the starter handle until the engine starts.

BREAKING IN A NEW ENGINE

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

It is also advisable and good practice to run the new saw for the first hour or so of its break-in period, with the carburetor adjusted for a richer fuel mixture than normal.

Look at the spark arrester ports frequently during the break-in period. If, after a few hours of running, the spark arrester has a gray or white appearance, it is an indication that the engine is running too hot and the fuel mixture is too lean.

STORING YOUR CHAIN SAW

Never store your chain saw without performing the following operations:

1. Run your engine with the choke button pushed all the way in so that your engine stops because of flooding. This will put a heavy coat of oil and gasoline on all the interior parts of your engine.

2. Remove the spark plug. Pour about a teaspoonful of clean oil through the spark plug hole into the combustion chamber. Pull the starter handle slowly at least twice. This will coat the interior of the combustion chamber with oil. Replace the spark plug.

3. Remove the chain and bar. Soak the chain in oil and oil the bar groove.

4. Drain the fuel from the fuel tank.

5. Wrap the chain in plastic or put it in a coffee can. Cover the engine and bar with a canvas or plastic sheet.

REMOVING YOUR CHAIN SAW FROM STORAGE

1. Remove the spark plug. Pull the starter rope briskly to clear the cylinder of the excess oil and fuel mixture. Clean and adjust the spark plug gap or install a new spark plug.

2. Fill the fuel tank with the correct fuel mixture. Fill the chain oiler tank with the correct grade of oil. Follow the standard starting procedure.

SAFETY PRECAUTIONS

FIRE PRECAUTIONS

OPERATING YOUR CHAIN SAW CAN BE DANGEROUS SO:

* Start your engine without assistance.
* Stop your engine before carrying the saw between cuts.
* Never touch, or try to stop, a moving chain with your hand.
* Be sure of your footing when operating your chain saw.
* Select a safe exit path before felling a tree.
* Use wedges to help control felling and prevent binding.
* Beware of falling limbs.
* Keep your chain sharp and in good condition. A dull or improperly filed chain will cause the saw to buck and jump, which can result in personal injury.
* Keep both hands on your saw when cutting.
* Refuel your saw in an area of uninflammable material.
* Avoid spilling fuel.
* Use correct gasoline-oil mixture to minimize carbon deposits which can be given off in the exhaust in the form of sparks.
* Don't start your saw where you refueled it.
* Keep your saw clean and free of twigs and sawdust.
* Keep the spark arrester in good condition and never run your engine without it.
* Keep spark plug and wire connections tight.
* Keep a fire extinguisher within easy reach at all times.
* Do not smoke in restricted areas.
* Put out any fires and report them to the proper authorities together with causes.

BE ALERT AND FIRE CONSCIOUS

KEEP THE FOREST GROWING

GENERAL CUTTING INSTRUCTIONS

Always follow the Fire and Safety Precautions listed on page 9. They are for your protection and the protection of your property.

The following paragraphs provide a brief instruction in how to make the most common and useful cuts.

FELLING

Plan your work to prevent excessive breakage of timber. This is especially important if the timber to be felled is closely spaced. Note the way most of the trees lean in your planning. Pick a direction or "lead" in which most of the trees will lay when felled. Always consider breakage, bucking, and trees to be left standing. If there is brush around the tree you are going to fell, clear a working space before you make your undercut so that you do not trip or stumble while working.

Several types of undercuts are shown in the accompanying illustration. Be sure to clean the wood out of the notch so the tree will fall true. Make the felling cut horizontally as shown, moving the saw blade in an arc. The arc is necessary because the chain will draw the spike tight against the tree. On a small tree, the felling can be completed from the same side where you began. On a larger tree, you should saw from each side. You will then know how much wood is remaining to be cut from each side.

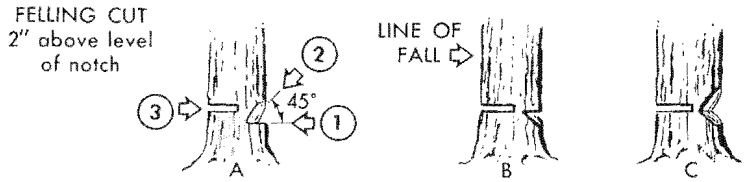
Be sure to figure out a path of retreat before the felling cut is started. Watch for dead limbs and bark that can come loose and fall while you are cutting. Be alert all the time you are cutting. If the tree rubs against another as it falls, watch out for limbs that might be thrown back.

LIMBING

When limbing either standing or fallen trees, be sure you are out of the way of any limbs that fall. If the tree lies on steep or sloping ground, cut off the limbs which are off the ground before you cut off the limbs resting on the ground. And be sure to stand above the log rather than below it at all times.

FELLING

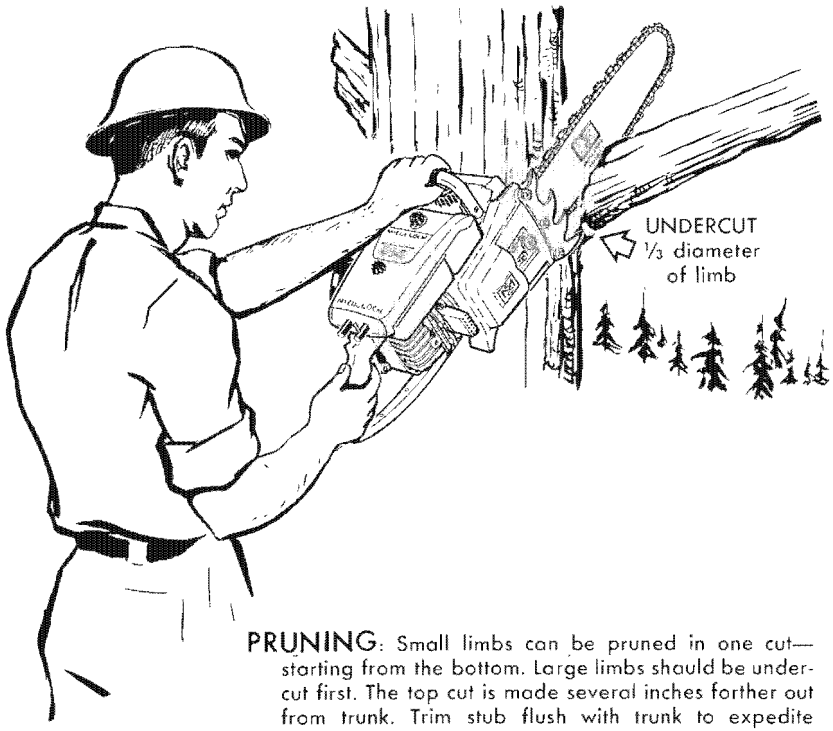
FELLING: Direction of fall is controlled by the undercut. Type "A" is easy to make and is commonly used for small trees. Type "B" leaves butt end of log cut squarely across. Type "C" is a variation of Type "A." Notch should be about ⅓ the diameter of the tree. On felling cut, do not cut through to notch. Uncut band of wood parallel to notch serves as a hinge. Make cuts in order shown 1 , 2 , 3 , on "A."



PRUNING

Always use a sling rope to haul the chain saw up into the tree. Keep the rope tied to the saw while cutting and tie the rope to the tree just below the point at which you are working. Then if you drop the saw, the rope will prevent the saw from falling to the ground and the swinging rope will not be able to pull you from the tree.

As a safety precaution, a second sling rope should be fastened to large limbs before cutting so the man or the crew on the ground can control their fall.



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

BUCKING

When bucking (cutting the log into lengths) make sure you have good footing and can get out of the way should the log begin to move as you complete your cut. When working on sloping ground, always stand above the log rather than below it. If possible, the log should be supported off the ground and the cut made in such a manner as to prevent binding of the chain and bar in the cut. Driving wooden wedges into the cut will often aid in preventing binding. Be especially careful to see that the chain does not dig into the ground while cutting since this will cause rapid dulling of the cutter teeth and excessive wear of your chain.

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

HOW TO CARE FOR YOUR CHAIN SAW

The easiest way to care for your chain saw is to follow a regular inspection and service procedure which will help prevent major breakdowns and costly repair bills. Listed below are four steps in the care of your chain saw which will help prevent trouble.

VISUAL INSPECTION

At the end of each work day, look for loose nuts and bolts and for cracked or broken parts. Tighten any loose nuts and bolts and have any cracked or broken parts replaced. Periodically check your saw for loose wires and those that may be bare or with worn insulation. Tighten the loose wire connections and replace any bare wire or one having worn insulation. If you have any doubt about the operating condition of your chain saw, take it to your McCulloch dealer for servicing.

CLEANING

Keep your chain saw, bar and saw chain clean. Do not allow dirt to clog the carburetor air filter or dirt, sawdust and grass to plug the holes in the air grills at the control end of the saw or to build up on the cooling fins. Clean the engine regularly and keep your saw chain clean.

HANDLING

Use your chain saw only for those jobs for which it was intended. Do not abuse it by trying to use it for other purposes. Protect it from the weather and when carrying it in a truck or car, prevent it from being tossed about or from being damaged by other tools and equipment. When you're not using it, don't dump it in a corner and pile things on top of it.

PERIODIC INSPECTION

Once a week or after every four or five days of work, check the operating controls to see that they are in good working order. Check the fuel tank for the presence of water. Check the starter rope for signs of fraying. Examine your chain and bar for evidence of abnormal wear.

AIR FILTER ELEMENT

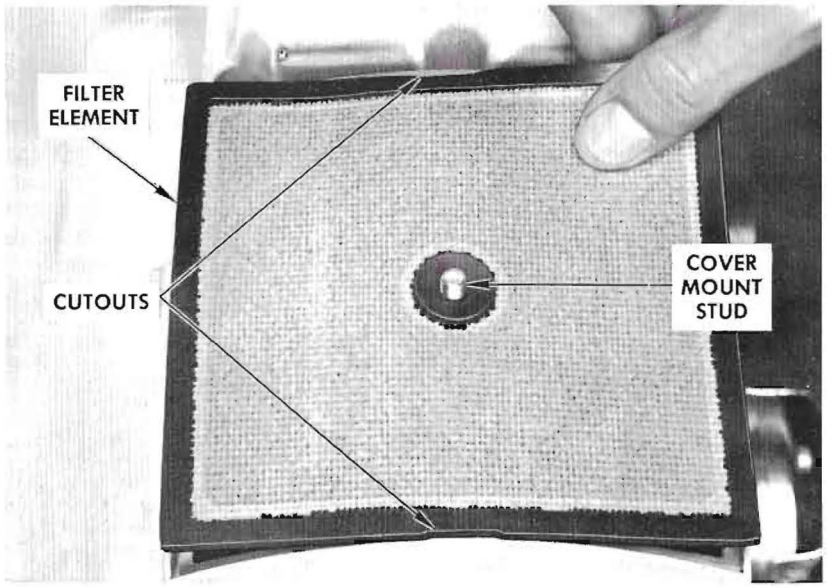
The air filter element of your chain saw must be kept clean in order that the engine may have enough filtered air. When the saw is operated in dusty, sandy or loose soil areas or continuously throughout the day, the filter can become clogged and will prevent your engine from getting enough air for proper combustion of the fuel mixture. Therefore, make sure you keep your filter element clean.

1. Clean the air filter cover and the sides of the carburetor enclosure of all dust, dirt and oil to prevent dirt from falling into the carburetor enclosure.

2. Loosen the air filter cover knob and lift off the air filter cover.

3. Lift the filter element from the top of the carburetor enclosure. If the element is stuck to the enclosure, insert a screwdriver under the cutout at either end of the element and carefully pry the element free (figure 6).

4. Clean the filter element by sloshing it in clean gasoline or solvent. If you use solvent, make sure that it is a petroleum solvent because chloride-base solvents, lacquer thinners and toluene will dissolve the bonding agent which holds the flock material to the screen.



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5. After the gasoline or solvent has evaporated from the element, replace it on the carburetor enclosure. Make sure the cutouts go toward the front and back of the chain saw. Replace the air filter cover and tighten the cover knob.

Caution

Do not operate the engine without the air filter element in place because the dust and dirt in the air will be sucked into the engine and can cause rapid wear of the piston rings and cylinder wall. The only time the engine should be run without the filter element is during adjustment of the carburetor and then only for as short a time as possible.

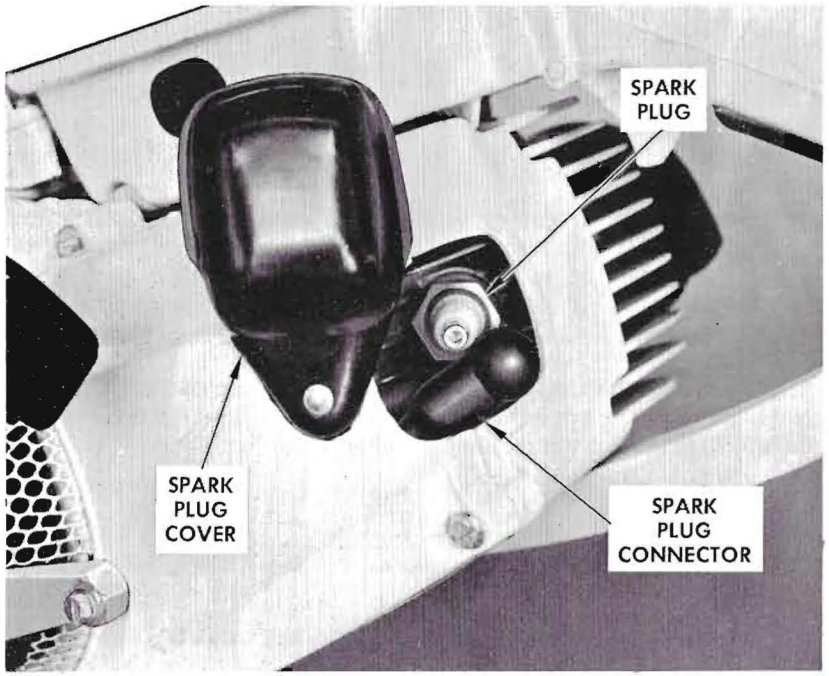
To save time, carry an extra filter with you and change elements mid-way through the working day. You can clean the filters at night without any loss of working time.

SPARK PLUG

Your chain saw engine was equipped with a 14 mm., 3/8 in. reach spark plug (Champion J8J, AC M45, or Autolite A7X) at the factory. This spark plug is suitable for all average cutting conditions. But during extremely hot or cold weather, a plug of a different heat range may be more efficient. Check with your McCulloch Dealer for the plug of the correct heat range for your area and climate.

The spark plug should be cleaned and have its air gap readjusted regularly.

1. Carefully pull the spark plug cover away from the engine and disconnect the spark plug connector from the spark plug (figure 7).



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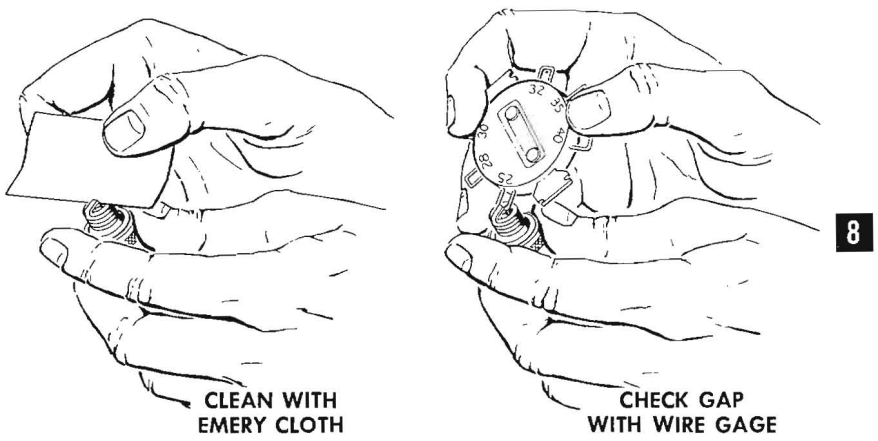
2. Remove the spark plug with a spark plug wrench.

3. Clean the electrodes with emery cloth or very fine sandpaper. Blow all the dust and grit away (figure 8).



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

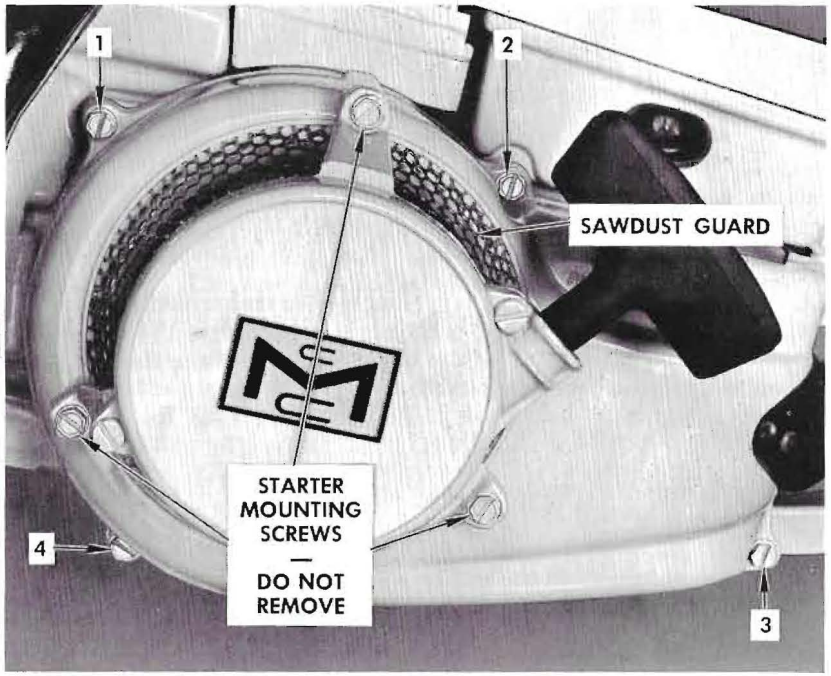
5. When reinstalling the spark plug or when installing a new spark plug, make sure the spark plug gasket is undamaged and in place. Tighten the spark plug securely.

STARTER

If the starter rope begins to slow in rewinding or if the rope hangs up, the starter shaft should be cleaned.

1. Remove the four screws attaching the fan housing to the engine (figure 9). Carefully detach the short stop-switch wire assembly from the coil, by pulling the fan housing away from the engine just far enough to gain access to the connection. Remove the fan housing completely.

2. Turn the fan housing starter-side down, and put a few drops of the fuel mixture on the starter shaft.



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3. Turn the shaft back and forth by hand or by pulling the starter handle, and add more fuel mixture as needed until the shaft turns freely.

4. When replacing the fan housing on the engine, pull the starter rope slowly so that the starter can engage the crankshaft. Tighten all four fan housing screws securely.

CARBURETOR ADJUSTMENT

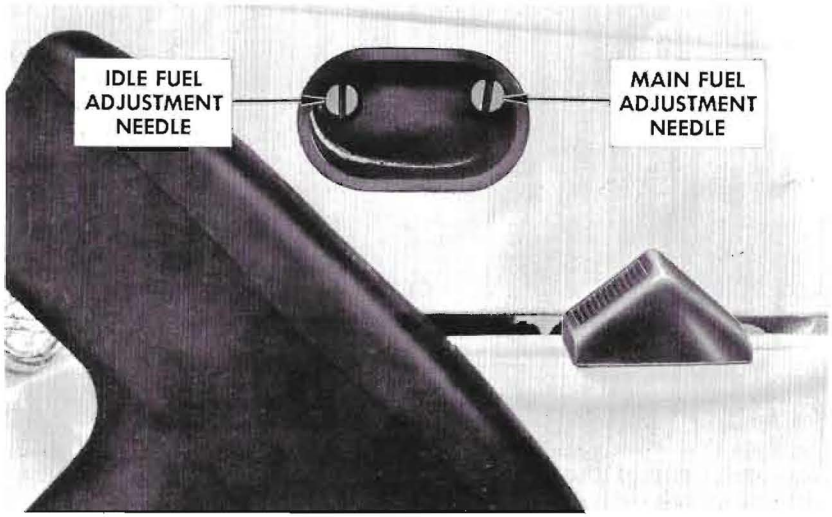
The carburetor of your chain saw was adjusted at the factory for maximum performance under average cutting conditions. If it becomes necessary to readjust the carburetor, it should be done only by a McCulloch dealer or other person experienced in carburetor operation. If this is not possible, then follow these instructions carefully, for careless adjustment can seriously damage both carburetor and engine.

1. Remove the air filter cover and the air filter from the carburetor enclosure.

2. Slowly turn the main and idle fuel adjustment needles (figure 10) clockwise with a thin screwdriver until the needles seat.

Caution

Do not turn the needles beyond the point of slight resistance. This will result in jamming the needles into their seats and damage the carburetor beyond repair.



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3. Open (turn counterclockwise) the main and idle fuel adjustment needles one full turn for a preliminary adjustment.

Idle Speed Adjustment Screw

1. Start and run the engine until it is thoroughly warmed up.

2. Turn the idle speed adjustment screw (figure 11) until engine speed with the trigger released, is just below the point at which the sprocket and chain stops turning. (The point at which the clutch disengages.)

Idle Fuel Adjustment Needle

1. Pull the throttle trigger full back and "gun" the engine several times to check acceleration.

NOTE

If the idle fuel adjustment needle is turned in too far (clockwise to a lean condition) the engine will falter and hesitate on acceleration. If it is turned out too far (counterclockwise to a rich condition) the engine will run rough and smoke heavily on acceleration.

2. Adjust the idle fuel adjustment needle (figure 10) to obtain a smooth, rapid acceleration every time without faltering. Turn the needle slowly and gradually to the desired position in steps of above 1/16 turn. Check acceleration after each step.

3. Reinstall the air filter element and the air filter cover on the carburetor enclosure.

Main Fuel Adjustment Needle

1. Start and warm up the engine thoroughly.

2. Start the saw into a cut and check to see that under load, it runs smoothly and evenly.

3. Open (turn counterclockwise) the main fuel adjustment needle about 1/16 turn, and with the slightly richer mixture, again check the engine running under load.

4. Repeat this adjustment and check, in very gradual steps until the engine begins to develop rough running under load.

5. Close the needle (turn clockwise) just enough to eliminate the roughness.

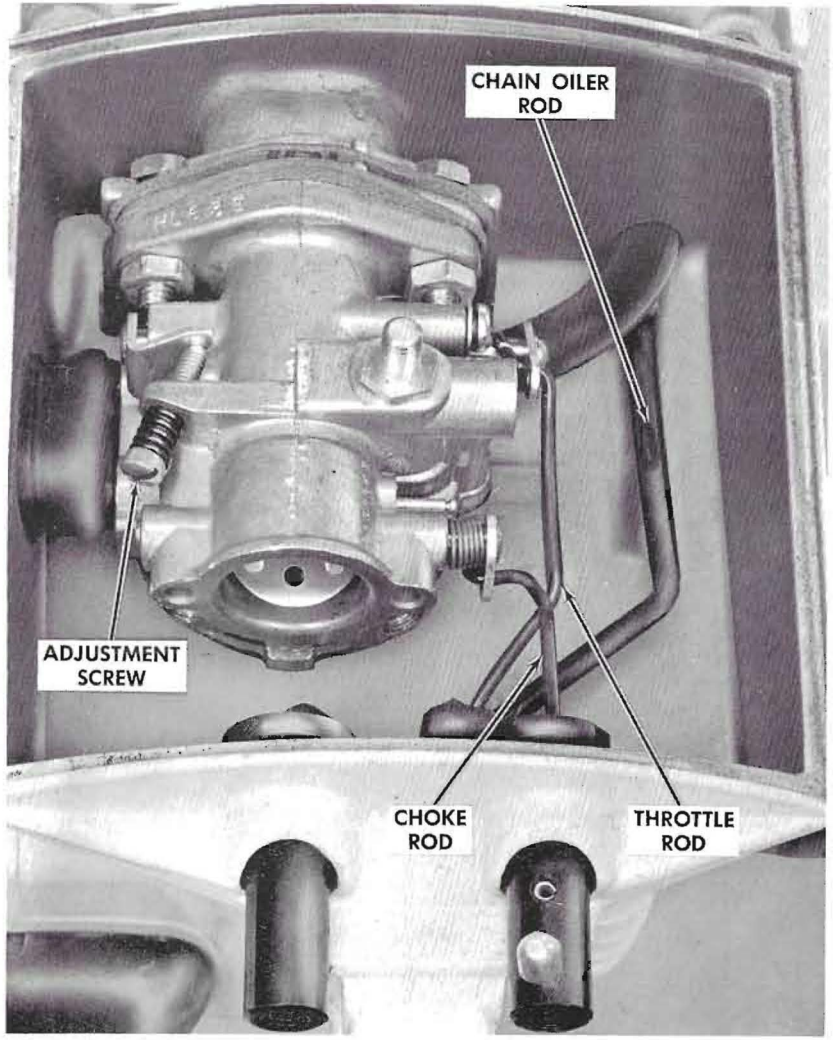
NOTE

After final adjustment, make sure that when the saw is pulled from the cut, with the engine under no load, it has the characteristic roughness of a rich carburetor setting.

Caution

If the main fuel adjustment needle is set while the saw is not under load, the mixture may be too lean. While the exhaust may be sharp and barking and sound powerful, costly damage can be done to the engine by the lean setting through overheating and lack of lubrication. It is much better to run the engine with a mixture slightly too rich, than one with a mixture slightly too lean. Be sure therefore, that final adjustment of the main needle is made only for full load conditions.

11



FUEL TANK FILTER

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

dirt from entering the fuel line to the carburetor. After awhile, dirt will build up on the filter and will cut down the flow of fuel. Or, if water enters the fuel tank, the water will get into the filter and prevent the flow of fuel to the carburetor. The filter can be cleaned or replaced.

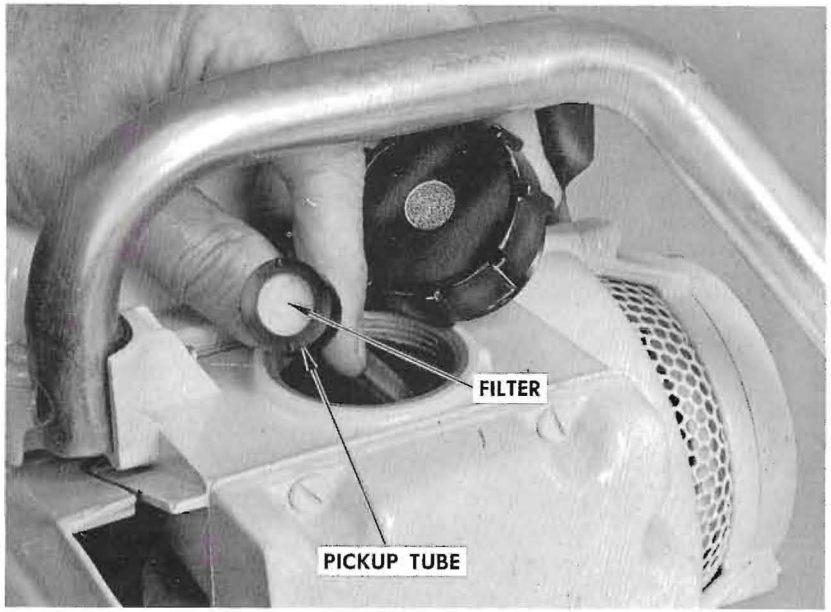
1. Remove the fuel tank cap.

2. Lift out the free end (the bell-shaped end) of the black rubber pick-up tube. (figure 12)

3. Carefully remove the filter from inside the bell.

4. Wash the filter in gasoline or solvent or replace it with a new filter. If the filter is water soaked, dry it thoroughly or replace it with a new filter.

5. Carefully put the filter back into the bell.



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Caution

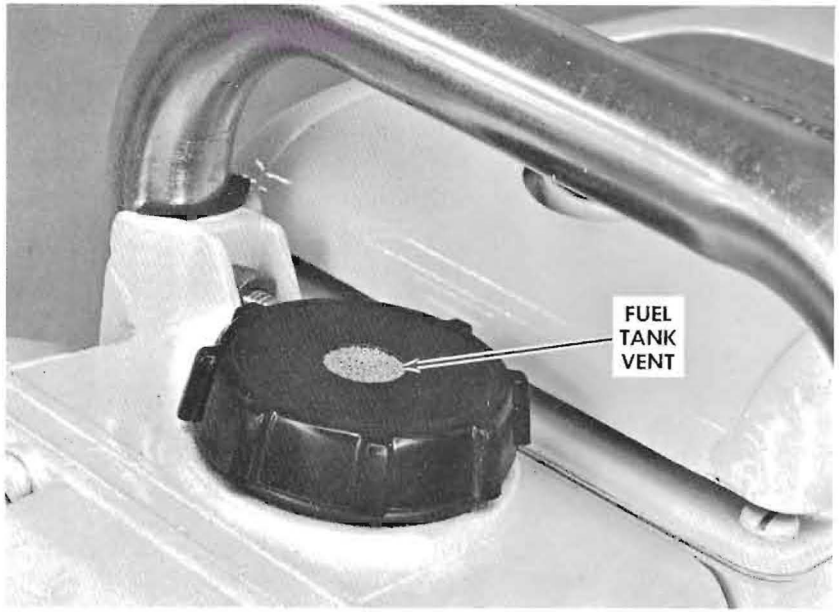
Never operate your chain saw engine without the fuel filter being securely in place. Never put your old filter back into the bell with the side that was dirty toward the tube end of the bell.

FUEL TANK VENT SYSTEM

The fuel tank of your chain saw is equipped with a fuel tank vent system to prevent the build up of tank pressure or tank suction.

The fuel tank has the vent in the fuel cap (figure 13). If either tank pressure or tank suction develops, take your chain saw to your McCulloch dealer for servicing.

Tank pressure will prevent the engine from idling properly. Tank suction will prevent the engine from developing full power. Both conditions can be caused by putting dirty fuel into the fuel tank.



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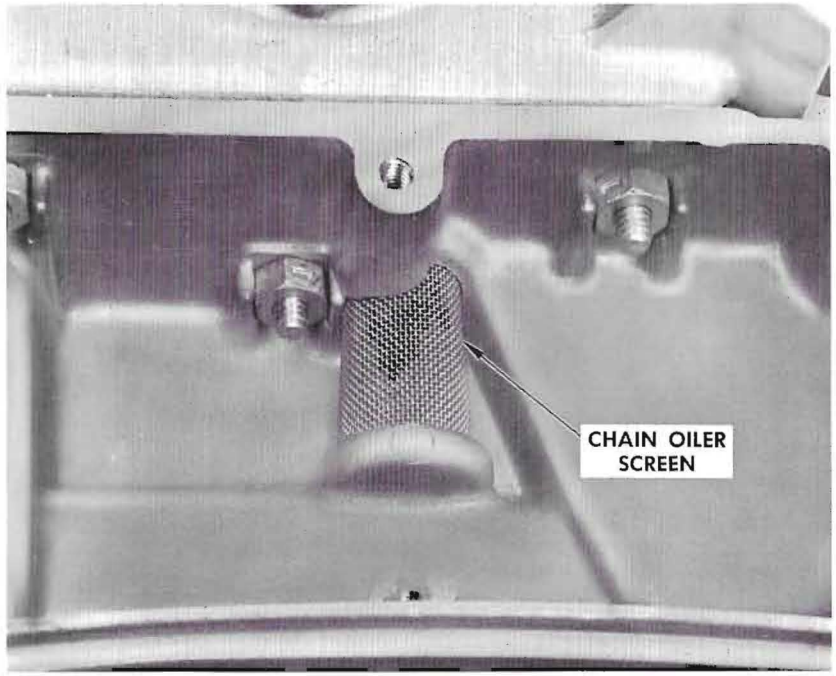
CHAIN OILER SCREEN

Chain oil is screened before passing from the chain oiler tank to the discharge valve. The screen should be cleaned periodically to prevent build-up of dirt and blocking passage to the valve. Remove the chain oiler tank cover to gain access to the screen. (See figure 14).



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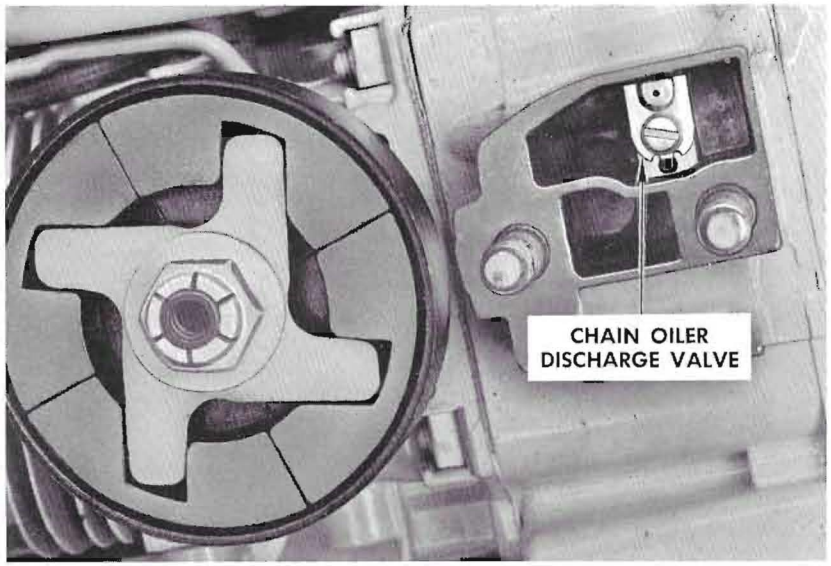
CHAIN OILER DISCHARGE VALVE

The chain oiler discharge valve is located in the upper section of the bar mounting pad (figure 15). Should it become plugged by dirt entering the chain oiler tank during filling of the tank, the valve must be removed and cleaned.

Caution

Never operate your chain saw if the chain oiler does not work because you can ruin your chain very quickly.



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1. Remove the bar mounting nuts and the clutch guard (figure 1).

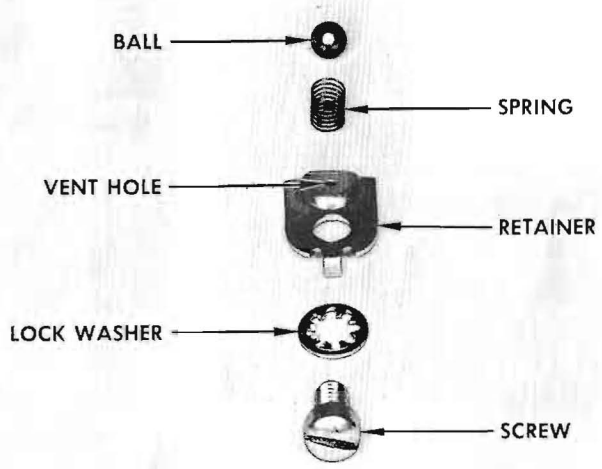
2. Remove the screw, lockwasher, retainer, spring and ball that make up the chain oiler discharge valve (figure 16) from the bar mounting pad.

3. Clean the small oil discharge hole in the retainer. Clean the spring and ball of any dirt. Do not stretch or deform the spring in any way.

4. Push the chain oiler button several times. If oil does not come out of the oiler valve hole, the internal pump is damaged and will have to be repaired by your McCulloch Dealer.

5. Replace the ball, the spring, the retainer, the lockwasher and the screw in that order. Tighten the screw securely.

6. If the oiler tank contains dirt, rinse the dirt out with gasoline or solvent before adding more oil.



CHAIN OILER VALVE

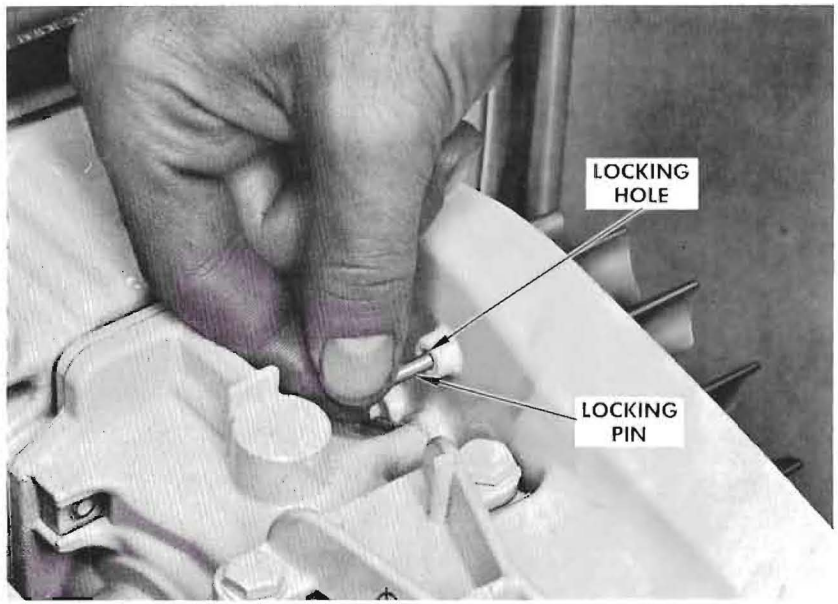
SPROCKET

Make sure the sprocket is in "like new" condition whenever you install a new chain. If it isn't, buy a new sprocket for your new chain. Both will last longer and give you better service.

1. Remove the bar mounting nuts (figure 3) and clutch guard.

2. Lock the flywheel by inserting a pin or screw through the locking hole (figure 17) beneath the crankcase. Turn the crankshaft until you can slide the pin or screw into the cutaway section of the flywheel. Figure 18 shows how the pin or screw fits into the flywheel cutaway.

17



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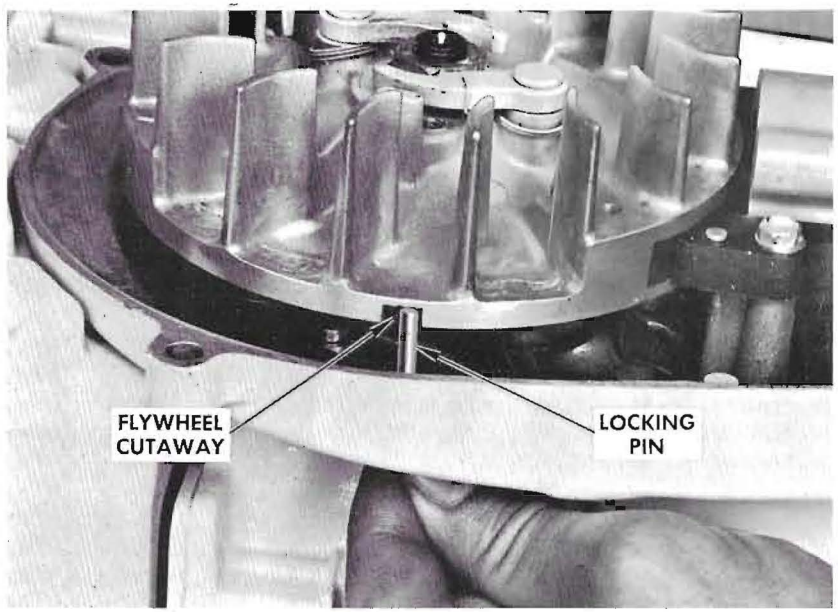

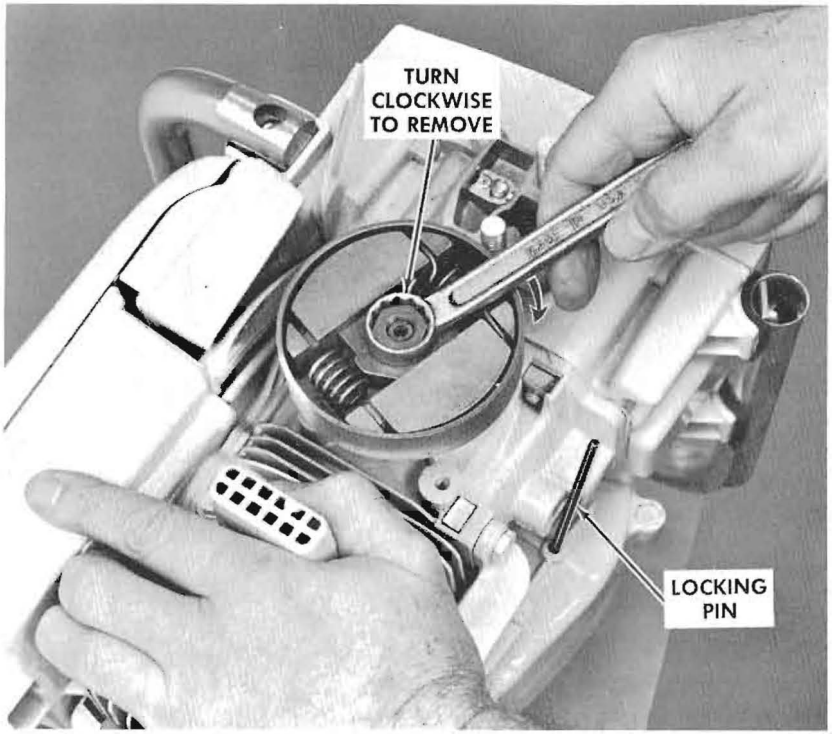

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3. Remove the clutch from the crankshaft. On Model 250 engines, turn the clutch rotor nut clockwise to remove it (figure 19). On Model 300 engines, remove the clutch returning nut, turning it counterclockwise.

4. Remove the clutch drum and sprocket assembly from the crankshaft (figure 20 for the Model 250, figure 21 for the Model 300).

Clean the sprocket bearing and lubricate with Shell Alvania #2 or equivalent grease. Repeat the inspection and lubrication at frequent intervals to avoid running with a dry bearing and causing unnecessary wear (figure 21).

5. After replacing the sprocket, reinstall the clutch and tighten the clutch rotor nut (Model 250) or the clutch retaining nut (Model 300). Be sure to remove the locking pin from the flywheel before you pull the starter handle.

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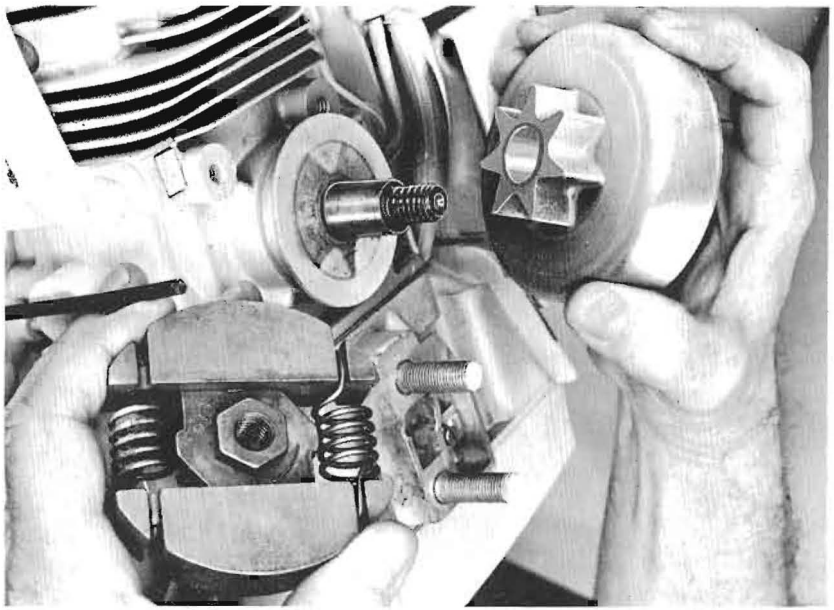

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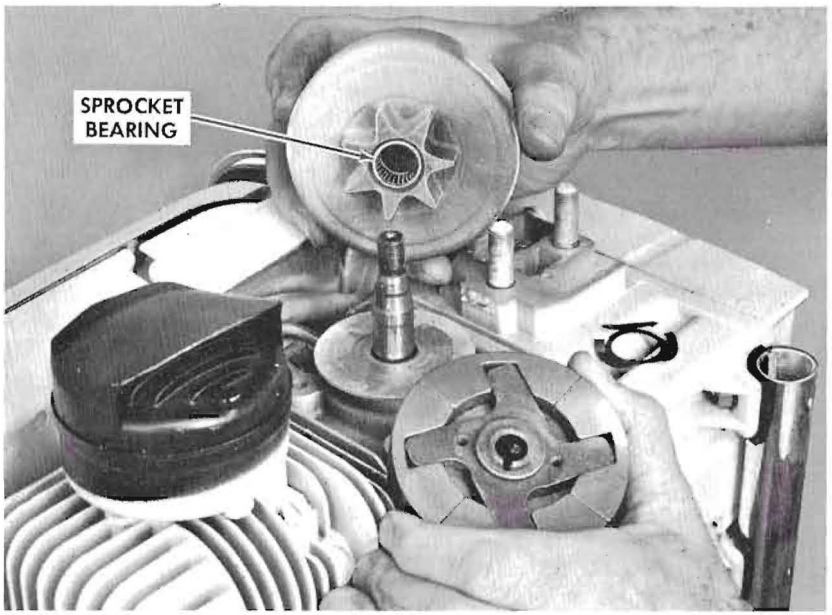


LAMINATION GAP ADJUSTMENT

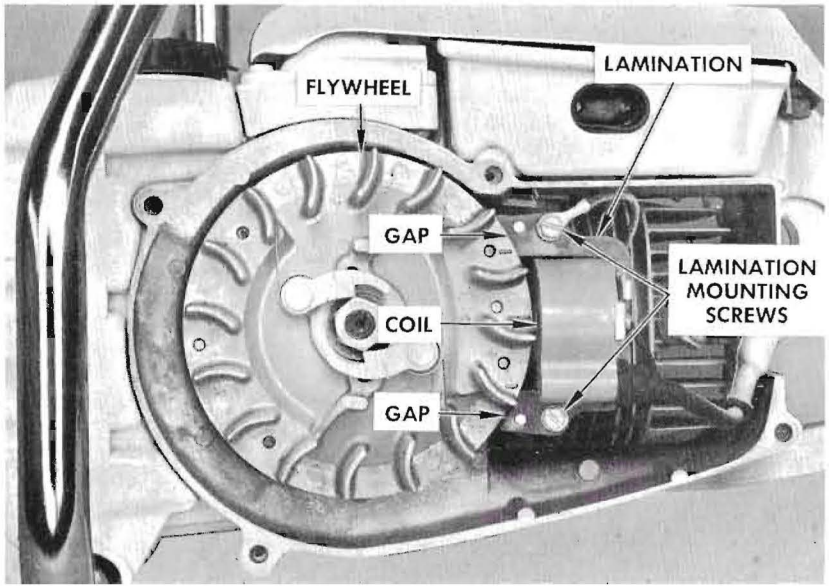
The coil and lamination are mounted on the cylinder beneath the fan housing. Under normal conditions this unit will not require any maintenance other than being kept clean. The gap between the two outer legs of the lamination and the flywheel should be 0.010 inch.

1. Remove the four screws attaching the fan housing to the engine and remove the housing (figure 9).

2. Measure the gap with a 0.010-inch feeler gauge at points marked "gap" on figure 22.

3. Adjust the gap by turning the flywheel until the magnets, set in the outer rim of the flywheel, are directly beneath the coil. Insert two 0.010-inch feeler gauges between the two outer lamination legs and the flywheel. Loosen the lamination mounting screws so the magnet can pull the lamination onto the feeler gauges. Tighten the lamination mounting screws, remove the gauges and turn the wheel several times to make sure that no part of the wheel touches the lamination legs.

4. When replacing the fan housing on the engine, pull the starter rope slowly so that the starter can engage the crankshaft. Tighten all four fan housing screws securely.



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EXHAUST PORTS AND SPARK ARRESTER

Clogged exhaust ports or spark arrester openings will cause loss of power. If the engine begins to lack power, examine the exhaust ports and the spark arrester to see if they need cleaning.

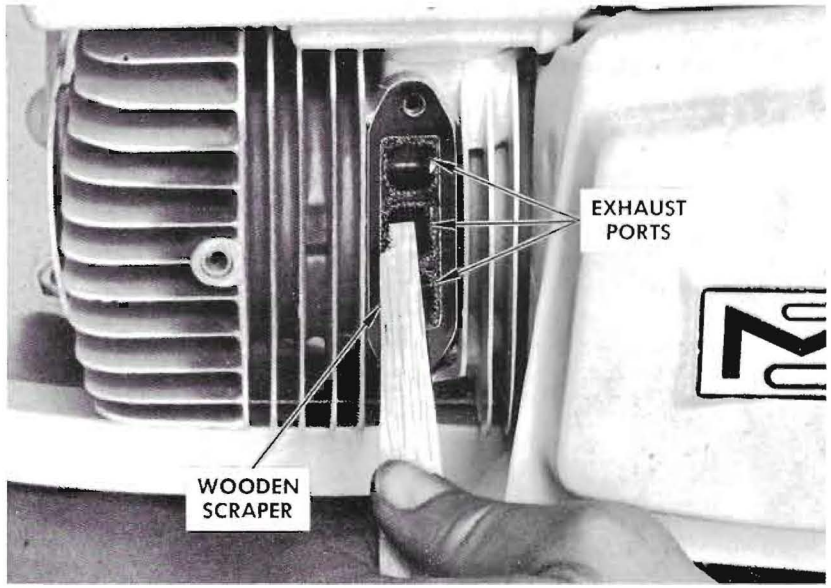
1. Remove the spark arrester.

2. Pull the starter handle slowly until the piston covers the exhaust ports.

3. Scrape the dirt from the gasket or remove it with a wooden scraper (figure 23). Scrape the carbon from the exhaust ports. Do not use a metal scraper of any kind around the exhaust ports, for if the metal scraper slips, it can scratch the piston and piston rings.

4. Blow away the loose carbon or turn the chain saw, spark arrester side down, and shake the carbon particles from the exhaust ports.

5. Clean the openings in the spark arrester of all carbon with a metal scraper or penknife.



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6. If the spark arrester gasket is damaged, install a new one when you re-install the spark arrester. Tighten the spark arrester attaching screws securely.

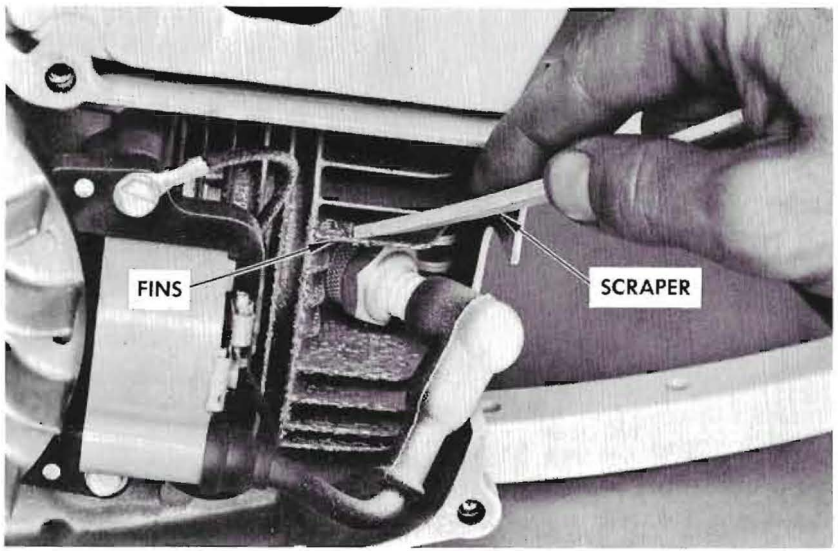
COOLING FINS AND SAWDUST GUARD

The cooling fins and sawdust guard (figure 9) must be kept clean or the chain saw engine will run too hot and be damaged by overheating.

1. Remove the fan housing attaching screws (figure 9) and remove the housing.

2. Clean the sawdust guard with a soft bristle brush and gasoline or solvent.

3. Scrape all dirt, sawdust and bits of grass and wood from the cooling fins on the cylinder head (figure 24). Use a thin brush (with bristles like a bottle brush) soaked in gasoline or solvent to scrub the fins clean.



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4. When replacing the fan housing on the engine, pull the starter rope slowly so that the starter can engage the crankshaft. Tighten the four fan housing screws securely.

BREAKER POINT AND CONDENSER

The breaker points are located in a box immediately behind the flywheel and operate from a camway on the crankshaft. Because it is necessary to remove the flywheel in order to adjust the points or to change the condenser, most chain saw users will find it easier to have their authorized McCulloch Dealer check and adjust, or change the breaker points and condenser whenever it becomes necessary. The adjustment of the breaker point gap follows standard automotive practices.

1. Remove the fan housing attaching screws (figure 9) and the fan housing.

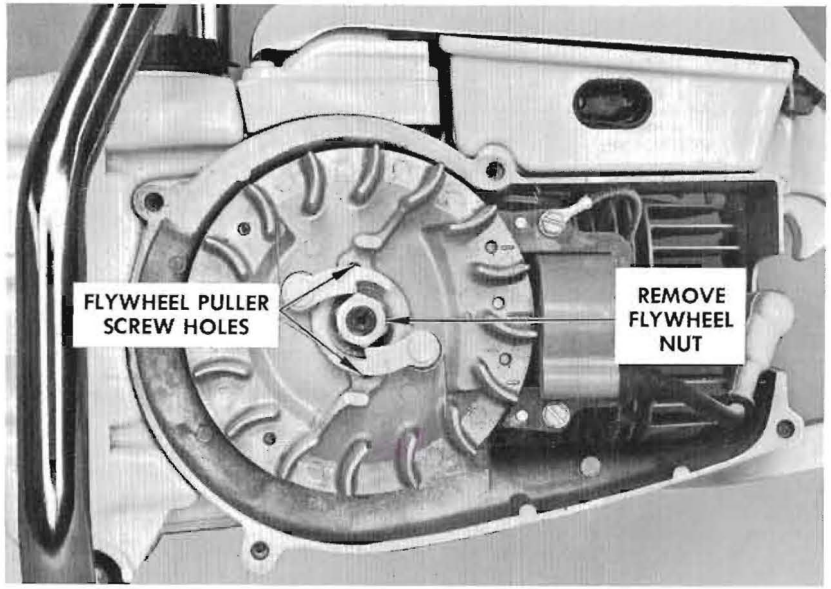
2. Lock the flywheel by inserting a pin or screw through the locking hole (figure 18) beneath the crankcase. Turn the flywheel you can slide the pin or screw into the cutout section of the flywheel.

3. Remove the flywheel nut (figure 25) with a 3/4-inch (19.05 mm) socket wrench.

4. Install a flywheel puller on the flywheel (figure 26). The flywheel puller screws must be threaded 1/4-20 and long enough to screw into the flywheel to a depth of 3/4 inch (19.05 mm).

Caution

Do not attempt to remove the flywheel unless the puller screws go into the flywheel for a full 3/4 inch (19.05 mm) or the threads of the screw holes will be stripped when pressure is applied to the puller.



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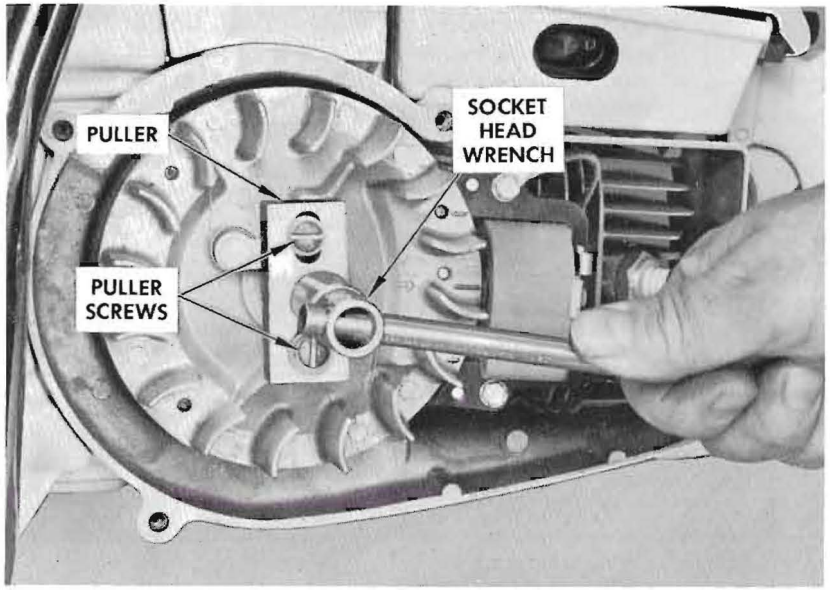

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5. Remove the flywheel with the puller. Apply pressure on the wrench gradually. When the flywheel comes free from the crankshaft, lift it off the shaft.

6. Remove the key (the flat-topped piece of metal projecting from the shaft). If necessary, place a screwdriver under the curved part and tap it gently with a hammer to loosen it.

7. Remove the retaining spring attaching screw (figure 27), the retaining spring, the breaker box cover and cover gasket.

8. Clean the breaker points (figure 28) with fine emery cloth or a point dresser, and remove any pitted areas.

9. Turn the crankshaft until the breaker points are at their widest gap or distance apart. Measure the gap with a feeler gauge. The gap should be 0.020 inch. Adjust the gap by loosening the mounting screw and moving the mounting plate. Retighten the screw and recheck the gap.

NOTE

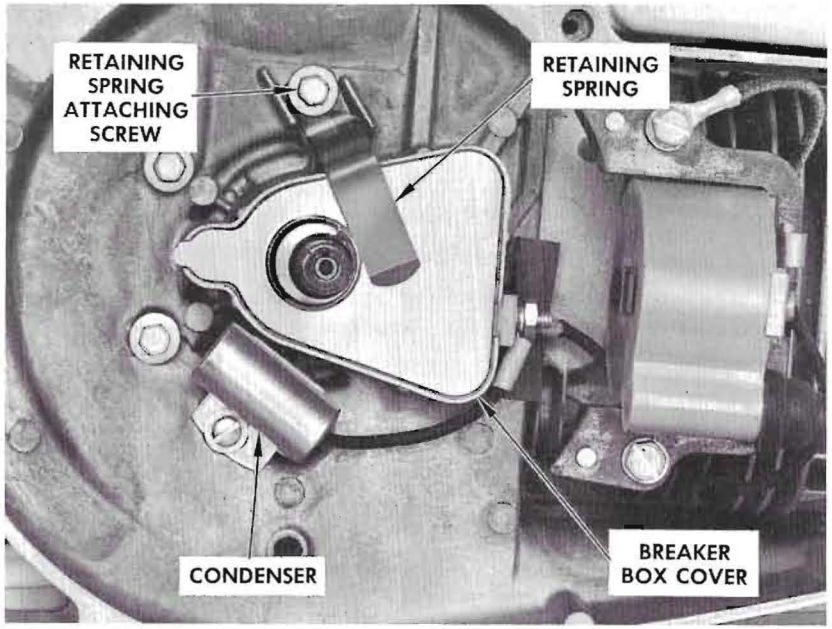
Do not force the cam arm away from the crankshaft when you insert the feeler gauge or your measurement will not be correct.

10. Replace the breaker box gasket and cover on the box. Install the retaining spring and the retaining spring attaching screw.

11. Replace the key in the crankshaft. Tap it into place with a hammer.

12. Mount the flywheel on the crankshaft. Make sure the washer goes under the nut and tighten the nut securely.

13. When replacing the fan housing on the engine, pull the starter handle slowly so that the starter can engage the crankshaft. Tighten the four fan housing screws securely.



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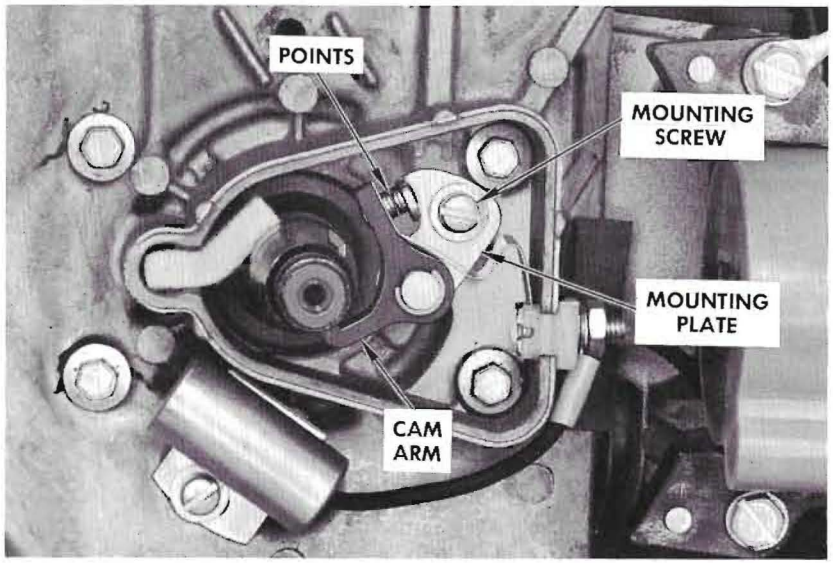

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YOUR McCULLOCH DEALER AND SERVICE

We believe that the sale of a McCulloch chain saw is not the end of the transaction between the Dealer and the Buyer. Because of this belief, our Servicing Dealers have been carefully chosen for their ability to provide prompt and efficient service to the owners of McCulloch chain saws. McCulloch Dealers carry a complete stock of service parts. Each dealer is visited periodically by field men who show him the latest and best methods of servicing our chain saws. So whenever you need service--take your saw to the man who knows it best--your McCulloch Dealer.

The following chart lists the more common troubles with their probable causes and remedies.

TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSE	REMEDY
Engine fails to start.	(FUEL TROUBLES) *Empty fuel tank.	Fill fuel tank with correct fuel mixture.
	Engine flooded.	Follow procedure in Operating Instructions, page 8.
	Water or dirt in fuel. Dirty fuel tank filter.	Drain fuel tank. Remove and clean or replace fuel tank filter, page 16.
	Main fuel adjustment needle closed or set too lean.	Correct adjustment needle setting as described on page 16.
	(NO SPARK) *Spark wire grounding on engine.	Tape bare part of wire. Tape wire to hold away from engine.
	*Ignition switch in "STOP" position.	Move ignition switch to "ON" position.
	Dirty or defective spark plug.	Clean or replace spark plug. Adjust spark plug gap, page 14.
	Breaker point gap too wide, points not opening, or points burred or pitted.	Adjust breaker point gap, page 23, or take chain saw to your authorized McCulloch Dealer.
	*Bad coil.	Have your authorized McCulloch Dealer replace it.
	*Bad condenser.	Have your authorized McCulloch Dealer replace it.
	Connections loose or wire grounding on engine.	Tape connections tight. Tape bare parts of wires.
Engine hard to start.	All above causes. Those preceded by an asterisk (*) will prevent any starting at all.	

TROUBLE	PROBABLE CAUSE	REMEDY
Engine flooding.	Dirty fuel tank vent system.	Have your authorized McCulloch Dealer clean the fuel tank vent system.
	Carburetor inlet valve not seating properly.	Have your authorized McCulloch Dealer overhaul the carburetor.
	Fuel pump diaphragm torn or cracked causing leakage.	Have your authorized McCulloch Dealer replace the diaphragm.
Engine cuts out or misfires.	Dirty or defective spark plug.	Clean or replace spark plug. Adjust spark plug gap, page 14.
	Breaker point gap incorrect.	Adjust breaker point gap, page 23, or have your authorized McCulloch Dealer do it.
	Short circuit in ignition system.	Tape bare parts of wire or have your authorized McCulloch Dealer check system.
	Breaker points sticking or burned.	Clean and adjust, page 23, or have your authorized McCulloch Dealer do it.
	Coil failure.	Take chain saw to your authorized McCulloch Dealer.
Chain moves at engine idling speed.	Idle speed too fast.	Adjust idle speed adjustment screw, page 15.
Engine overheats and lacks power.	Wrong fuel mixture.	See Fuel Mixture Chart, page 6.
	Main fuel adjustment needle set too lean (turned too far clockwise).	Readjust main fuel adjustment needle, page 16.
	Loose spark arrester; missing or damaged spark arrester gasket.	Tighten spark arrester attaching screws; install new spark arrester gasket.
	Cooling air restricted.	Clean cylinder fins and sawdust guard, page 22. Make sure there are no broken vanes on flywheel.

Caution

Any of these conditions can cause piston and cylinder scoring and ruin your engine.

TROUBLE	PROBABLE CAUSE	REMEDY
Engine lacks power.	Wrong fuel mixture.	See Fuel Mixture Chart, page 6.
	Main fuel adjustment needle set too rich (turned too far counter-clockwise).	Readjust main fuel adjustment needle, page 16.
	Spark arrester and exhaust ports clogged or dirty.	Clean spark arrester and exhaust ports, page 21.
	Dirty air filter element.	Remove and clean filter element, page 12.
	Poor compression or piston and cylinder scored.	Take your chain saw to your authorized McCulloch Dealer for overhaul.
Engine starves on acceleration or idles too fast.	Idle fuel adjustment needle set too lean (turned too far clockwise).	Readjust idle fuel adjustment needle, page 15.
	Idle speed adjustment screw set too high.	Readjust idle speed adjustment screw, page 15.
	Loose muffler; missing or damaged muffler gasket.	Tighten spark arrester attaching screws; install new spark arrester gasket.
	Worn or damaged crankshaft seals, air leaking into engine.	Take your chain saw to your authorized McCulloch Dealer for overhaul.
Chain oiler fails to deliver oil to bar and chain.	Oiler tank empty.	Fill tank with correct grade of clean oil.
	Wrong weight oil. Oil congealed from cold.	Use lighter weight oil, see page 6.
	Dirt in oil plugging valve system.	Have your authorized McCulloch Dealer clean the oiler system.
	Oiler not working; leaking seals or valve assembly.	Have your authorized McCulloch Dealer overhaul the oiler system.

McCULLOCH MODEL 250 AND 300 CHAIN SAW SPECIFICATIONS

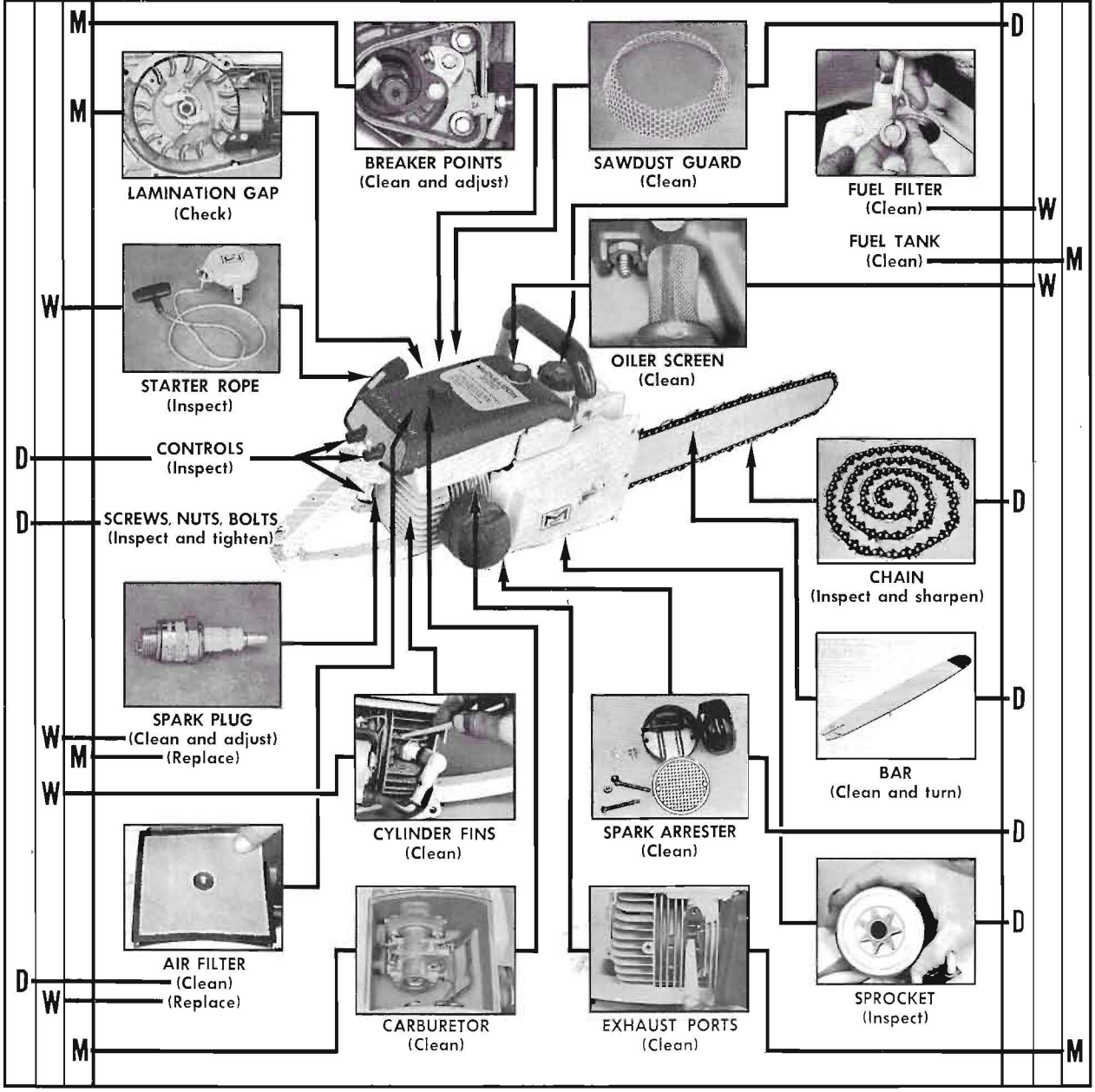
	Model 250	Model 300
Weight	19 lbs. (8.62 kg.)	21 lbs. (9.53 kg.)
Type	Two-cycle	Two-cycle
Cooling	Air	Air
Number of Cylinders	1	1
Bore	2-1/8 in. (53.98 mm)	2-1/8 in. (53.98 mm)
Stroke	1-3/8 in. (34.93 mm)	1-1/2 in. (38.10 mm)
Displacement	4.9 cu. in. (80.3 cc.)	5.3 cu. in. (86.86 cc.)
Compression Ratio	6.3:1	6.25:1
Main Bearings	1 ball, 1 needle	2 ball
Connecting Rod Bearing	Needle	Needle
Upper Rod Bearings	2 needle	2 needle
Piston	Permanent mold aluminum	Permanent mold aluminum
Number of Rings	2	2
Valve Type	Reed	Reed
Carburetor	Diaphragm	Diaphragm
Fuel Supply	Pulse pressure	Pulse pressure
Fuel Induction	Crankcase compression	Crankcase compression
Clutch	2 Shoe centrifugal	4 Shoe centrifugal
Ignition	Flywheel magneto	Flywheel magneto
Spark Plug	14 mm, 3/8" reach, Champion J8J, AC M45, or Autolite A7X	14 mm, 3/8" reach, Champion J8J, AC M45, or Autolite A7X
Spark Plug Gap	0.025 in. (0.635 mm)	0.025 in. (0.635 mm)
Breaker Point Setting	0.020 in. (0.508 mm)	0.020 in. (0.508 mm)
Coil	McCulloch waterproof	McCulloch waterproof
Transmission	Direct drive	Direct drive
Starter	Rewind	Rewind
Oiler Tank Capacity	1 pint (0.473 liters)	1 pint (0.473 liters)
Fuel Tank Capacity	2-1/2 pints (1.18 liters)	2-1/2 pints (1.18 liters)
Fuel	Regular grade of about 90 octane gasoline mixed with McCulloch High Performance 40/50 Two-Cycle motor oil at a ratio of one pint of oil to five gallons of gasoline.	

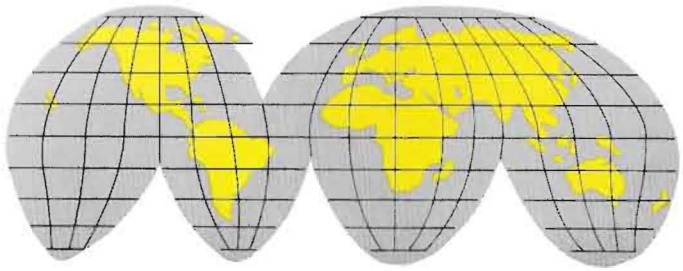
McCULLOCH CHAIN SAW

MODEL 250,300 MAINTENANCE CHECK CHART

DAILY	WEEKLY	MONTHLY

A good preventive maintenance program of regular inspection and care will increase life and improve performance of your new McCulloch chain saw. This maintenance check chart is a guide for such a program. Frequencies listed are for average cutting conditions. 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.





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