Owner's Manual

1-61

OF OPERATING INSTRUCTIONS



McCULLOCH
MODEL 1-61
CHAIN SAW

APRIL 1960
NO. 57213

McCULLOCH

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By McCULLOCH CORPORATION

SERVICE ORGANIZATION . . .

Service on McCulloch Corporation products is provided by authorized dealers and distributors located throughout the United States and Canada. Each authorized dealer and distributor carries a stock of parts for McCulloch products and is equipped with special tools for servicing. All their mechanics are factory trained, assuring expert repair service. Factory representatives keep the dealers and distributors fully informed as to the latest design advances and service techniques.

McCulloch Warranty

Be sure to fill in and mail the warranty card which accompanied the product at time of purchase. Unless the warranty card is returned to the factory, the warranty is not effective.

WARRANTY

For thirty days from purchase date, McCulloch Corporation will replace for the original purchaser, free-of-charge, any part or parts found upon examination at any factory-authorized distributor or at our factory at Los Angeles, California to be defective under normal use and service, because of defects in material or workmanship.

All transportation charges on a part or parts submitted for replacement under this warranty must be paid for by the purchaser.

No service charges, labor, or other expenses will be allowed unless they have been previously approved and authorized by the factory. This warranty shall not apply to any part or parts which have been subjected to misuse, negligence, or accident; nor if it has been repaired or altered outside of our factory or authorized service station.

WARRANTY INSTRUCTIONS . . .

A part or parts covered under this warranty should be returned to the authorized dealer or distributor. (See distributor list on back cover page of Manual.) No parts are to be returned to the factory without written approval which can be obtained by writing a letter, giving the description and number of the part, the nature of the defect, or failure, engine serial number, and the name and address of the customer. This is to be addressed to the:

Service Manager
McCulloch Corporation
6101 W. Century Blvd.
Los Angeles 45, Calif.

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 of Operating Instructions. Do not just read part of it or glance through it. You will find the information it contains will help you to obtain the service and performance built into your new McCulloch chain saw.

Along with this Manual of Operating Instructions, you should receive with your new chain saw, an Illustrated Parts List, a Warranty Card and an envelope containing the parts shown in Figure 2. 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.

TABLE OF CONTENTS

	Page
Location of Controls and Features	2
Installation of Bar and Chain	3
Fuel and Lubrication	9
Operating Instructions	11
Your McCulloch Dealer and Service	12
Cutting Instructions	13
Safety and Fire Precautions	14
How to Care for Your Chain Saw	15
Ignition and Spark Plug Check	24
Trouble Shooting Chart	25
Chain Saw Specifications	29
Accessories	30
Service Notes	31

LOCATION OF CONTROLS

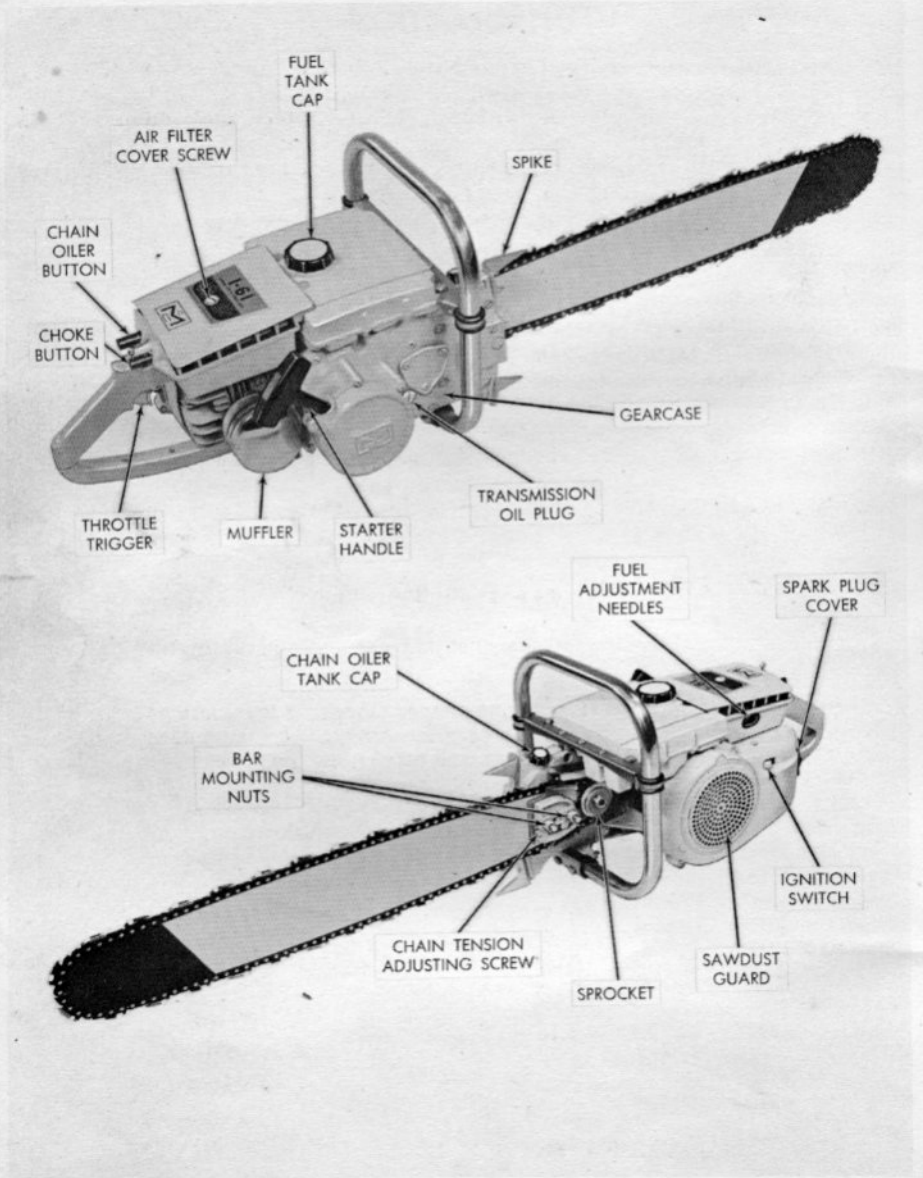


Figure 1. Location of Controls

INSTALLATION OF BAR AND CHAIN

Your chain saw has been designed to permit mounting the bar on either side of the gearcase. The normal mounting is with the bar on the left side of the gearcase since this position provides the best balance. When a minimum of stump height is desired, the bar should be mounted on the right side of the gearcase in the offset position. Make sure that your spike is properly installed for the bar position you are using. Before installing your new chain, soak it for at least five minutes in SAE 30 motor oil. This will help to make your chain last longer.

INSTALLING THE SPIKE

The spike provides a pivot point when bucking and a bumper plate when making other types of cuts. Always operate your saw with the spike against the wood being cut except when boring. Install the spike with its flanged base pointing away from your bar.

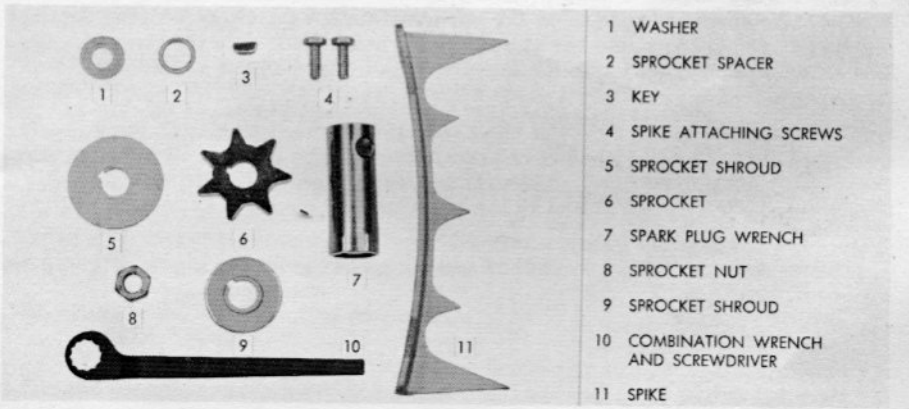
1. Remove the spike and its two attaching screws from the parts envelope (figure 2).

2. Mount the spike on the front of the gearcase (figure 3). Tighten the screws securely.

NORMAL INSTALLATION OF SPROCKET, BAR AND CHAIN

Normal mounting position for the sprocket, bar and chain is on the left side of the gearcase.

1. Remove the bar mounting nuts, washers, adjusting lockplate and one of the gearcase protectors (figure 3) from the bar mounting bolts. Make sure the flanged sides of the second gearcase protector are toward the gearcase.



1 WASHER
2 SPROCKET SPACER
3 KEY
4 SPIKE ATTACHING SCREWS
5 SPROCKET SHROUD
6 SPROCKET
7 SPARK PLUG WRENCH
8 SPROCKET NUT
9 SPROCKET SHROUD
10 COMBINATION WRENCH AND SCREWDRIVER
11 SPIKE

Figure 2. Contents of Parts Envelope

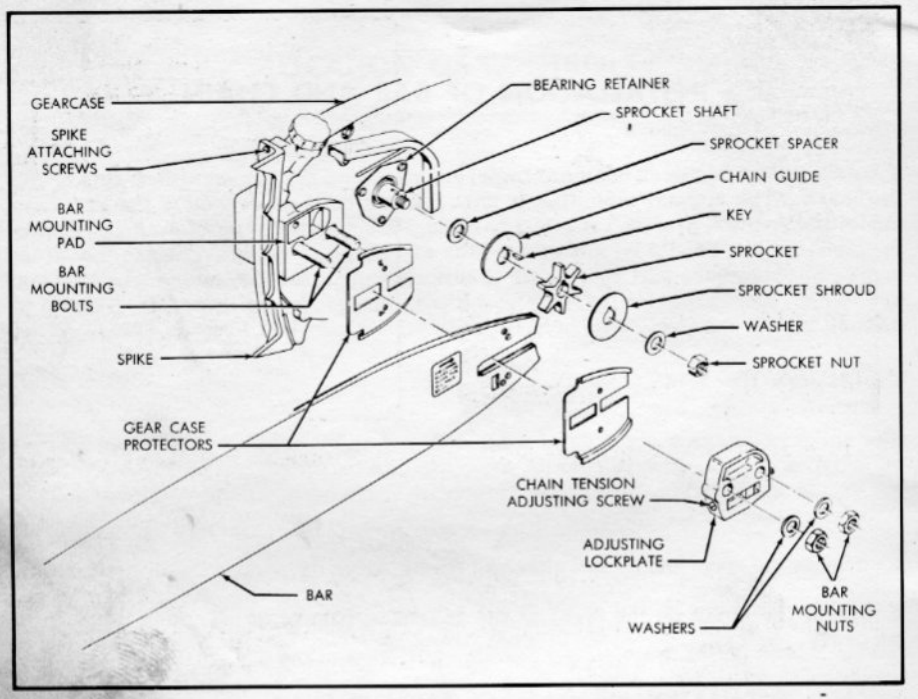


Figure 3. Installation of Bar

2. Take the sprocket spacer, key, sprocket shroud, chain guide plate, washer, nut and sprocket from the parts envelope (see figure 2 for identification of parts).

3. Place the sprocket spacer on the sprocket shaft next to the bearing retainer (figure 3). Put the key into the slot in the sprocket shaft with the flat side of the key out. You may have to tap the key gently into place with a hammer.

4. Slide the chain guide onto the shaft with the cutout fitting over the key. The flanged side of the chain guide goes toward the sprocket spacer. Put the sprocket on the shaft next to the chain guide. If necessary, gently tap it into place with a hammer. Make sure the cutout in the sprocket fits over the key in the shaft.

5. Put the sprocket shroud, washer and sprocket nut on the shaft. Tighten the nut securely.

NOTE

To lock the sprocket shaft, place a screwdriver against the sprocket and bar mounting bolt as shown in figure 4.

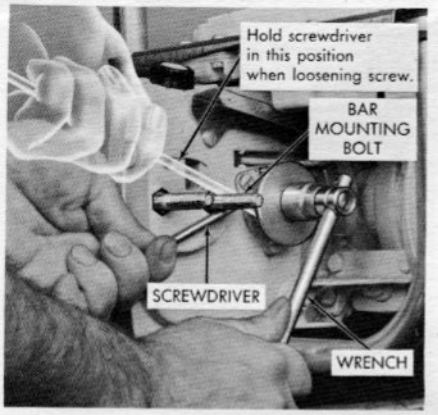


Figure 4. Locking Sprocket Shaft to Tighten Nut

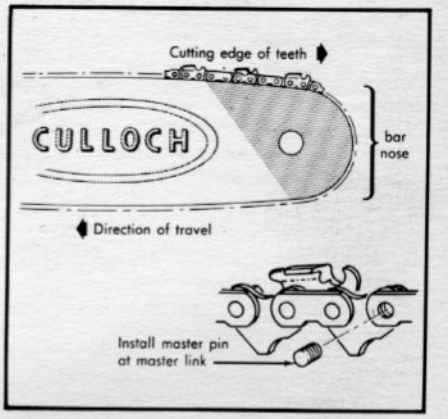


Figure 5. Installation of Chain

6. Place the bar on the gearcase protector with the slot on the bar fitting over the two bar mounting bolts and the small tab of the gearcase protector fitting into the tab cutout in the bar. Place the gearcase protector, which you removed in (1) above, back on the bolts. Make sure the tab fits into the bar cutout and the flanged sides are away from the bar.

7. Put the adjusting lockplate back on the bar mounting bolts. Make sure the lug on the side of the lockplate fits into the bar cutout. Reinstall the two washers and bar mounting nuts. Tighten the nuts finger tight and turn the chain tension adjusting screw counter-clockwise until the bar is as close to the sprocket as possible.

8. 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 teeth point toward the nose or rounded end of your bar (figure 5).

9. Bring the rear end of your chain around the sprocket and fit the center link tangs between the sprocket teeth. Pull the chain forward along the bottom groove of the bar, up around the bar nose and fasten the two ends of the chain together with the master pin (figure 5).

10. Turn the chain tension adjusting screw clockwise to tighten the chain. Pull the chain down at the center of the bottom of the bar and continue to tighten the chain until there is between 3/8 and 1/2-inch clearance between the side links or cutter that you are holding and the bottom of the bar (figure 6).

11. Tighten the bar mounting nuts securely.

12. 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 wears in during the first few hours of use. Keep a close check on chain tension. If the tension becomes too loose, the chain can jump off the bar and damage itself. If it's too tight, it will overheat the bar and wear down the bottoms of the side links and cutters. Too tight or too loose a chain tension cuts service life of your chain. Remember to pump plenty of oil onto your chain when cutting.

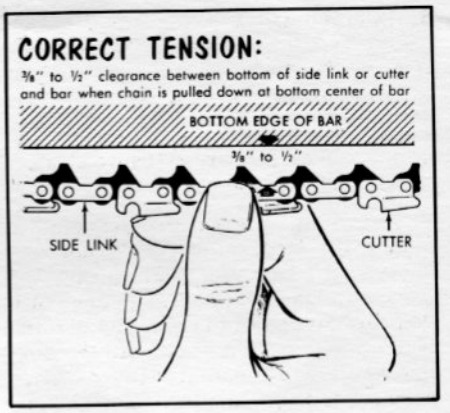


Figure 6. Correct Chain Tension

OFFSET INSTALLATION OF SPROCKET, BAR AND CHAIN

When the bar is mounted in the offset position (on the right side of the gearcase), trees can be cut leaving a minimum of stumpage. However, the chain saw will not balance as easily for other cuts.

Mounting the bar in the offset position requires changes in the gearcase of your chain saw. Your McCulloch Dealer has the tools and equipment to do this easily. If you are experienced in overhauling automobile or tractor engines and wish to attempt the changes yourself, follow these instructions:

1. Remove the chain oiler tank cap (figure 1) and drain the oiler tank by turning the chain saw upside down.

2. If the chain, bar and sprocket are installed on the chain saw, remove them:

   a. Loosen the chain by turning the chain tension adjusting screw (figure 3) clockwise.

   b. Remove the bar mounting nuts, washers, adjusting lockplate, gearcase protectors and bar. Slide the chain off the sprocket as you remove the bar.

   c. Remove the sprocket nut, washer, sprocket shroud, sprocket and chain guide from the sprocket shaft. See figure 4 for method of locking sprocket when removing nut.

3. Remove the handle mounting screws shown in figure 7. Pull the right-hand clamp down to free it from the brace. Loosen the screw on the left-hand clamp and swing the handle forward and away from the gearcase.

4. Remove the oil plug from the oil discharge hole on the right side of the gearcase and install it in the oiler discharge hole on the left side (figure 8).

5. Remove the bar retaining bolts from the gearcase. Tap them gently with a hammer to free them. A small diameter punch can be used when driving them through the gearcase.

6. Remove the bearing retainer and gasket from the left side of the gearcase. Remove the shaft cover and gasket from the right side of the gearcase.

7. Turn the chain saw with its right side up and remove the screws (figure 9) which hold the gearcase cover on the gearcase.

8. Remove the gearcase cover by gently tapping the sprocket end of the sprocket shaft with a hammer to drive the shaft toward the gearcase. Take care not to damage the end of the shaft by striking it too hard or at an angle. As the shaft moves toward the gearcase, the gearcase cover will come free. Keep tapping until you can remove the gearcase cover. Keep the cover gasket with either the gearcase or gearcase cover.

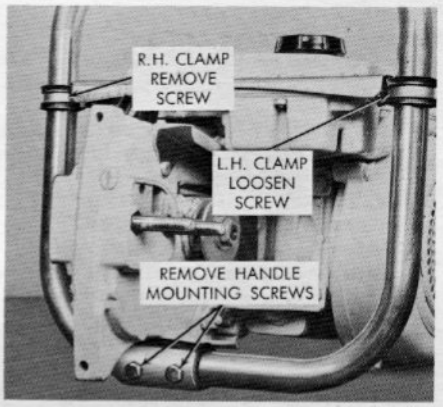


Figure 7. Handle Mounting Screws

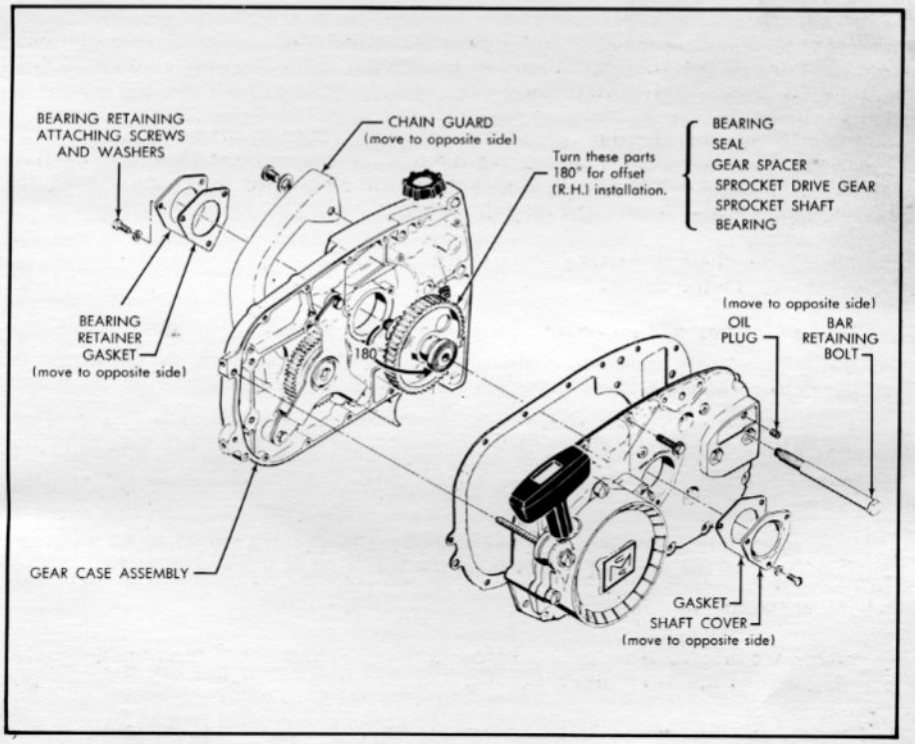


Figure 8. Offset Installation of Sprocket Bar and Chain

9. Gently tap the sprocket shaft out of the gearcase cover. Tap on the center of the shaft with your hammer and not on the bearing.

NOTE

If the shaft comes free with only one bearing on it, the other bearing will have to be pressed out of the gearcase or cover, and back onto the sprocket shaft. Unless you are experienced in this work, have your McCulloch Dealer do this.

10. Place the shaft back in the gearcase with the sprocket-end of the shaft toward you. Turn the shaft so the shaft gear meshes with the gear in the gearcase. Gently tap the end of the shaft until the shaft gear is flush with the gearcase gear.

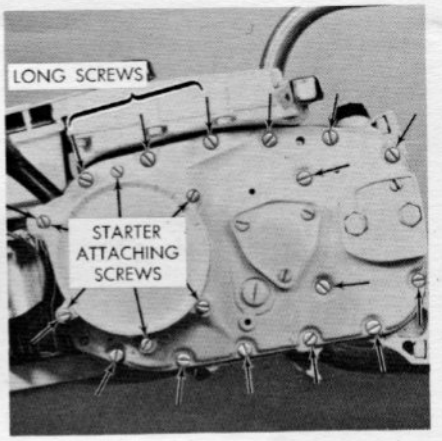


Figure 9. Gearcase Cover Attaching Screws

11. Put the gearcase cover and gasket back on the gearcase and put the screws back in their correct screw holes (figure 9). Give each screw several turns to seat it. Then go from screw to screw, around the cover, turning each one a few times until the screws are all tight. You may have to pull the starter handle in order to fit the cover on the gearcase.

12. Install the shaft cover and its gasket on the left side of the gearcase (figure 3). Install the bearing retainer and its gasket on the right side of the gearcase.

13. Remove the chain guard from the left side of the gearcase and install it on the right side.

14. Swing the handle back into position and reinstall the screws. Do not forget to tighten the left-hand clamp.

15. Refill the chain oiler tank and check the level of oil in the transmission (page 10).

16. The installation of sprocket, bar and chain is exactly the same as when installing them in the normal position on the left side of the gearcase.

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 regular 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.

FUEL MIXTURE TABLE

Oil Quantity	Gasoline Quantity	
	(Mixed with McCulloch Oil)	(Mixed with SAE 30 motor oil)
1/2 pint	1-1/4 gallons	1 gallon
1 pint	2-1/2 gallons	2 gallons
1 quart	5 gallons	4 gallons
2 quart	10 gallons	8 gallons
1 gallon	20 gallons	16 gallons

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. Use a container equipped with a flexible spout and strainer. You will find it easier to fill your fuel tank and less fuel will be spilled, reducing the danger of fire. 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.

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. Do not use two-cycle outboard oil or motor oil containing additives for these will cause the formation of excessive carbon. If McCulloch Oil is not available, use a medium grade, non-detergent SAE 30 motor oil. Do not use reclaimed oils.

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.

GEARCASE

The gearcase of your chain saw has been filled to the correct level at the factory with SAE 140 gear oil. The oil level should be checked periodically. Place the saw on a level surface and remove the transmission oil plug. The oil should come even with the bottom of the plug hole as indicated in figure 10. Do not fill the gearcase higher then the bottom of the hole because the excess lubricant will damage the shaft bearings and overheat the transmission.

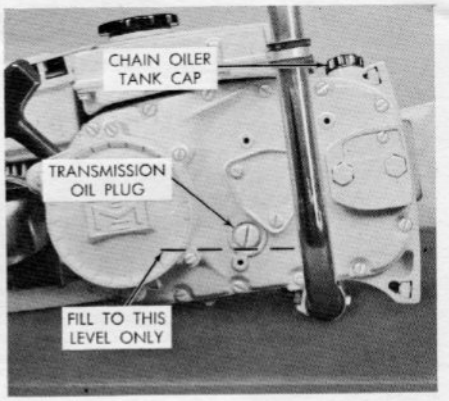


Figure 10. Transmission Oil Level

Use SAE 140 gear oil at temperatures above 40°F. When daily temperatures drop below 40°F., drain the gearcase and refill to the correct level with SAE 90 gear oil. When temperatures drop below 10°F., drain the gearcase and mix the SAE 90 gear oil with an equal amount of kerosene. Refill the gearcase with the mixture to the correct level and save the extra mixture to add when necessary. When temperatures go above 70°F., drain the gearcase and refill with SAE 140 gear oil.

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., and SAE 10 motor oil when temperatures go below 40°F. 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.

OPERATING INSTRUCTIONS

STARTING YOUR ENGINE

See figure 1 for location of controls.

1. Fill the fuel tank of your chain saw with the correct fuel mixture and check the level of the oil in the gearcase.

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 "RUN" position.

5. Grasp the starter handle with your right hand. Operate the throttle trigger and choke button with your left hand. The choke button can be locked in by pushing it in and turning it counter-clockwise.

6. Pull the starter handle with a smooth, rapid stroke. Do not release the handle so that the rope rewinds itself for this will wear the rope out. 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.

STOPPING YOUR ENGINE

1. Release the throttle trigger.

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

IF THE ENGINE FLOODS

1. Make sure the choke button is not locked in.

2. Place the engine on its side with the muffler down.

3. 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. Check your chain tension frequently and make frequent use of your chain oiler button. Make small cuts and get the feel of your saw. 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.

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. Drain the fuel from the fuel tank.

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

5. Wrap the chain in plastic or put it in a coffee can. Cover the engine and bar with canvas or a tarpaulin 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 and follow the standard starting procedure.

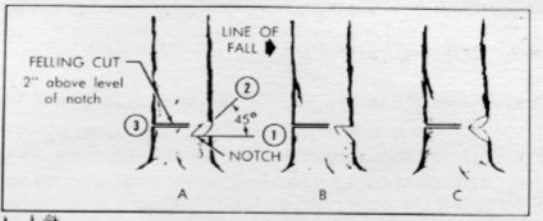
YOUR McCULLOCH DEALER AND SERVICE

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.

CUTTING INSTRUCTIONS

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

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

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

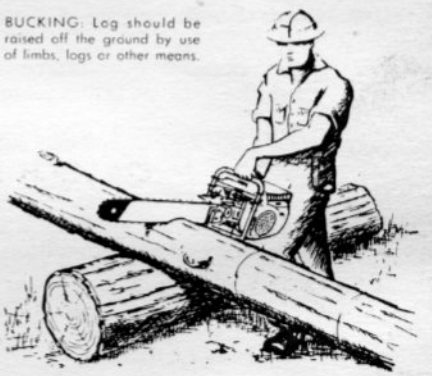


Figure 11. Cutting Instructions

SAFETY 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.

FIRE PRECAUTIONS

* 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 muffler 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**

HOW TO CARE FOR YOUR CHAIN SAW

The easiest and cheapest 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 major steps in the care of your chain saw which will help prevent trouble.

1. **VISUAL INSPECTION** At the end of each work day, check your saw for loose wires or wires with worn insulation. Tighten the wires and replace wires with bare or worn insulation. 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. If you have any doubt about the operating condition of your chain saw, take it to your McCulloch Dealer for servicing.

2. **CLEANING** Keep your chain saw, bar and saw chain clean. Do not allow dirt, sawdust, grass or twigs to build up on the cooling fins or plug the holes in the sawdust guard. Clean the sawdust guard and cooling fins regularly. Keep your saw chain clean and covered with a good grade of oil to prevent rust.

3. **HANDLING** Use your chain saw only for those jobs for which it is intended. Do not abuse it by trying to use it for other purposes. Protect it from the weather and, if carrying it in a truck or car, prevent it from being tossed about by the truck or car.

4. **PERIODIC INSPECTION** Once a week check the operating controls to see that they are in good working order, check the fuel tank for the presence of water, check the level of lubricant in the gearcase, check the clutch for slippage, check the starter rope for signs of fraying and examine your chain and bar for evidences of abnormal wear.

INSPECTION AND SERVICE PROCEDURES

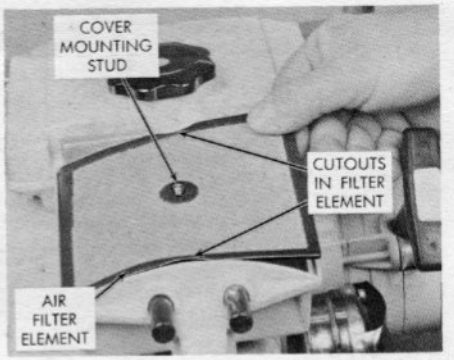
AIR FILTER ELEMENT

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. 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.

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 screw (figure 1) 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 12).



Filter 12. Removing Air Filter Element

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.

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 screw.

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.

SPARK PLUG

Your chain saw engine was equipped with a 14 mm Champion J8J spark plug 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.

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

1. Carefully pull the combination spark plug cover and connector away from the engine (figure 13).

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

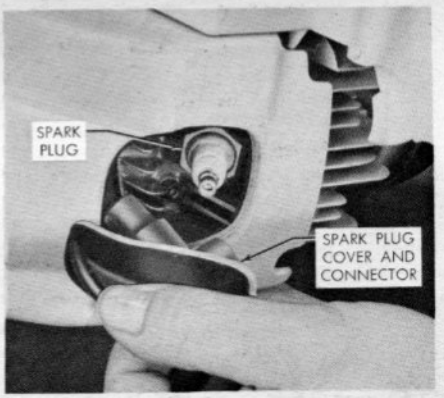


Figure 13. Spark Plug

3. Clean the electrodes with emory cloth or very fine sandpaper. Blow all the dust and grit away.

4. Measure the air gap or distance between the electrodes with a wire gauge. The gap should be 0.025 inch. 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.

SPROCKET

It is advisable to use a new sprocket every time you buy a new chain since a worn sprocket can reduce the service life of your chain.

1. Lock the sprocket shaft by placing a screwdriver against the sprocket and bar mounting bolt as shown in figure 4.

2. Turn the sprocket nut counter-clockwise to remove it. Take off the washer and sprocket shroud and remove the sprocket.

3. Put the new sprocket on the shaft. Add the sprocket shroud, washer and nut, and tighten the nut securely.

CARBURETOR ADJUSTMENT

The carburetor of your chain saw engine was adjusted at the factory for maximum performance under average cutting conditions. Should it be necessary to re-adjust the carburetor, follow these instructions carefully for careless adjustment can seriously damage the carburetor and the chain saw engine.

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

2. Remove the air filter cover and filter element from the carburetor enclosure.

3. Slowly turn the main and idle fuel adjustment needles (figure 14) clockwise with a thin screwdriver until the needles seat.

CAUTION

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

4. Open (turn counter-clockwise) the main fuel adjustment needle 1-1/4 turns.

5. Open (turn counter-clockwise) the idle fuel adjustment needle 3/4 turn.

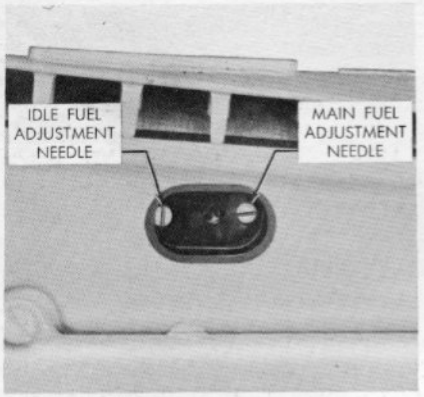


Figure 14. Fuel Adjustment Needles

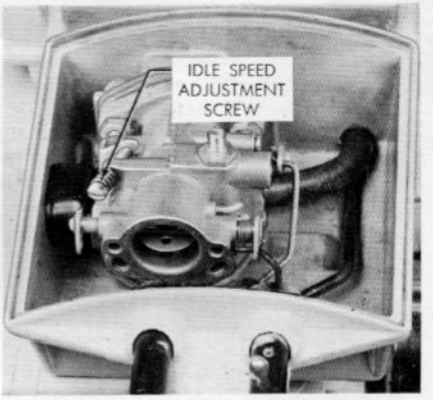


Figure 15. Idle Speed Adjustment Screw

6. Start the engine and turn the idle speed adjustment screw (figure 15) until engine speed is just below the point at which the sprocket stops turning (the point at which the clutch is no longer engaged).

7. Slowly adjust the idle speed adjustment needle to obtain an even engine speed without "coughing" or "missing". If the engine coughs, the needle has been turned too far counter-clockwise. If the engine falters or misses, the needle has been turned too far clockwise.

8. Pull the throttle trigger full back to accelerate the engine several times. If the engine falters or does not accelerate rapidly and smoothly each time, turn the idle speed adjustment needle counter-clockwise in very gradual steps, checking the acceleration after each step, until correct acceleration is obtained.

NOTE

If the sprocket starts to turn during idle, turn the idle speed regulating screw counter-clockwise until the sprocket stops turning.

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

10. With the chain saw running under a cutting load, slowly turn the main fuel adjustment needle until the engine runs smoothly and evenly at cutting speeds. This setting will be between 1 and 1-1/2 turns open.

CAUTION

Do not set the main fuel adjustment needle too "lean", that is, with the needle turned too far clockwise. Although the exhaust may be sharp and barking and sound powerful, costly damage can be done to the engine by too lean a setting.

FUEL TANK VENT VALVE

The fuel tank of your chain saw is equipped with a fuel tank vent valve to prevent the build-up of tank pressure or tank suction. Should either of these develop, 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.

FUEL TANK FILTER

The fuel tank of your chain saw is equipped with a felt, wick-type filter. If the filter becomes soaked with water through condensation or becomes dirty, it should be removed, cleaned and dried in the open air. The filter is held in place by a spring-loaded wick cap which can be seen after removing the fuel tank cap.

1. Release the spring holding the wick cap against the filter by pressing it down with the point of a screwdriver until it slips off the pin on the underside of the tank top.

2. Work the filter out of the tank by drawing out one corner and turning the filter to make it smaller.

3. Wash the filter in gasoline or solvent. Rub it together to break up the crust of dirt.

4. After the filter is dry, roll its two sides in toward the middle in as tight rolls as possible. The cutouts in the filter go toward the front and back of the fuel tank; the sides of the filter are uncut.

5. Insert the rolled-up filter into the tank. Use a screwdriver to work it over the wick cap mounting pin. Spread the filter in the tank so that the corners of the filter fit in the corners of the tank and the mounting pin projects through the hole in the center of the filter.

6. Put the wick cap on top of the wick cap mounting pin and slip the spring onto the pin on the underside of the fuel tank top.

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.

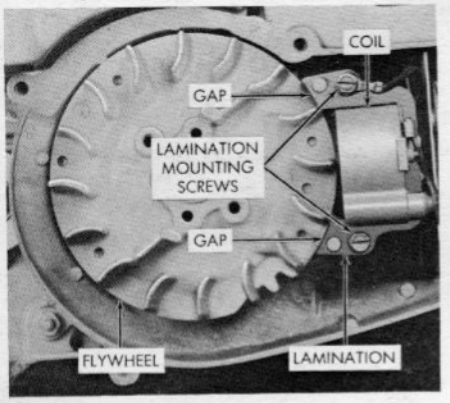


Figure 16. Coil and Lamination Adjustment

2. Measure the gap with a 0.010-inch feeler gauge at points marked "gap" on figure 16.

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. Replace the fan housing and tighten the four attaching screws securely.

EXHAUST PORTS AND MUFFLER

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

1. Remove the muffler.

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

3. Scrape the carbon from the exhaust ports with a wooden scraper (figure 17). 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, muffler side down, and shake the carbon particles from the exhaust ports.

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

6. If the muffler gasket is damaged, install a new one when you reinstall the muffler. Tighten the muffler attaching screws securely.

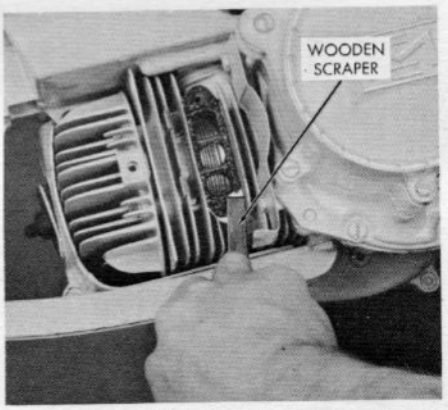


Figure 17. Cleaning Exhaust Ports

COOLING FINS AND SAWDUST GUARD

The cooling fins and sawdust guard (figure 1) 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 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 18). Use a thin brush (with bristles like a bottle brush) soaked in gasoline or solvent to scrub the fins clean.

4. When replacing the fan housing, tighten the four attaching screws securely.

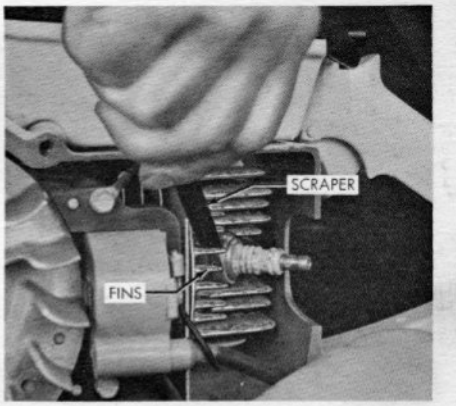


Figure 18. Cleaning Cooling Fins

CLUTCH

Maintaining proper adjustment of the clutch is important because if the clutch begins to slip, cutting power and speed will be lost and the clutch will be damaged. The clutch should be checked for slippage after the first 10 to 15 hours of operation and periodically after that.

1. Remove screws holding starter housing on gearcase (figure 9) and remove starter housing. Do not take screws out of housing.

2. Using finger pressure only, try to turn the clutch disc retaining ring (figure 20). Do not press down on the ring. A ring of the correct wire diameter will be hard to turn or will not turn at all.

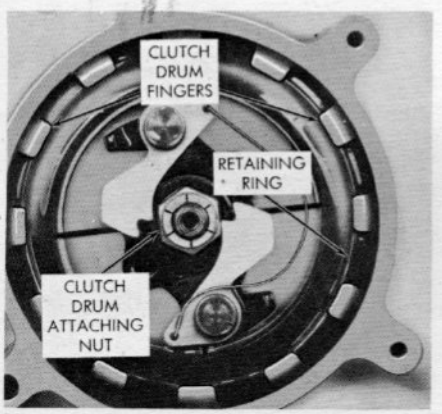


Figure 19. Clutch Assembly

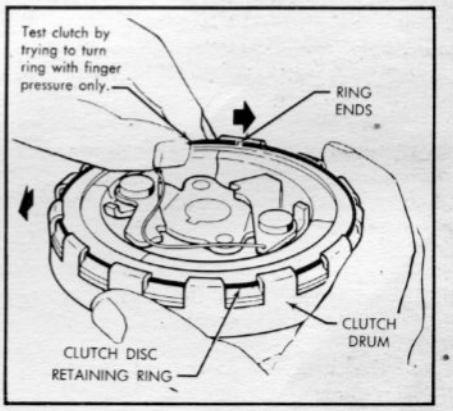


Figure 20. Checking Clutch for Slippage

3. If ring turns freely, it's too loose and will have to be replaced with a ring having a larger wire diameter. The loose ring can be easily removed by levering it out with a screwdriver. When installing the new ring, make sure the ends are supported under one of the fingers of the clutch drum.

4. When replacing starter housing, pull the starter handle and release it to mesh the starter shaft with the clutch. Tighten the 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 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 and the fan housing.

2. Lock the flywheel by inserting a pin or screw through the locking hole (figure 21) beneath the crankcase. Turn the flywheel until you can slide the pin or screw into the cutout section of the flywheel.

3. Remove the flywheel nut (figure 23) with a 3/4-inch socket wrench.

4. Install a flywheel puller on the flywheel (figure 24). 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.

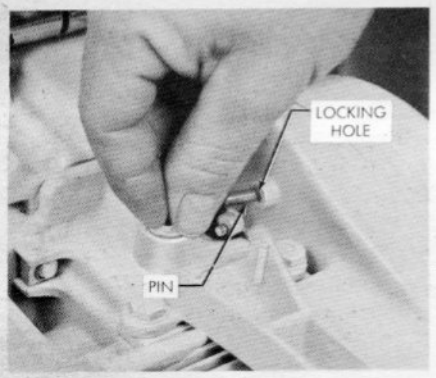


Figure 21. Locking Flywheel

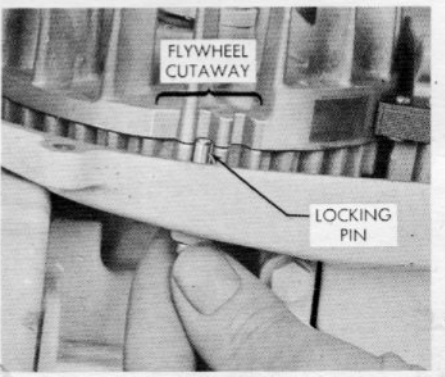


Figure 22. Locking Cutout Pin in Flywheel (Fan Housing Removed)

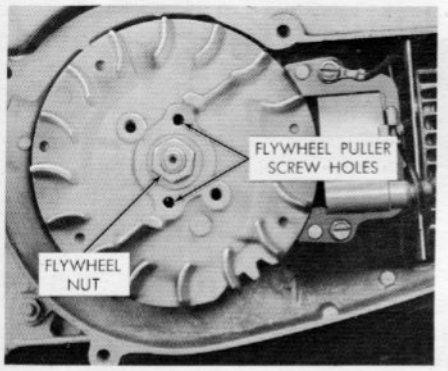


Figure 23. Flywheel Nut and Puller Screw Holes

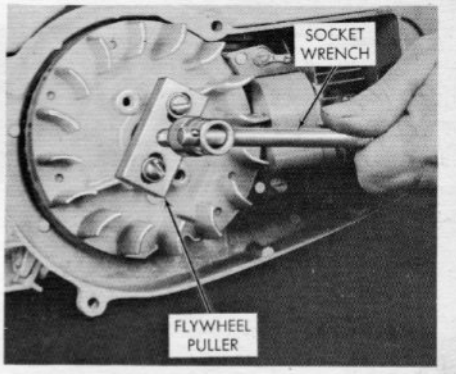


Figure 24. Using Flywheel Puller

CAUTION

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

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 25), the retaining spring, the breaker box cover and cover gasket.

8. Clean the breaker points (figure 26) with fine emory 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.

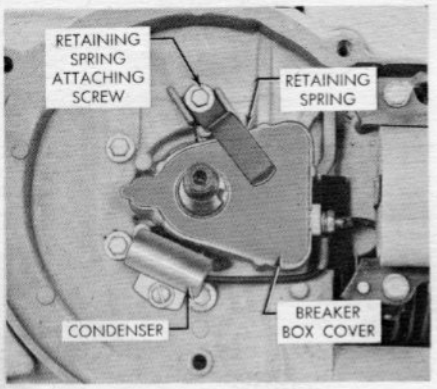


Figure 25. Breaker Box Cover

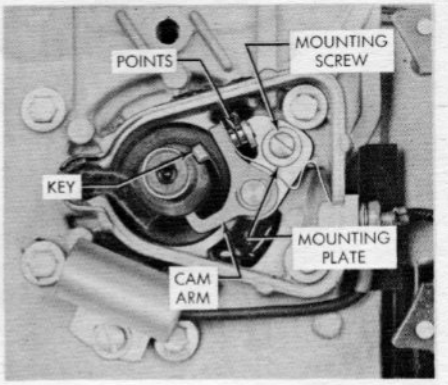


Figure 26. Breaker Points

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, tighten the attaching screws securely.

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 (Champion J8J or similar plug of any other make) and recheck. If there is still no spark, refer to the Trouble Shooting Chart for the probable causes.

TROUBLE SHOOTING

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

TROUBLE	PROBABLE CAUSE	REMEDY
Engine fails to start.	(FUEL TROUBLES)	
	*Empty fuel tank.	Fill fuel tank with correct fuel mixture.
	Flooded.	Follow procedure in Operating Instructions, page 11.
	Water or dirt in fuel. Dirty fuel tank filter.	Drain fuel tank. Remove and clean or replace fuel tank filter, page 19.
	Main fuel adjustment needle closed or set too lean.	Correct adjustment needle setting as described on page 17.
	(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.
	Dirty or defective spark plug.	Clean or replace spark plug. Adjust spark plug gap, page 16.
	Breaker point gap too wide, points not opening, or points burned or pitted.	Adjust breaker point gap, page 22, or take chain saw to your McCulloch Dealer.
	*Bad coil.	Have your McCulloch Dealer replace it.
	*Bad condenser.	Have your 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 consistently.	Dirty or defective fuel tank vent valve.	Have your McCulloch Dealer clean or replace vent valve.
	Carburetor inlet valve not seating properly.	Have your McCulloch Dealer overhaul the carburetor.
	Fuel pump diaphragm torn or cracked causing leakage.	Have your 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 16.
	Breaker point gap incorrect.	Adjust breaker point gap, page 22, or have your McCulloch Dealer do it.
	Short circuit in ignition system.	Tape bare parts of wire or have your McCulloch Dealer check system.
	Breaker points sticking or burned.	Clean and adjust, page 22, or have your McCulloch Dealer do it.
	Coil failure.	Take chain saw to your McCulloch Dealer.
Chain moves at engine idling speed.	Idle speed too fast.	Adjust idle speed regulating screw, page 18.
Engine overheats and lacks power.	Wrong fuel mixture.	See Fuel Mixture Chart, page 9.
CAUTION Any of these conditions can cause piston and cylinder scoring and ruin your engine.	Main fuel adjustment needle set too lean (turned too far clockwise).	Readjust main fuel adjustment needle, page 17.
	Loose muffler; missing or damaged muffler gasket.	Tighten muffler attaching screws; install new muffler gasket.
	Cooling air restricted.	Clean cylinder fins and sawdust guard, page 21. Make sure there are no broken vanes on flywheel.

TROUBLE	PROBABLE CAUSE	REMEDY
Engine lacks power.	Wrong fuel mixture.	See Fuel Mixture Chart, page 9.
	Main fuel adjustment needle set too rich (turned too far counter-clockwise).	Readjust main fuel adjustment needle, page 17.
	Muffler and exhaust ports clogged or dirty.	Clean muffler and exhaust ports, page 20.
	Dirty air filter element.	Remove and clean filter element, page 15.
	Poor compression or piston and cylinder scored.	Take your chain saw to your McCulloch Dealer for overhaul.
	Slipping clutch.	Readjust clutch, page 21.
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 17.
	Idle speed regulating screw set too high.	Readjust idle speed regulating screw, page 18.
	Loose muffler; missing or damaged muffler gasket.	Tighten muffler attaching screws, install new muffler gasket.
	Worn or damaged crankshaft seals, air leaking into engine.	Take your chain saw to your McCulloch Dealer for overhaul.
Clutch slips.	Clutch disc retaining ring too loose.	Install larger wire thickness retaining ring, page 21.

TROUBLE	PROBABLE CAUSE	REMEDY
Clutch drags, won't disengage.	Idle speed regulating screw set too high.	Readjust idle speed regulating screw, page 18.
	Clutch disc retaining ring too tight.	Install smaller wire thickness retaining ring, page 21.
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 10.
	Dirt in oil plugging valve system.	Have your McCulloch Dealer clean the oiler system.
	Oiler not working; leaking seals or valve assembly.	Have your McCulloch Dealer overhaul the oiler system.

1-61 CHAIN SAW SPECIFICATIONS

Weight	21 pounds
Type	Two-cycle
Cooling	Air
Number of Cylinders	1
Bore	2-1/8 inches
Stroke	1-3/8 inches
Displacement	4.9 cubic inches
Compression Ratio	5.5/1
Speed - Maximum HP	6000 R.P.M.
Main Bearings	1 ball, 1 thin wall needle
Connecting Rod Bearing	Needles
Upper Rod Bearings	2 needle
Piston	Permanent mold aluminum
Number of Rings	2, chrome top ring
Valve Type	Reed
Carburetor	Diaphragm
Fuel Supply	Pulse pressure
Fuel Induction	Crankcase compression
Clutch	4-shoe centrifugal
Clutch Lining	None
Engine Speed Clutch Engagement	2450 - 3100 R.P.M.
Ignition	Flywheel magneto
Spark Plug	J8J Champion
Spark Plug Gap	0.025 inch
Breaker Point Setting	0.020 inch
Coil	McCulloch waterproof
Transmission	Gear train
Starter	Rewind
Fuel Tank Capacity	2.5 pints
Fuel	70 octane or higher gasoline mixed with McCulloch chain saw oil at the ratio of one pint to two and one-half gallons of gasoline
Chain Oiler Tank Capacity	1 pint
Chain Oil	Temperatures above 40°F. - SAE 30 motor oil; temperatures below 40°F. - SAE 10 motor oil
Transmission Lubricant	Temperatures above 40°F. - SAE 140 gear oil; temperatures between 10°F and 40°F. - SAE 90 gear oil; temperatures below 10°F. - half SAE 90 gear oil and half kerosene

ACCESSORIES

McCulloch Plunge Bow



If you're a pulpwood cutter and you've never used a chain saw equipped with a plunge bow, you've no idea how much easier it is to use than the standard bar. The design of the plunge bow keeps stooping and bending to a minimum in felling and bucking operations. The taper of the bar extends from the outer edge to the inner edge of the bar, so that you can cut straight through without pinching or binding. And the light-weight, but rugged construction, means lots of smooth, easy cutting without tiring you out. You owe it to yourself to try the McCulloch Plunge Bow and see for yourself how it can save you time, trouble and an aching back.

McCulloch Paddle Bow



The McCulloch chain saw, when equipped with a McCulloch Paddle Bow, is the ideal cutting tool for all land clearing operations. It can cut through small trees for the Christmas tree grower and farmer. It can be used by the tree trimmer and landscaper for limb pruning. It can slice its way through heavy brush and do line clearing. It has a cutting capacity of up to 24 inches and it weighs less than the standard bar of the same cutting capacity. It comes with a double spike which controls the feeding and provides a rest when starting the saw. If you want to cut small trees and heavy brush with the least amount of effort, ask your McCulloch Dealer to let you try the McCulloch Paddle Bow.

SERVICE NOTES

Model No. _____ Date Purchased _____

Serial No. _____

Dealer's Name _____

Dealer's Address _____

Dealer's Telephone Number _____

MAY 1960

McCULLOCH

AUTHORIZED CHAIN SAW DISTRIBUTORS

ALABAMA	Birmingham — Joe H. Brady & Associates, 3029 Third Avenue, South
ALASKA	Seattle — Northern Commercial Company, 4233 W. Marginal Way, P.O. Box 3562
ARIZONA	Phoenix — Waukesha Southwestern, 3333 East Washington Street
ARKANSAS	North Little Rock — Timberland Saw Company, 1103 E. Broadway
CALIFORNIA	Fresno — California-McCulloch Equipment Co., 2608 Tulare Street
	Sacramento — Leavitt Power Tool Company, 2305 "J" Street
	San Francisco — Coast McCulloch Co., 855 Bryant Street
	Torrance — California McCulloch Equipment, 800 West Carson Street
COLORADO	Denver — M. L. Foss, Inc., 1901-1927 Arapahoe St., P.O. Box 57
HAWAII	Honolulu — Theo. H. Davies & Company Ltd., P.O. Box 3020, Honolulu, T. H.
	Hilo — Theo. H. Davies & Company Ltd., P.O. Box 967, Hilo, T. H.
IDAHO	Boise — Boise Saw Sales, 3131 Chinden Blvd.
ILLINOIS	Elmhurst — Power Equipment Company, 645 South Rt. 83
LOUISIANA	Alexandria — Timberland Saw Company, 2825 Lee Street
	New Orleans — Industries Sales Corp., 4129 Euphrosine St.
MASSACHUSETTS	Medford — Stantial-McCulloch Co., Inc., 4080 Mystic Valley Parkway
MICHIGAN	Detroit — Langford-McCulloch Co., P.O. Box 4742
MINNESOTA	St. Paul — Power Tools, Inc., 1731 University Avenue
MISSOURI	Kansas City — Contractors Supply, 620 E. 18th Street
	St. Louis — C & F Equipment Company, 805 So. Kirkwood Road
NEBRASKA	Omaha — T. S. McShane Company, Inc., 1113 Howard Street
NEW MEXICO	Albuquerque — Log Cutters Supply, 6608 2nd Street, N.W., P.O. Box 6191
NEW YORK	Long Island City — John Reiner and Company, 12-12 37th Avenue
	Syracuse — John Reiner and Company, 726 West Hiawatha Boulevard
NORTH CAROLINA	Shelby — Carolina Chain Saw and Equipment Company, 118 No. Morgan Street
OHIO	Cincinnati — Bryan Equipment Sales, Inc., 7850 Kenwood Road
	Cleveland — Loehr Distributing Company, 12724 St. Clair Avenue
OREGON	Bend — Bend Chain Saw Service, 47 Oregon Avenue
	Eugene — Foster-McCulloch Company, 4190 Franklin Boulevard
	Portland — Towne Equipment Company, 2030 S. E. 7th Avenue
PENNSYLVANIA	Pittsburgh — Conaway-McCulloch, Inc., 1116 Castle Shannon Blvd., Castle Shannon
TENNESSEE	Memphis — RCH McCulloch Chain Saw Company, Inc., 223-229 S. Front St., P.O. Box 173
TEXAS	Marshall — Timberland Saw Company, 209 Pinecrest Drive, West
UTAH	Salt Lake City — Wilson's Transport Supply, 665 S. State Street
VIRGINIA	Richmond — Potter Equip. Co., Inc., 1705 Chamberlayne Avenue
WASHINGTON	Seattle — Pacific Equipment, Inc., 1001 Jackson Street Northern Commercial Co., 4233 W. Marginal Way, P.O. Box 3562
	Spokane — McCulloch Equipment Co., E. 4201 Trent Avenue
WASHINGTON, D. C.	Potter Equipment Company, Inc., 2121 New York Avenue, N.E.
WEST VIRGINIA	Charleston — Engine Sales and Service Company, Inc., 919 Virginia Street, East
WISCONSIN	Plover — Rapids Distributing Co., Inc., Rts. 51 & 54
CANADA	Edmonton, Alberta — McCulloch of Canada Ltd., 11925-73 St.
	Moncton, New Brunswick — McCulloch of Canada Ltd., 135 Albert Street
	Montreal, Quebec — McCulloch of Canada Ltd., 155 Port Royal
	Quebec City, Quebec — McCulloch of Canada Ltd., 160-162 Sacre Coeur.
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