DISSTON

ONE MAN

CHAIN SAWS

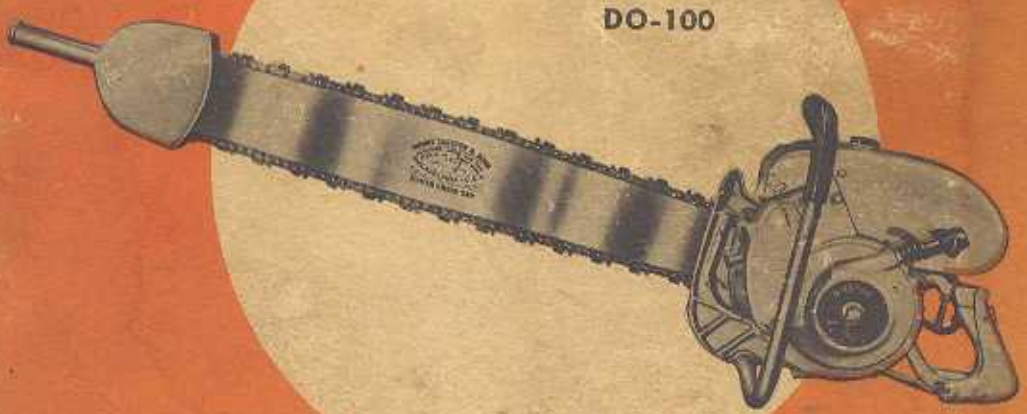
. . . with Mercury Gasoline Engines

ESTABLISHED 1840

REG. U.S. PAT. OFF.

OPERATOR'S HANDBOOK

MODELS
DO-101 AND
DO-100



HENRY DISSTON & SONS, INC., PHILADELPHIA 35, PA., U.S.A.

Henry Disston & Sons, Inc., Philadelphia, PA USA

Diston Chain Saw -

Model DO-101

Serial # 618081

Rating 3.5 H.P.

Mercury Motors.

Mercury engine built by Kickhaefer Aero Machine Fond-Du-Lac, Wis. USA

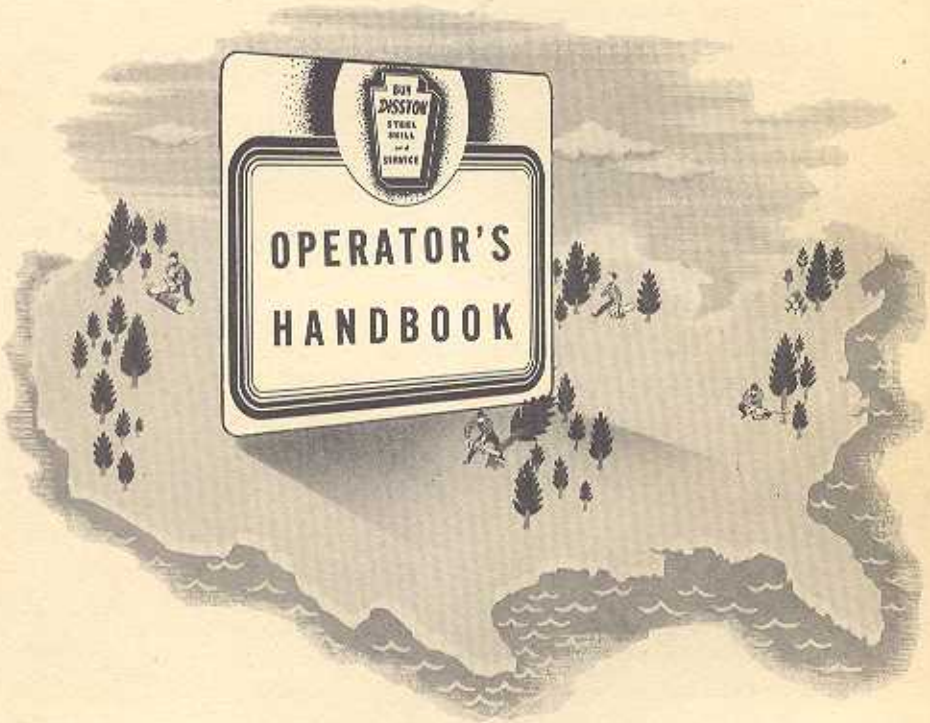
FOR MODELS DO-101 AND DO-100

DISSTON

ONE MAN CHAIN SAWS

WITH

MERCURY GASOLINE ENGINES



HENRY DISSTON & SONS, INC.

PHILADELPHIA, PA., U. S. A.

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Preface

EVERY DISSTON CHAIN SAW OWNER AND OPERATOR

should carefully read this handbook and keep it with the saw. It contains valuable operating and maintenance information which is of little value unless it reaches the men who run and maintain the unit.

PROTECT YOUR INVESTMENT!

Keep your unit clean and properly lubricated. Use clean fuel!
Keep your chains sharp and well fitted.
Follow general safety precautions, in addition to those given in this book.
Use only standard Disston renewal parts.
Consult your Disston Certified Service Station on chain saw problems.
Write to Disston if you have any problem or recommendation concerning this machine.

DISSTON OFFERS FURTHER PROTECTION!

A 30 day Guarantee Certificate

Effective from the date of purchase, if signed by your Dealer. He mails this report of sale to Disston, Phila., where a permanent engine serial number record is maintained.

The Disston Chain Saw Check Chart

Your dealer will cover, with you, all the points shown on the Check Chart. Much of what he will show you is described in this Handbook. He will tell you of any later developments and give you a complete operation and maintenance demonstration.

Service and Maintenance Facilities

Disston provides complete instructive material for the operation of all saws, as well as complete stocks of renewal parts and qualified mechanics to service your unit.

FUELING AND LUBRICATION

Automotive gasoline with an octane rating of at least 72 should be used. Either regular or high-test gasoline can be used, but premium fuels are not required for satisfactory operation.

The lubricant mixed with the gasoline should be high quality SAE-30 automotive oil (preferably without additives or detergents when obtainable).

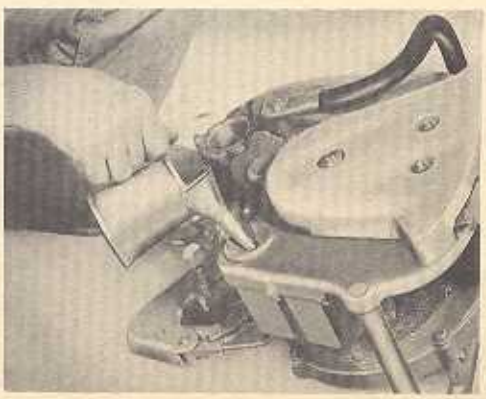
Mix the oil and gasoline (½ pint of oil to one gallon of gasoline) in the *clean* fuel can supplied. Shake thoroughly to make sure that the fuel is mixed. Always use the Disston fuel can—it has a fine screen in the end of its flexible spout. Keep tightly covered to prevent dirt and dust from entering the fuel and to prevent fire.

(Fuel Mixture Instructions are also on Fuel Tank and Fuel Can)

FILLING TRANSMISSION

Clean area around top plug on right side of unit. Remove plug. Gradually add clean SAE-30 oil to gear chamber. Return unit to upright position and allow excess to drain out the opening. Replace the plug.

Fueling Unit



Filling Chain Oiler

ASSEMBLY

Place the engine in a normal resting position (fuel cap up).

Remove two nuts from the sprocket cover with the special T wrench provided. Then remove cover by pulling outward.

Unpack the Disston steel Guide Rail. When installing an 18" capacity Straddle-type rail make sure Disston trade mark on the rail will be right side up. With the exception of this one 18" rail and the Bow rail, all other Disston rails are symmetrical in shape and are reversible top for bottom.

To install the guide rail, move the tensioning block toward the sprocket, using the tensioning adjustment screw. Place rail with bolt slots over the guide rail mounting bolts and seat the rail over the chain tensioning device. Be sure rail is in notch of tensioning block.

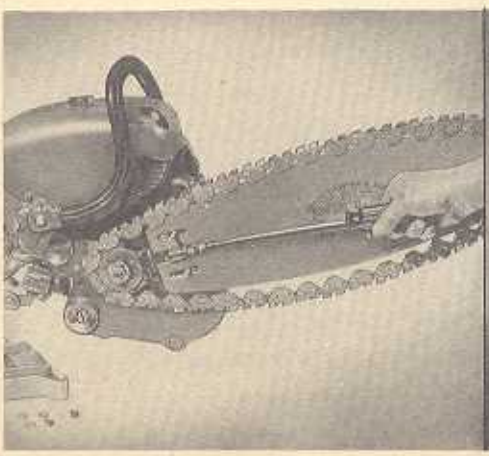
To install cutting chain lay the chain over the guide rail so that cutting points of the teeth point away from the unit at top of the guide rail. Draw the chain around guide rail and fit it over sprocket flange until chain fits correctly in the sprocket. Next, turn chain tensioning screw clockwise to push guide rail forward, tightening chain. See that the tensioning block is properly seated in the guide rail. Adjust screw until chain does not sag at bottom of rail. Do not bring chain up tight.

Now install the sprocket cover, washers and nuts. Do not tighten these nuts. Adjust chain by means of tensioning screw.

The chain is correctly tensioned when it will lift $\frac{1}{8}$" from its seated position on the rail, at the top immediately in front of the abutment plate. Check after cover nuts have been tightened securely. The chain is loose and will rattle at a standstill. A chain that is too tight wastes power and results in chain and rail wear. A chain that is too loose rattles and clatters, striking the sprocket cover.

Be sure your chain is correctly tensioned at all times. Do not tighten chain on rail too tightly. Never adjust chain tension with the engine running.

Check for proper tension at frequent intervals, especially when chain is new.

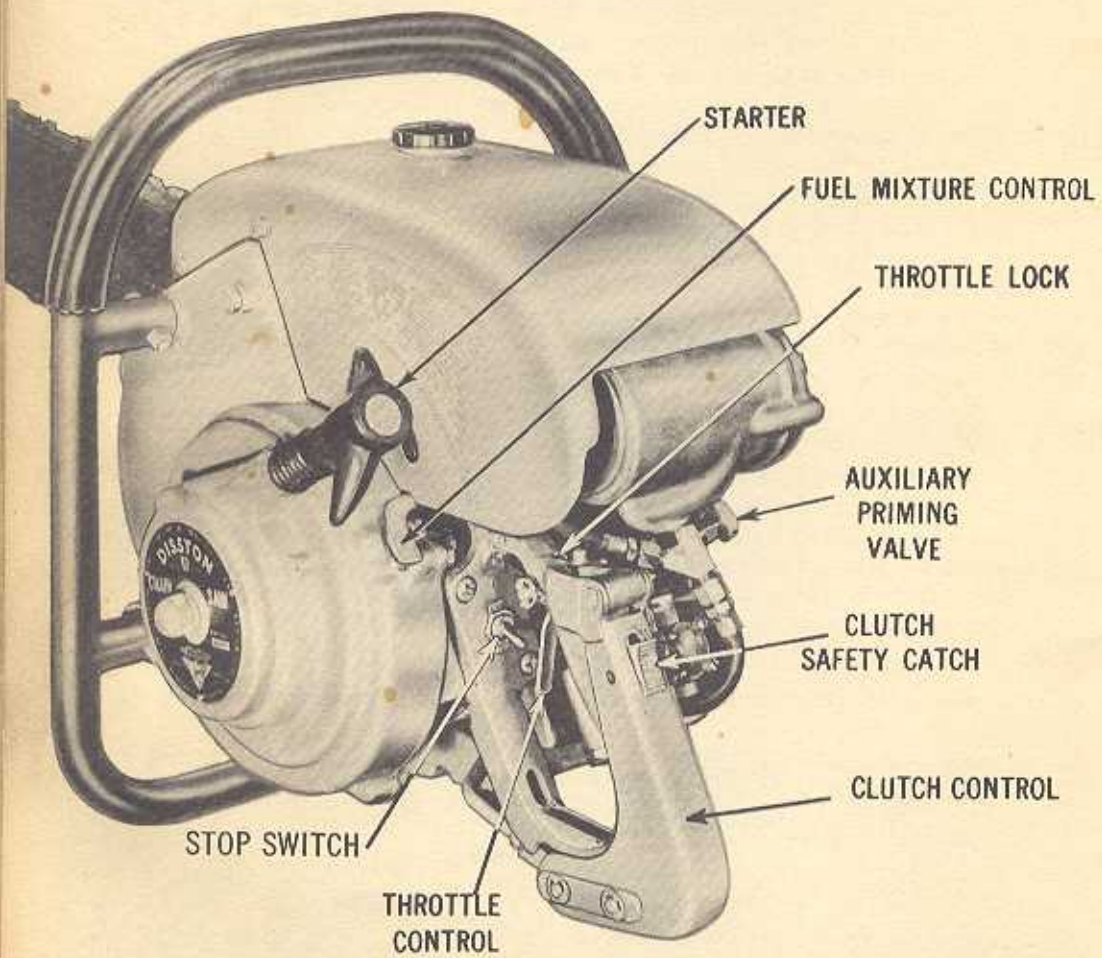


Tightening the Chain

Installing Sprocket Cover

CONTROLS

Before operating the unit in sawing wood, it is recommended that the operator familiarize himself with all controls and their correct method of operation. When you do not have to look to locate the clutch release, stop switch or throttle lock you are ready to start sawing.



STARTER:	On left side of Engine
THROTTLE:	Trigger type on rear operating handle
CLUTCH:	Controlled from rear operating handle
FUEL MIXTURE:	Lever on left side of unit above starter
AUXILIARY PRIMING:	Valve on throat of Air Filter
CHAIN LUBRICATOR:	Valve at top of abutment plate near muffler
STOP SWITCH	Conveniently located on rear handle, readily accessible to forefinger.

SAFETY FIRST—

Before starting your saw, realize that it is a fast-cutting powerful tool. Yet in the hands of a thinking, careful operator it is a safe one.

However, bystanders, and those wishing to assist the operator, unnecessarily expose themselves to injury if they come too close to the operator. "Stay 6 feet away!" is a good general rule for all non-operators to follow.

Remember, the operator, busy cutting, may not know how close an observer may be. Don't stand close enough to him to allow possible contact with the chain. Watch particularly when the chain is withdrawn from the cut.

Always play it safe. Place unit on ground before starting the engine. Disengage clutch before starting. Stop the chain by disengaging the clutch between cuts. Stop the engine during pauses in operation. Never carry the unit with the chain running. Do not take your saw up into a tree. When your footing or the cut involved looks dangerous, use a hand saw.

This is a gasoline-powered unit. When handling fuel follow the usual safety precautions. Never run the engine in a closed room without adequate ventilation. Be sure to ground the spark plug wire whenever it is removed from the plug. Read Engine Flooding on page 10.

These precautions, and other important ones, will be repeated throughout this handbook. Make sure that everyone who uses the saw reads and understands the material given.

We require that you register the serial number of your unit through your Dealer for purposes of warranty protection. This sometimes helps in case of loss or theft of your saw. Also, many reliable insurance companies issue fire, theft and damage policies on power saws.

Disengage clutch, immediately after completion of cut.

STARTING

When instructions for filling the fuel tank, automatic chain lubricator and the transmission have been carefully followed, the engine is ready for starting:

1. Place unit on the ground or other firm foundation.
2. Be sure clutch is disengaged. Rear handle contains clutch control—should be in compressed position.
3. Lock throttle in open position, using right thumb on throttle lock. Trigger is all the way back.

4. Lift fuel mixture control lever (located on left side of unit below starter handle) to "Start" position—all the way forward.
5. Open priming valve ¼ turn. (The valve is located at bottom of air cleaner housing.)

6. Hold unit down firmly with left hand at center of front carrying handle. It is a light machine and may move as the starter cable is pulled.
7. In the right hand, grasp the rubber handle of the Magnapull starter. Pull starter cable back slowly to take up the slack. You will feel the pawls inside "catch". Then pull the starter cable sharply. Straight back pull means longer cable life. Guide cable back into housing.

8. When engine fires, *quickly* close the priming valve.
9. *Excessive* smoke will occur at warm-up (even after the engine is warmed up there is a small amount of smoke). As this occurs, slowly turn the fuel mixture control lever to the "Run" position—all the way back.
10. Release throttle lock and saw will idle.

After the engine has been running for a short time and is warm, opening of the priming valve and adjustment of the fuel mixture control lever for each start is unnecessary.

In extremely cold weather, always turn the engine over several times, using the starter gently and slowly, before making an attempt to "start" the engine. This allows for loosening up the engine and stiff lubricant.

NEVER run the engine for any length of time with the fuel mixture control lever in the "Start" position, or with the primer valve open. This will cause the engine to run rich, resulting in loss of power, a fouled plug, or a flooded engine.

GENERAL OPERATION

When operating the One-Man Saw, the left hand and arm support the machine by means of the front carrying handle. This goes all the way around the machine, allowing a comfortable grip in any sawing position.

The rear operating handle, which resembles a pistol grip, is held in the right hand. The following duties are performed by the right hand when the saw is in operation:

1. Operation of the trigger-throttle control with the right index finger: Pressure on the trigger opens the throttle. Releasing pressure allows the throttle to close under spring action.
2. Manipulation of the throttle lock with the right thumb: The throttle lock is located on the top of the rear operating handle. Forward pressure locks throttle in desired position. To release, just touch throttle trigger.
3. Stop the toggle switch operation: Switch is located on the rear handle immediately in front of the throttle lever. The saw operates with the switch in the "up" or "on" position. The "down" or "off" position stops the saw.
4. Clutch engaging: To start chain, squeeze handle at the bottom. Release the safety catch at the top rear of the handle by pressing catch up with the right thumb. Then release pressure of squeeze and clutch is engaged.
5. Clutch disengaging: To stop chain, close rear handle section by squeezing with the right hand. Use the heel of your hand for better leverage. The clutch safety catch is self-operating.

During the cutting both hands should be used to guide the saw through the cut. Keep your hands on the carrying handle and the rear operating handle.

ENGINE FLOODED?

Remove the spark plug. *Be sure to ground the ignition wire* and turn ignition switch "off" to eliminate fire hazard. Then turn engine over by pulling the starter handle until the piston is at the bottom of its stroke. Turn engine upside down by rotating it in a clockwise direction as you face the starter housing side. This is the only way that excess fuel can be completely drained. Dry the spark plug and reinstall, or replace with spare plug.

NOW ADJUST THE CHAIN LUBRICATOR

After engine has run for a few minutes, adjust the chain lubricator. Its valve is located in the abutment plate beside the muffler.

1. Make sure clutch is disengaged (chain is stopped).
2. With a screw driver in the slotted head, turn the valve ¼ turn to deliver the desired amount of lubricant. Counter-clockwise turning increases the flow, clockwise decreases flow. Not much oil is required. Watch out for hot muffler. Very little adjustment of oil flow is required once the proper regulation is set.

HOW TO CUT

For practice buck a few stove wood lengths, from a log of about 12" diameter.

1. Start engine as explained above. Allow it to warm up.
2. Engage clutch and open throttle.
3. Start cut by bringing cutting chain into contact with log — **with abutment plate of saw against log.**
4. Notice that the chain saw is self-feeding—and will stay that way if you keep chains well fitted. Saw can be guided very easily using both hands—one in complete control of the engine, the other to support the engine. Always cut at full throttle.
5. As cut is completed, release the throttle and disengage the clutch.
6. Continue this cutting for practice until you feel "at home" with your chain saw.

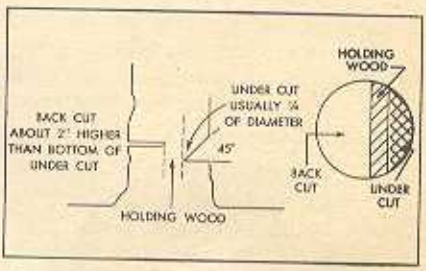
Keep abutment plate against log when bucking.

TO CUT A LARGER LOG

than the capacity of the guide rail, cut into the side of the log away from you until the unit approaches a vertical position, with engine up and cutting mechanism down. This is accomplished by lifting the rear handle and holding the front carrying handle downward. After the far side of the log has been cut, work the engine toward you until the saw is approximately level. The cut is finished in this position. As the cut nears completion, get a firm hold on the saw to prevent it from entering the ground. When cut is finished, release throttle and disengage the clutch.

FELLING

is done in much the same manner as with a hand cross-cut saw. Any type of notch can be made by turning the saw and holding it at the desired angle. Care should be taken in the felling cut, when the saw approaches the notch on the far side of the tree. If holding wood is cut through, the tree will spin out of control.



Remember . . . Safety First! Keep your hands on the unit at all times. Don't allow spectators to come within 6 feet of the chain. Think before you cut . . . properly made undercuts make felling safe. Correctly done, the undercut guides the direction of fall, dropping the tree where you want it. Careless undercutting causes broken and splintered logs, and can be dangerous to the felling crew.

Start notch this way.

Cut from other side.

Leave holding wood.

PREVENTIVE MAINTENANCE

PM means keeping your saw always in first class condition and thus preventing little troubles from developing into costly repair jobs. When you start your saw, start this 6 point PM program:

Observation—Watch unit performance closely. Listen for unusual sounds. Observe and note any excessive vibration or unusual performance. Try to find the reason for any symptoms in order to remove their cause. If the unit seems to be developing serious difficulties, don't run it. Service it immediately.

Care in Handling—Avoid putting your unit in a dangerous position; if there is a possibility that the cut you are making, when completed, will damage the saw, stop and block up the log which might drop on the tool. Do not throw your unit in the truck. After it is placed in a vehicle, block it up to prevent its being bumped excessively.

Careful Cleaning—Keep your unit clean at all times.

Careful Lubrication—Follow fuel and lubrication instructions to the letter.

Inspection—Go over the Handles, Controls, Fuel Lines, Fuel Tank, Starter, Guide Rail, Chain, Guide Rail Mounting, Chain Lubricator, etc. These parts can be inspected without stripping the unit. Note any loose parts for immediate tightening, renewal or repair. Inspection is best accomplished while cleaning.

Servicing—Immediately tighten any parts which become loose. Repair bent or distorted parts or replace them with new ones. Take your unit to a Certified Disston Service Station for check ups and servicing. Keep your cutting chains well sharpened and correctly fitted.

CLEANING

Once each day, the unit should be cleaned thoroughly to remove all traces of sawdust, leaves, etc. To do this job easily, use a compressed air hose. If air is not available, a dust brush and 1 inch paintbrush can be used effectively to clean sawdust from the unit. Don't clean with the air cleaner or fuel lines disconnected, or with the filler cap and oil reservoir plugs removed. Avoid moving the dirt from the outside to the inside of the chain saw unit. Never remove oil plugs or fuel caps unless they, and the area around them, are cleaned first.

Cooling air from the fan has sufficient force to keep the cylinder fins clean provided the air intake screens (around the whole unit beneath the starter assembly) are kept clean and free of leaves, saw dust or chips. Clogging of the screen reduces the amount of cooling air through the unit, causing overheating.

At intervals, it is advisable to remove the fuel tank and cylinder cowl from the unit to inspect and clean the cylinder fins. At this time, the fan, fan housing and magneto should be cleaned and inspected. The amount of time between cleaning operations of this type will depend upon the amount and type of work you do with your unit. It would be advisable to have a check up made to determine the amount of dirt in the cooling system after the first few weeks of operation. The volume of sawdust found will then indicate how often this cleaning procedure should be repeated.

KEEP IT CLEAN

AIR FILTER lets saw breathe. Push brush all the way through, using a twisting motion. Pull it back in the opposite direction. This removes sawdust. A clogged element should be removed and cleaned in pure gas (never gas-oil mix) or carbon tetrachloride. Dry. Renew gaskets if necessary.

Make cleaning a habit, do it every day!

When cleaning, always inspect all parts. Tighten loose screws and bolts. Check for free working of controls. Protect your investment.

FUEL TANK
Clean area around cap to prevent entrance of dirt into tank. Use only clean fuel!

SPARK PLUG
Remove carbon and reset spark gap at .025".

CYLINDER
Clean out all sawdust and leaves with a wire.

CUTTING CHAIN
Clean with kerosene after each sharpening or to remove grit and dirt. Dry thoroughly and oil after cleaning.

VENTED SCREW
Keep it open to allow excess oil from transmission to drain.

FUEL FILTER—Clean with fingernail or air blast. See page 15.

FUEL LINES—Flush if fuel trouble is encountered. Never blow out with air!

MUFFLER and the exhaust port should have carbon removed. Rewire muffler studs.

FAN SCREEN . . . brush off all sawdust, leaves and dirt.

This is an air-cooled engine . . . help it beat the heat by regular cleaning of cylinder fins, muffler, exhaust port, and fan screen.

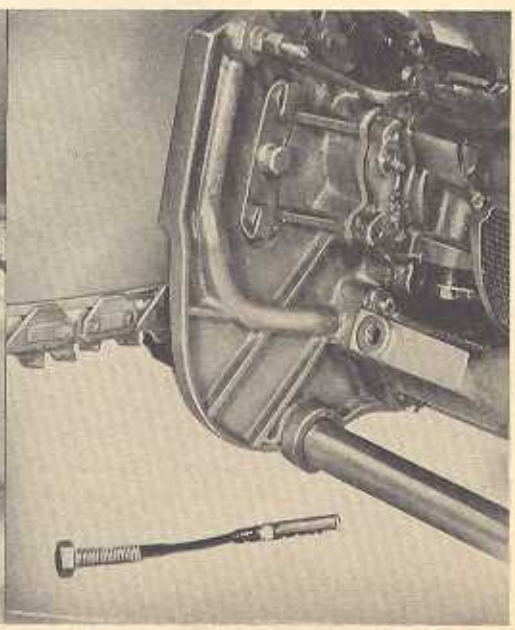
AUTOMATIC CHAIN LUBRICATOR CARE

The chain is oiled automatically whenever the engine is running by using the compressing action of the engine itself. If the reservoir is filled with clean SAE-30 oil, it should give very little trouble during the life of the machine.

If oil fails to flow from the opening opposite the chain, make these checks:

1. See that there is oil in the reservoir.
2. Turn the valve clockwise until it seats. Then open valve (turn counter-clockwise) several turns. Start engine and run at full throttle a few seconds, watching for oil delivery. This should wash out any dirt loosened by the needle end of the valve.
3. Is the short section of hose between the crankcase and the lubricator reservoir intact? Check the ball check valve in the crankcase.
4. If oil still does not flow, it may be due to dirt entering the reservoir through the fill opening. Remove the oil feed pickup and filter assembly as shown. Clean thoroughly and replace.

Make sure this hose connection is leak-proof



Remove and clean the oil feed pickup and filter assembly.

FUEL SYSTEM AND ITS SERVICING

The fuel system of your saw consists of the fuel tank, fuel filter, fuel pump and fuel meter. It is especially designed to feed the proper volume of fuel to the engine in any position without special adjustments, flooding or leakage.

Keep the fuel tank cap tight. See that the gasket is always in good shape. A ball check valve regulates the flow of air into the tank to replace the fuel used.

Within the tank is a flexible fuel pickup. Inspect it to see that it has not been damaged. Use a pen-type flashlight—look for any dirt collected in the tank.

From the tank the fuel passes through a flexible fuel line to the fuel filter located at the side of the fuel pump. To clean this filter remove the hexagon nut from the end of the filter body and withdraw the element. Clean by flushing in gasoline, blowing with air, or by allowing it to dry and then brushing lightly. Don't use a rag! See that filter element is tight in cap. While the element is removed, loosen the fuel tank cap, allowing clean fuel to flow through the filter housing, flushing it completely. Insert element, with gasket, and tighten hexagon cap securely.

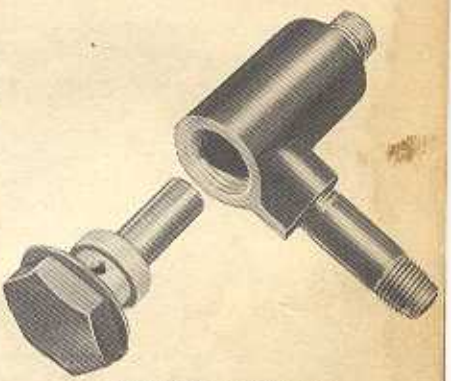
Keep hose connection tight. *Never* blow out lines with air—this will damage diaphragms in fuel meter. An additional filter is built into the fuel meter, removable by taking out the slotted plug in rear of the meter. This can be reached only by removal of air cleaner housing.

From the fuel filter, fuel passes to the fuel pump. Fuel pump performance can be checked by removal of the flexible fuel line at (A) between the fuel pump and the priming valve. Turn engine over slowly with the starter—if fuel spurts from hose at (A) pump is operating.

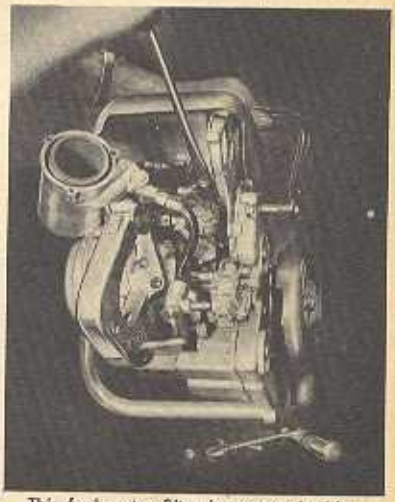
The fuel pump feeds the gas-oil mixture under pressure to the fuel meter which mixes it with intake air and delivers the correct amount to the engine for any throttle setting.

Fuel meter has two adjustments, a main metering valve corresponding to high speed

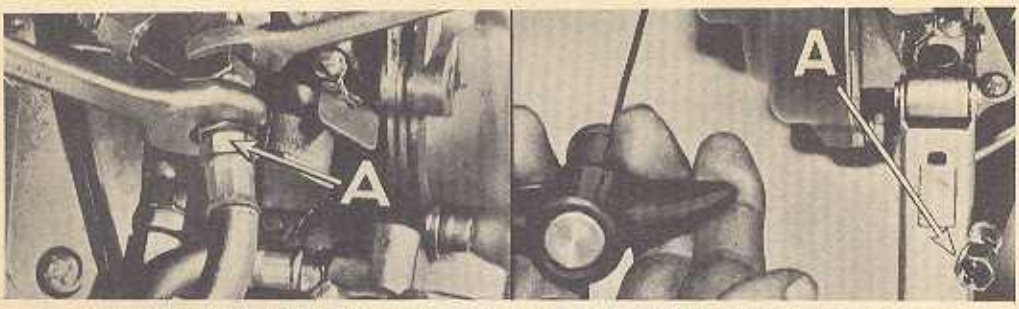
Check tank frequently.



Keep this fuel filter clean.



This fuel meter filter is removed with a screw driver.

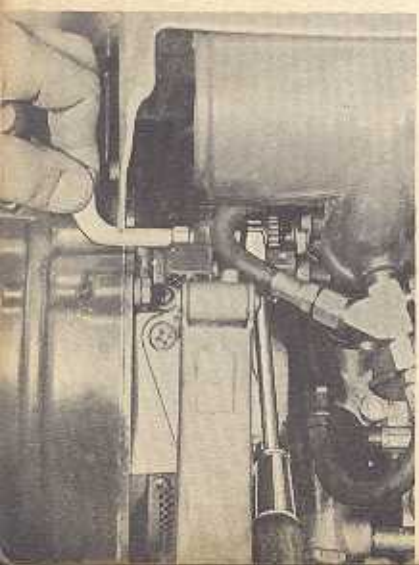


needle valve of a conventional carburetor and an idle adjusting valve corresponding to low speed adjustment of a conventional carburetor. Main metering valve is fitted with an actuating lever which is connected to mixture control lever through suitable linkage; this provides a manual control which permits setting mixture as required for starting and for normal operation; when mixture control lever is in "START" position, main metering valve is in rich position; when mixture control lever is in "RUN" position, main metering valve is in normal position. A fine-toothed, spring-loaded coupling permits adjusting position of actuating lever in relation to main metering valve so mixture can be brought into richer or leaner range as required.

HIGH SPEED ADJUSTMENT—

Need of adjustment can be determined by observing high speed performance under no-load and full-load conditions. When adjustment is correct, engine will run slightly rich or "4-cycle" under no-load, but will settle down and run smoothly when sawing load is applied; if mixture is too rich, engine will fail to smooth out as sawing load is applied. If mixture is too lean, engine may run smoothly under no-load, but will lose power or misfire when sawing load is applied.

Adjustments should be made with engine stopped. For richer mixture, set mixture control lever in "START" position and turn main metering valve counter-clockwise. For leaner mixture, set mixture control lever in "RUN" position and turn main metering valve clockwise. Valve can be turned by applying tip of screwdriver blade to flutes in edge of knob. Change adjustment only one notch at a time and check performance after each adjustment. If change in adjustment of 2 or 3 notches in either direction does not restore normal performance, trouble is most likely due to some factor other than fuel meter adjustment.



LOW SPEED ADJUSTMENT—

Operate engine at idling speed and turn idle adjustment valve clockwise until engine starts to "load up" or fire unevenly due to over-rich mixture; then slowly turn needle counter-clockwise until engine picks up speed and again fires evenly. Do not adjust leaner than necessary to attain reasonably smooth idling; it is preferable to set mixture slightly rich rather than too lean, because an excessively lean mixture will tend to cause engine to stall out while idling or when accelerated suddenly. Normal adjustment is approximately 1½ turns from full-closed position.

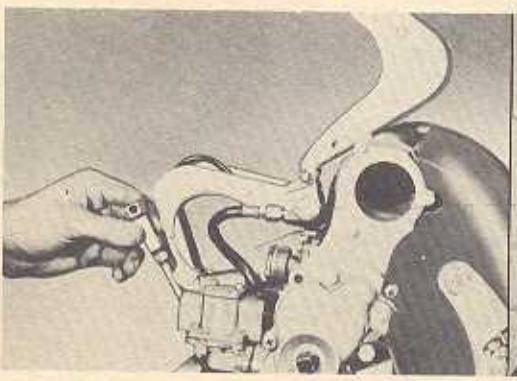
CAUTION

To assure sufficient thread engagement of idle adjusting needle, do not turn it out more than 2½ turns from fully-closed position.

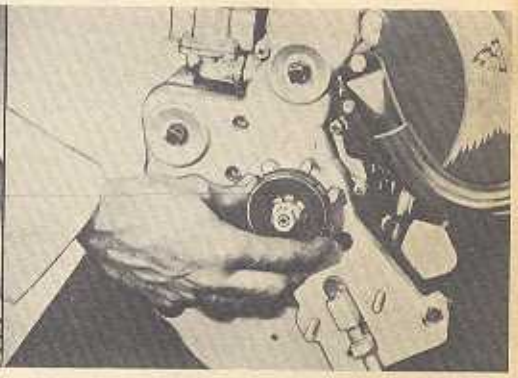
CLUTCH

The clutch is a positive, interlocking one, manually operated by pressure on the rear handle. Squeezing the handle section together disengages the clutch and stops the chain. Releasing the clutch handle section engages the clutch and starts the chain. The safety catch must be pushed up (while squeezing handle) to engage the clutch.

The clutch spring is located inside the clutch shaft and is accessible by removing the retaining screw from the sprocket end of the shaft. It will provide sufficient compression to keep the clutch engaged should the clutch control become inoperative. Use your clutch and keep it in good repair at all times. It protects you and gives you non-slip cutting power when you really need it . . . in cutting out of a bind for example.



In the event that a knocking noise is heard due to improper adjustment or hard usage, you can do this—Engage clutch (release handle). Remove clevis pin S-41-306 at bottom of handle. Loosen the locknut S-61-201 and unscrew the control rod connector S-41-337 half a turn at a time.

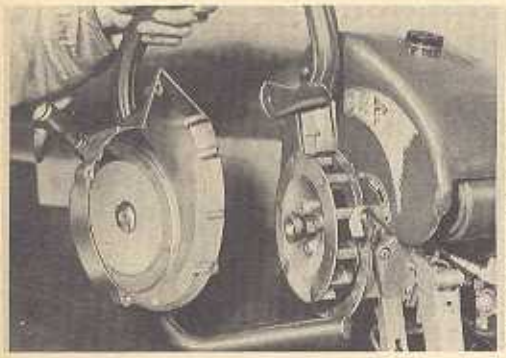


Test for proper adjustment by reassembling handle (replace clevis pin). Disengage clutch and turn sprocket by hand. When control is correct length, and clutch halves have proper clearance, the sprocket will turn without clicking. Don't over-adjust!

THE SAFETY SPROCKET—

which absorbs shock loads and protects engine parts, has been assembled to provide proper torque characteristics. Do not change its factory adjustment. Consult your Certified Service Station if slipping occurs.

STARTER SERVICING



When a new starter cable, spring, or replacement of other damaged and worn parts is required the complete starter assembly should be detached. Remove the five starter housing attachment screws and the long screw which attaches the carrying handle to the transmission housing. Leave the carrying handle remain on the starter housing. It provides a suitable support while working.

Remove friction plate by removing the two hex head attachment screws. The pawls may now be lifted off the pivot screws.

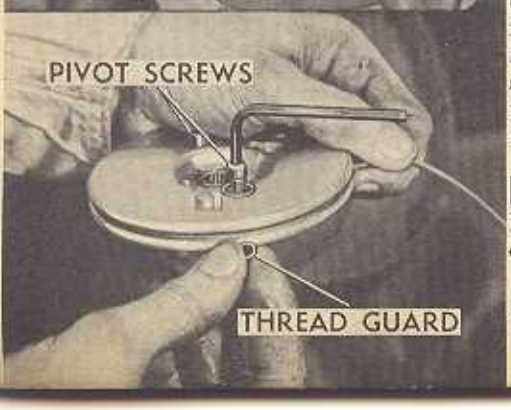
Remove starter cable handle and bushing by cutting cable with a pair of diagonal cutting shears or a cold chisel. The bushing is recessed in the end of the handle. Take care when removing it or rubber handle may split.

When the handle is removed, hold the sheave and allow it to wind slowly. (In assembly, the starter spring is given its initial tension by winding the sheave counter-clockwise two or three turns.)

Remove the large brass acorn nut, lock washer, and flat washer installed on the outside end of the sheave shaft. While holding the sheave and the housing firmly together, tap out the sheave shaft using a small hammer. Note the small key used to anchor the sheave shaft and prevent its turning in the starter housing.

SEPARATE SHEAVE FROM HOUSING

Carefully lift sheave just enough to insert thumb under sheave to hold the spring in place. While holding spring firmly in housing, the sheave may be lifted free of the spring. The spring may now be uncoiled safely one coil at a time. Always hold the remaining coils in place with thumb. Note the thrust washer assembled in the starter housing recess, between housing and sheave.



REMOVE STARTER CABLE

from the sheave by removing the two Allen head pivot screws. Note the two small thread guards mounted on the pawl pivot screws between the flanges of the sheave.

INSPECT all parts for damage or wear. Renew parts showing excess wear or damage beyond repair.

INSTALL STARTER SPRING:

Notice that hooks on the ends of the spring are of different lengths. The long end of the hook must be engaged on the anchor pin in the starter housing. In coiling spring, keep coiled portion fully seated in housing. Hold coils constantly in place with one hand while inserting the next coil in place. Do not relax this precaution or the spring may snap out of housing with sufficient force to cause serious injury.

After engaging spring hook on anchor pin in housing, coil spring counter-clockwise. When entire spring is installed, force some grease between the coils.

INSTALL CABLE IN SHEAVE:

Hook lug on end of cable in slot in sheave. Make one full turn of the cable before installing pivot pawl screws and thread guards.

INSTALL STARTER SHEAVE:

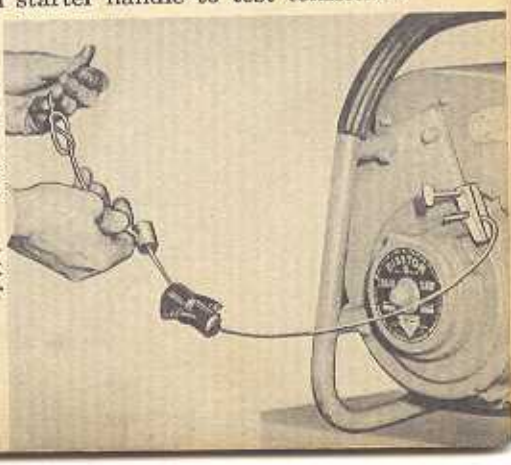
Make sure to install thrust washer in housing recess. Hold the inner end of starter spring with a small punch inserted through the sheave shaft hole in the starter housing. Lower the sheave over the spring making sure the spring hook catches on the sheave anchor pin. Insert sheave shaft, twisting to align key slot. Install key after making sure that the pin in the sheave falls in place between the two ears of the pawl guard. Install flat washer, lock washer and acorn nut. Tighten acorn nut securely.

INSTALL HANDLE AND BUSHING—

tying a figure eight knot in the end of the cable. Pull the starter cable out 12″ or 18″. Hold the sheave from turning and push the cable into the housing. This will produce slack cable in the housing which may be grasped and wound counter-clockwise around the sheave. This procedure winds spring to give sheave the necessary initial tension. Pull starter handle to test tension. If tension is not sufficient, wind an extra loop of cable over the sheave.

Reinstall pawl assemblies and friction plate. Tighten the two friction plate retaining screws. The pawls are installed with the magnets bearing against the friction plate, with their hooked ends toward the pawl retainer.

Reinstall starter assembly on engine, tightening all screws securely. A lock washer and flat washer should be under the head of each screw.



Cut off frayed cable and re-tie this figure-8 knot way.

IGNITION

The ignition system seldom requires service in the field. A rotating magnet keyed to the crankshaft, a coil, condenser, and breaker points are all mounted in a convenient assembly immediately under the fan. The magneto is completely protected from dirt and moisture. A single primary lead runs from the point assembly to the rear handle and provides the lead to the stop button. The high tension lead runs from the underside of the coil, through a small hole in the crankcase casting and thus to the spark plug.

Before repairing a magneto, always make sure that the cause for malfunction lies in the magneto itself. Hard-starting, erratic operation, and failure to start may be caused by other reasons. Make these checks first—

1. Remove spark plug, check gap, clean and test under pressure. Gap should be .025".
2. With the spark plug removed, hold the high tension lead about ¼" from the top handle attachment bolt. Pull engine over rapidly with the starter. A thick blue spark generally indicates a healthy magneto. A thin weak spark indicates trouble with the points, coil, or condenser.
3. Inspect the high tension lead for cracks or burns in the insulation especially near the muffler.
4. Check the stop button lead for fraying, and the stop button itself for a possible short.

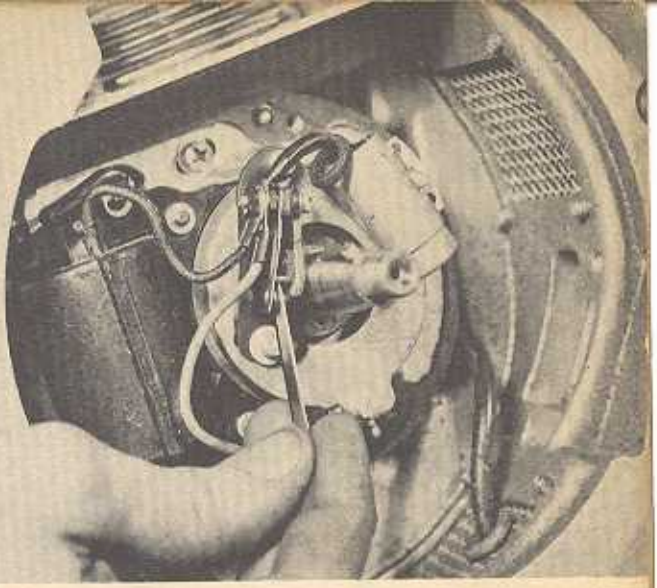
Access to the magneto is obtained by removing the starter housing (see starter repairs) and the fan assembly. Before the fan can be removed, the starter ratchet or fan nut must first be removed. Hold the fan securely and turn the starter ratchet counter-clockwise with a wrench. Remove the large flat washer. The fan is removed with the puller, Part No. S-61-505. Make sure the three puller screws are tightened down equally so that even pressure is exerted. Note the fan key which keys the fan to the crankshaft. When reinstalling fan the tapered end of the key must be to the inside and against the crankshaft. Under the fan will be seen the large Bakelite magneto cover which is removed by loosening four slotted head screws.

Use the puller to remove the fan. Tighten three screws equally.

1. Check the points for pitting or pyramiding. Slightly pitted points may be redressed with a small point file. Badly pitted points must be replaced. Always replace points as a set—never replace individual points. Check the point gap setting. It should be .020" with the breaker arm riding on highest point of the cam.

2. Condenser should be replaced if suspected and testing equipment is not available. To replace, loosen lead at contact points and mounting bracket screw.

3. Should the coil require replacement, remove the three screws securing the stator plate to the crankcase. The magneto assembly may then be lifted upwards and the high tension lead removed from the coil. (This lead is not soldered and should only be wrapped around coil terminal. Pack the area with sealing compound, Part No. S-30-223.) Detach the high tension lead from the coil, remove the two coil clamps and loosen the ground and primary leads. The coil may now be removed. Replace with a known good coil if testing equipment is not available.



A .020" strip is inserted between the points with the breaker arm riding on the cam's highest point.

4. The cam wick should be checked for oil. If it is dry or stiff, replace it.

IGNITION TIMING

There is little chance for variation in the ignition timing of the engine. The only adjustment occurs in point clearance and the rotation of the stator plate within the limits of the slots through which the attachment screws are inserted. The point clearance should always be maintained at .020" and the points should begin to open 26 degrees of crankshaft rotation before top dead center. The degree at which the points open may be determined by use of the timing gauge, Part No. S-61-504.

1. Remove fan and magneto cover. Set points at .020" at highest point of cam.
2. Install timing gauge in spark plug hole making sure plunger is in retracted position. Screw in just far enough so that piston grazes end of gauge as it goes over top dead center.
3. Push plunger in and turn 90 degrees to lock.
4. Insert small piece of cellophane between the points.
5. Bring piston up in direction of rotation until piston contacts timing gauge.
6. At this position, the contact points should just begin to open and the pressure on the cellophane should be starting to release.
7. Adjust by rotating the stator plate to the desired position. Before rechecking timing tighten all screws.

A cellophane strip and this gauge make the ignition timing simple.

CUTTING CHAINS

Much of your success with a chain saw will depend on the use of a sharp, correctly fitted chain. Your Disston Service Station can maintain your chains at low cost, using the Disston Electric Chain Saw Sharpener. Also, using the sawing principles explained, a satisfactory job can be done by hand filing.

CHAIN REPAIR

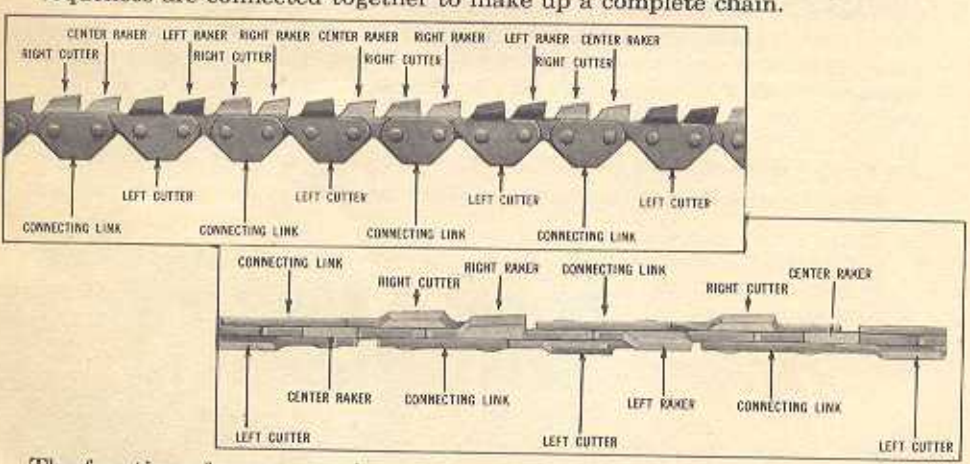
Repair links (with rivets) are available as well as repair teeth. Grind the heads from rivets where link is to be replaced, insert new teeth and connecting link and re-rivet. Always use riveting stake (Part No. 227) on a good solid surface for heading rivets properly. New teeth must be fitted to match old teeth before the cutting chain will perform with satisfaction.

STRADDLE CHAIN

This chain is made up of six different kinds of links:

1. Right cutters
2. Left cutters
3. Right rakers
4. Left rakers
5. Center rakers
6. Connecting links

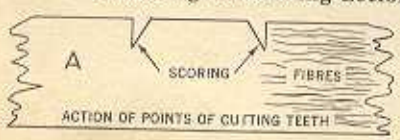
These teeth, or toothed links, are connected into a series called a "sequence" Sequences are connected together to make up a complete chain.

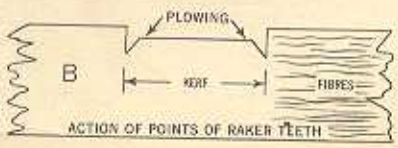


The function of a sequence is as follows:

(a) The left and right cutting teeth sever the fibres of the material being cut by a scoring action.

(b) The center, left and right raker teeth faces dig or "plow" up the material between the score marks and lift out the material thus loosened, with a chiseling or clearing action.



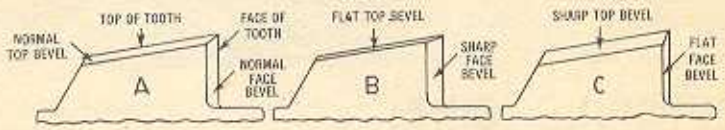


KEEP THE CHAIN SHARP!

The cutters are the most important teeth and should have the proper bevel and hook angles for the type of wood being cut.

Sharpen frequently. Never let points become dull. Always sharpen the chain by filing (or grinding with the Disston sharpener) the face of the teeth, never the top of the teeth.

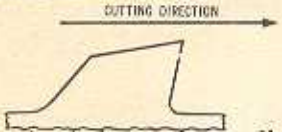
CUTTERS ONLY have face bevel angles. (Center rakers are square faced and should be altered only in their hook angle.) For average, hard or frozen wood this is 30°. Increase the angle slightly (making a sharper, longer point) for soft wood. If this is done flatten the *top* angle of the tooth to "back up" the tooth points.



SET RAKERS may be altered on their face angles for hard or frozen wood. For average wood, they are square faced.

HOOK ANGLE: While you are filing the face bevel angles of the cutters and rakers, you are also able to retain or change their hook angles. This is the angle of approach to the wood and may be varied slightly.

If the tooth face is shaped to cause the tooth to tend to bury itself more deeply, it has Positive Hook.

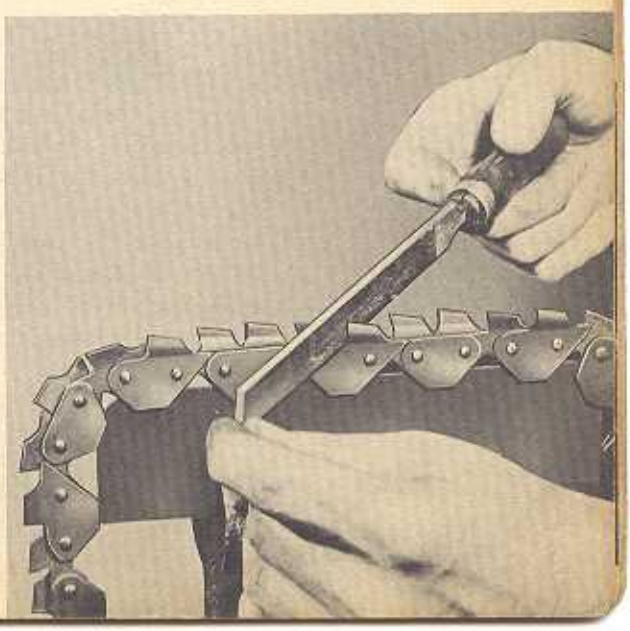


Positive hook is used on all rakers, +10° for standard cutting, +15° for hard or frozen woods.

If the tooth face is shaped so that the tooth tends to pull away from the wood, the tooth has Negative Hook.

Negative hook is used on *cutters only* for average, hard or frozen woods.

This is the correct filing procedure: Use a Disston S-61-5384 Chain Saw file and file the face of the teeth. Remember both the bevel and hook angles are determined by the way you hold the file!



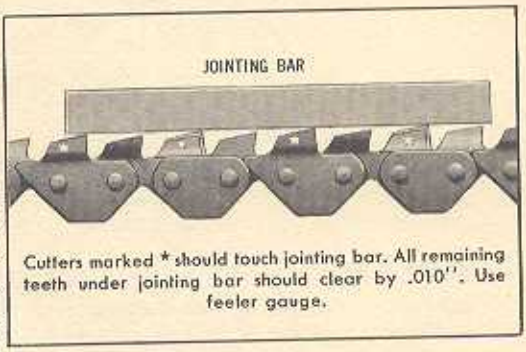
JOINT:

Within each sequence the height of the cutting teeth, set raker teeth and center raker teeth bear a relationship. This is known as joint. In the Disston Straddle Chain, the standard joint is .010" for set and center rakers.

It is necessary that the rakers always be shorter than the cutters, otherwise the plowing and chiseling action of the rakers would take place without benefit of the scoring of the cutters. Joint can be varied to suit individual needs.

For hard or frozen woods the center raker should be .007" lower than the cutters, the set rakers .005" lower than the cutters.

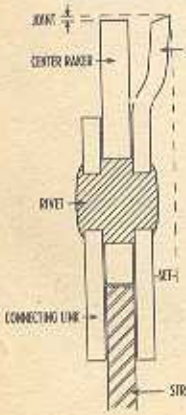
CHECKING JOINT:



Cutters marked * should touch jointing bar. All remaining teeth under jointing bar should clear by .010". Use feeler gauge.

Chain must be mounted securely so that the teeth are all supported evenly. Use of the runway and metal bar is recommended. A ½ inch wide surface of the bar is placed on the chain points. The required joint is obtained by filing the face of the high teeth so that a "feeler" gauge of proper thickness can be inserted between the bar and the tooth being jointed. When the bar rests on the cutting teeth points, a 0.010" thickness gauge can be inserted between the bar and the points of the raker teeth. This is for a standard fitting.

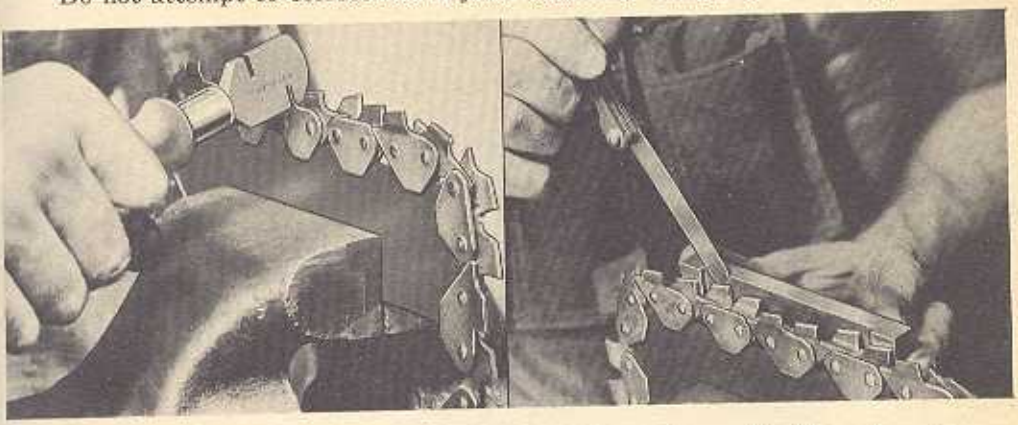
SET:



The set of a chain saw is the distance the tooth is bent outward from a straight tooth. Set is necessary so that the kerf is wide enough to prevent binding of the chain saw as it makes a cut. The amount of set needed is dependent upon the characteristics of the chain plus those of the wood being cut. It is more important that set be equal for both left and right cutters all around the chain, at any fixed value above the minimum need to clear the guide rail and chain itself, than it is to fix a certain value for set.

Correct set for all timber is included in chains as produced in the factory. Unless your chain is subjected to unusually severe pinching conditions it should seldom require resetting if sharpened on the face of the teeth only.

Incorrect jointing of the chain, where cutters on one side are lower than on the opposite side, will give the chain the appearance of being out of set. Do not attempt to correct out-of-joint chains by changing the setting.



After sharpening always check the set of the cutters with the set gauge. Then using the saw set, make it equal on both sides. Do this by placing the tool on the tip of the tooth and gently bending, being careful not to crack the tooth. Then re-check with set gauge. Set-raker teeth do not require resetting and center rakers, of course, do not have set.

STANDARD CHAIN FITTING

Tooth	*Hook Angle*	*Face Bevel*	*Top Bevel*	*Set*	*Joint*
Cutting	−5°	30°	20°	.135″	.000″
Set Raker	+10°	0°	0°	.100″	.010″
Center Raker	+10°	0°	0°	.000″	.010″

HARD OR FROZEN WOOD FITTING

	Hook Angle	*Face Bevel*	*Top Bevel*	*Set*	*Joint*
Cutting	−5°	30°	10°	.135″	.000″
Set Raker	+15°	10°	0°	.100″	.005″
Center Raker	+15°	0°	0°	.000″	.007″

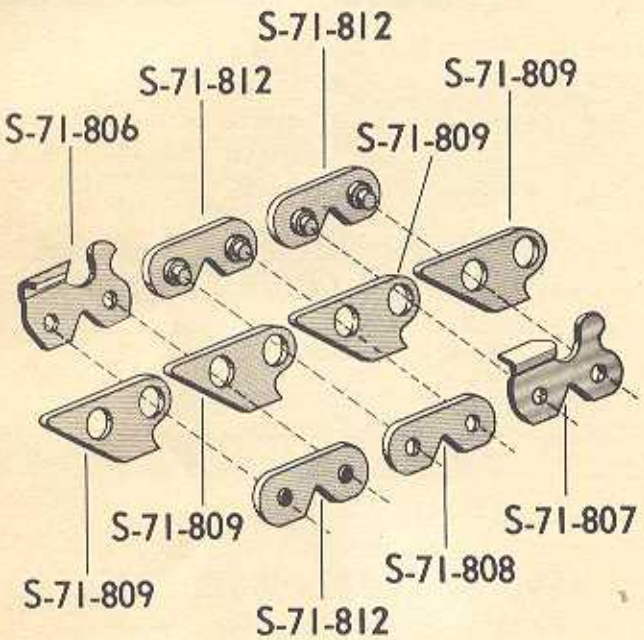
DF CHAIN

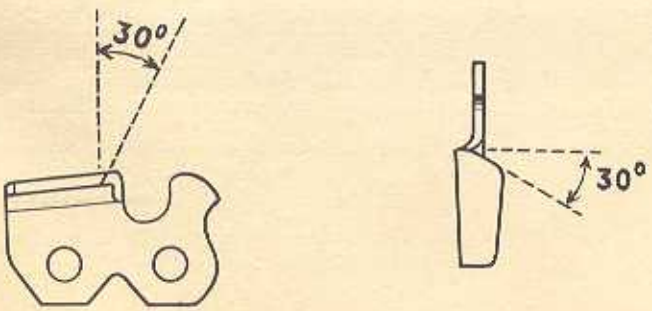
The Disston Fast Cut Chain is also used on Disston One-Man Chain Saws. The Fast Cut is made up of round router teeth with special stabilizing flat sides for making a cleaner-cut kerf.

SHARPENING is accomplished by dressing the inside bevels with a file. The Chain Saw file Part Number S-61-5384 may be used with excellent results.

DRAWKNIFE ANGLE is maintained at approximately 30°.

BEVEL of the cutting tooth is about 30°. This angle is increased for softwoods and decreased for hardwoods.



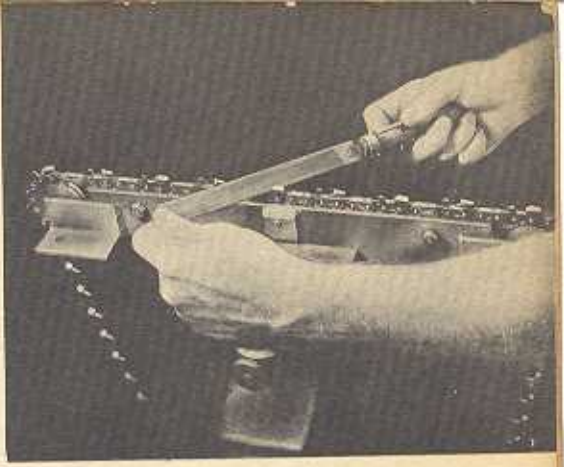


JOINT

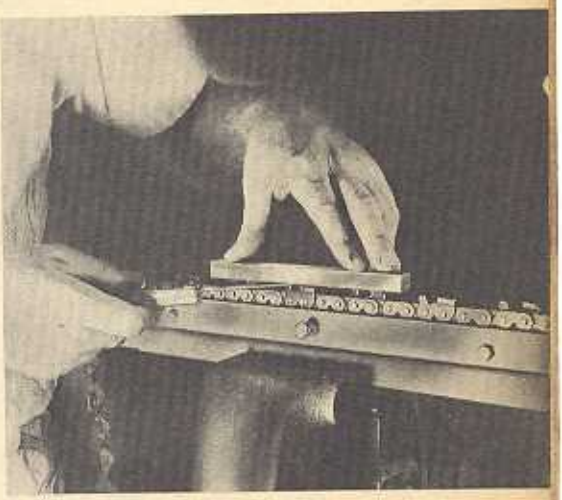
is the distance the top of the rider lug is below the cutter tooth. New chains have a joint of approximately .035" which is desirable for cutting mixed species. In softwoods joint may be increased to .050" but in hardwoods the joint should remain at .035".

Joint must also be maintained in the cutter teeth. The top of each cutter should be of equal height from the guide rail or the chain may "hump" when cutting. To file, lay bar Part Number S-61-5006 across at least three cutters. File the tops of high cutters straight across. Go around the chain following this procedure. Then sharpen back on the face of each tooth until the bright file spots disappear.

For the best Bore-Bucking characteristics keep the rider lugs well rounded on the leading edge.



Dressing Inside Bevels



Checking Joint

REMEMBER — many light filings will give longer chain life. Do not run with dull chains. Try to keep equal bevels, equal drawknife angles, and equal joint throughout the chain.

Filing The Rider Lugs

BORE-BUCKING

This technique permits many cuts with a power saw that cannot be made with a cross-cut. Without wedging, the operator takes advantage of the bind, cuts the log in two without splitting.

Push the saw into the side of the log. When the cutting tip is in 1½", put side pressure on the unit in either direction. This keeps the bar in the cut. Push in all the way at the same time.

The operator then allows the saw to cut downward by its own weight. At the bottom, he takes hold with both hands to keep the chain out of the dirt and to stop the engine instantly.

The top cut is made standing on the top of the log. This gives the top and the side of the log the equivalent of a "side notch" cut so that the log will not split.

Now the saw is almost straight up and down . . . and is cutting the log straight across the top. This is a difficult cut, requiring a dependable saw like your DISSTON.

When do you need the boring technique? For bucking out "jack pots" or places where the logs lay close or tight together. The unusual compactness of the DISSTON allows the operator to get in between the logs (picking out the safe side always). The end of the rail is shown as it breaks through the far side of the log.

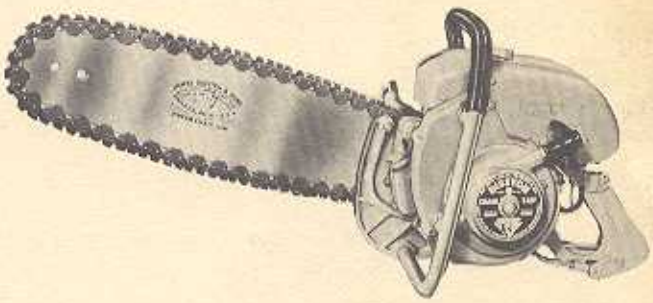
This log is resting top and butt with a strong downward bind, causing the top of the cut to bind. To avoid splitting, the top is first sawed in and down as far as possible without hanging up. Then bore into the bottom of the log and work upward.

Let's review this! We first cut down, then bored in and cut upward. Another boring operation between the top and bottom cut allows the log to break in two at the point of the 2 converging saw cuts.

VARIOUS DISSTON ONE MAN UNITS, RAILS, CHAINS

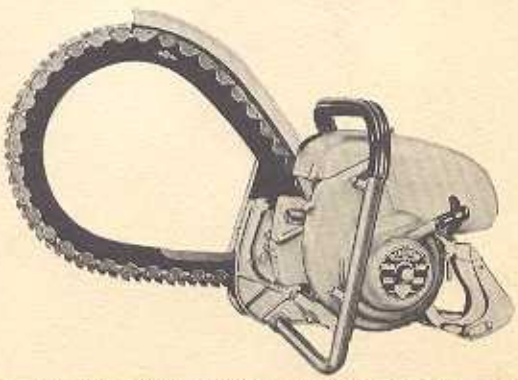
THE DO-101 UNIT WITH SLOTTED RAIL AND TAILSTOCK.

Available with "DF" chain in rail lengths of 20", 26", 32", 36", and 40".



THE DO-101 UNIT WITH STRADDLE TYPE RAIL.

Available with "S" chain in rail lengths of 18" and 24".



THE DO-101 BOW SAW UNIT WITH STRADDLE TYPE RAIL.

Available with 15" bow and "S" chain.

SPECIFICATIONS

ENGINE:

Mercury single cylinder, two-cycle, air cooled. Anti-friction bearings on all rotating parts. Specially designed fuel system provides for efficient operation in any and all positions. Built-in automatic chain lubricator. Crankshaft-type magneto doubly protected against dirt and moisture. Equipped with reed valve to eliminate hazard of back firing.

Bore—2" Horsepower—3½ at 4000 rpm
Stroke—1¾" Rings—3
Speed—4000 rpm Piston Displacement—5.5 cu. in.
Fuel Capacity—3½ pints Fuel—1 part SAE-30 oil to 16 parts gasoline
Chain Lubricator Capacity—⅞ pint
Chain Lubricant—SAE-30 oil, or its dilution with kerosene
Spark Plug—Champion J7J Gap—.025"
Breaker Point Gap—.020" Ignition Timing—Breaker points start to open 26° ahead of top dead center.

TRANSMISSION:

Power transmitted through hardened and tempered steel gears in a roller-bearing mounted gear train which also provides accessory drive. Lubricated with SAE-30 oil.

CLUTCH:

Positive, quick acting, interlocking type. Manually controlled by pressure on rear handle of the unit.

STARTER:

Magnapull, self-rewinding, proven by continued use on Disston Two-Man Chain Saws.

PORTABLE CUTTING POWER FOR EVERY PURPOSE