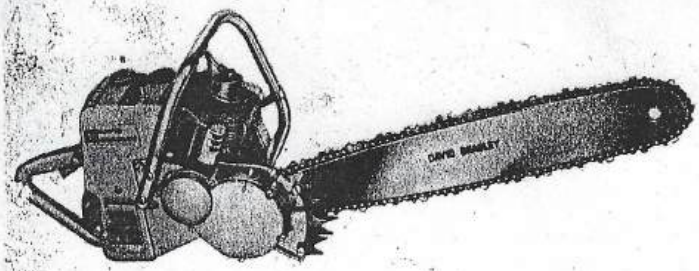
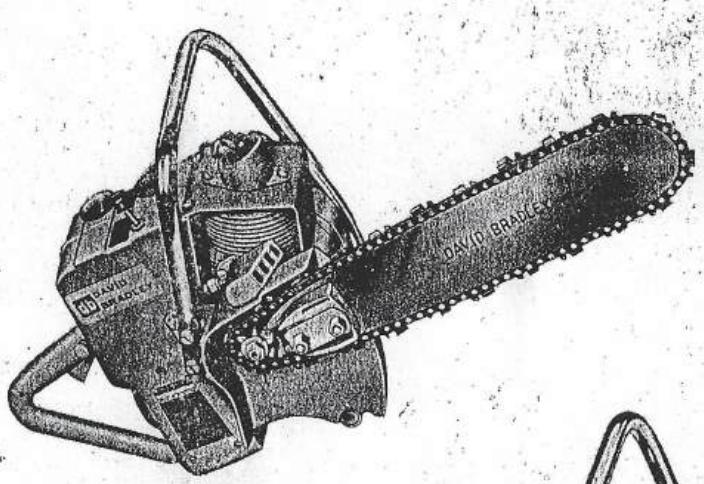
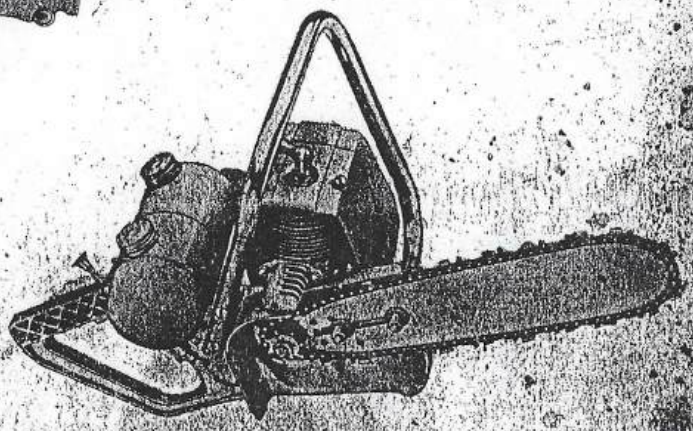
Service

CHAIN SAWS







SOURCE 917.

ISSUED IN THE INTEREST OF BETTER SERVICE BY THE
PARENT SERVICE DEPARTMENT 7[illegible] CHICAGO
DIV. 32 OCTOBER 1960 NO. 1[illegible]
PRICE $1.00

Table of Contents

All chain saws, manufactured by source 917, David Bradley Mfg. Works, use the Power Products two-cycle engine.

The Models AH47 and AH58 engines are used on the new 917.60026 and 917.60027 Economy Saws and the 917.60023 and 917.60024 Slim Line Saws. This manual covers these model saws only.

I. The Operation of a Two-Cycle Engine

Basically, these engines consist of a piston, connecting rod, crankshaft, cylinder, reed plate, crankcase and flywheel.

There are four phases of operation that occur during each revolution of the crankshaft of a two-cycle engine. These phases are the intake, compression, power and exhaust. These engines use a fuel mixture that includes gasoline, oil and air. In Figure 1, the piston is approaching top dead center of the cylinder. The fuel mixture, which had filled the cylinder, has been compressed into a small area between the top of the piston and the end of the cylinder. At this time, the ignition system sends a spark between the terminals of the plug to fire the compressed fuel mixture so that it will explode by the time the piston reaches top dead center.

In Figure 2, the power stroke is shown and the piston has now reached top dead center. The expanding gases, caused by the burning of the fuel mixture, drives the piston down toward the crankshaft.

As the piston moves toward the crankshaft, it slightly compresses the fuel mixture in the crankcase.

The reeds are then pressed against their seats by the pressure in the crankcase, trapping the fuel mixture in the crankcase and preventing blowback into the carburetor.

In Figure 3, as the piston continues its downward stroke, the skirt of the piston uncovers the exhaust port of the cylinder first; then, uncovers the intake port. As the exhaust port is uncovered, the remaining pressure created by the expanding gases is released through the exhaust port.

By the time the intake port is uncovered, the pressure in the cylinder is less than the pressure in the crankcase, and part of the slightly compressed fuel mixture in the crankcase is now blown into the cylinder.

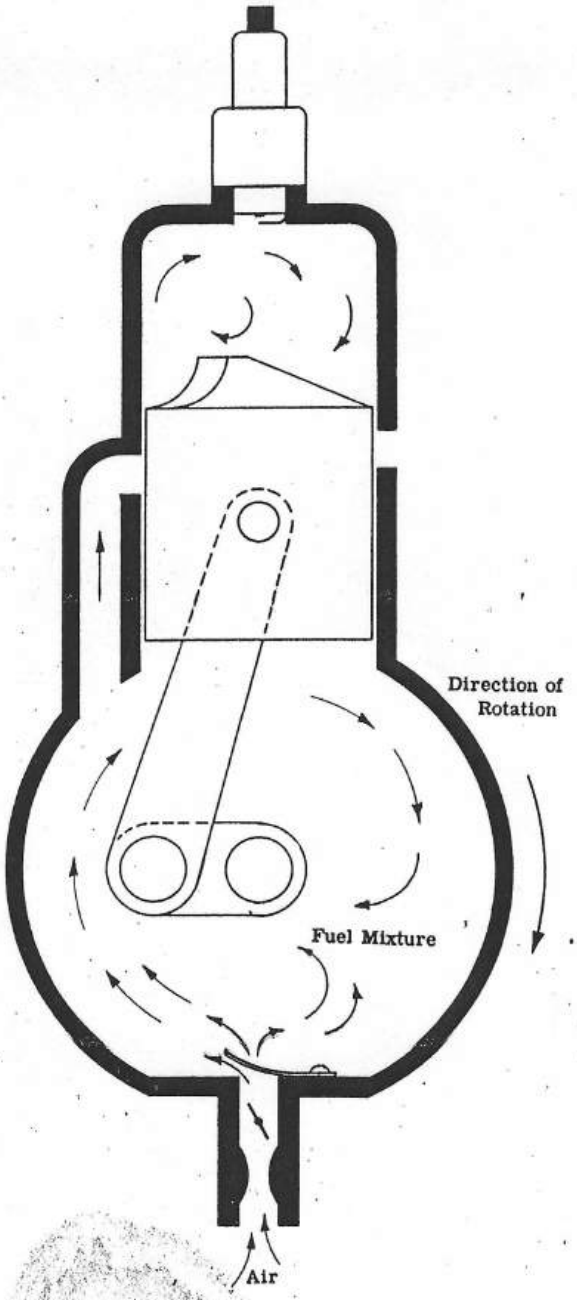


Figure 1

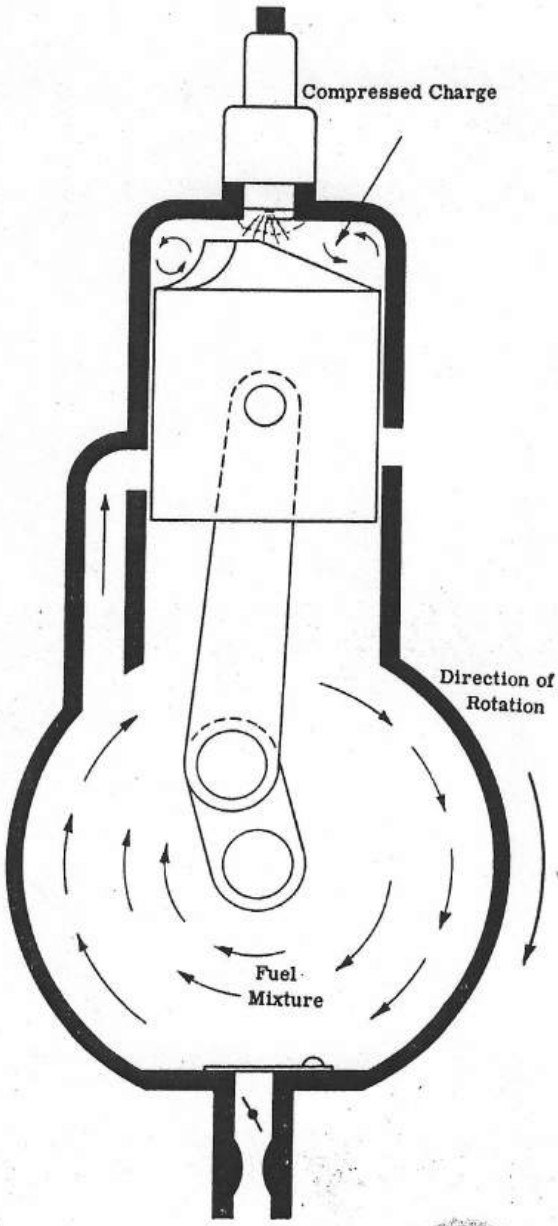


Figure 2

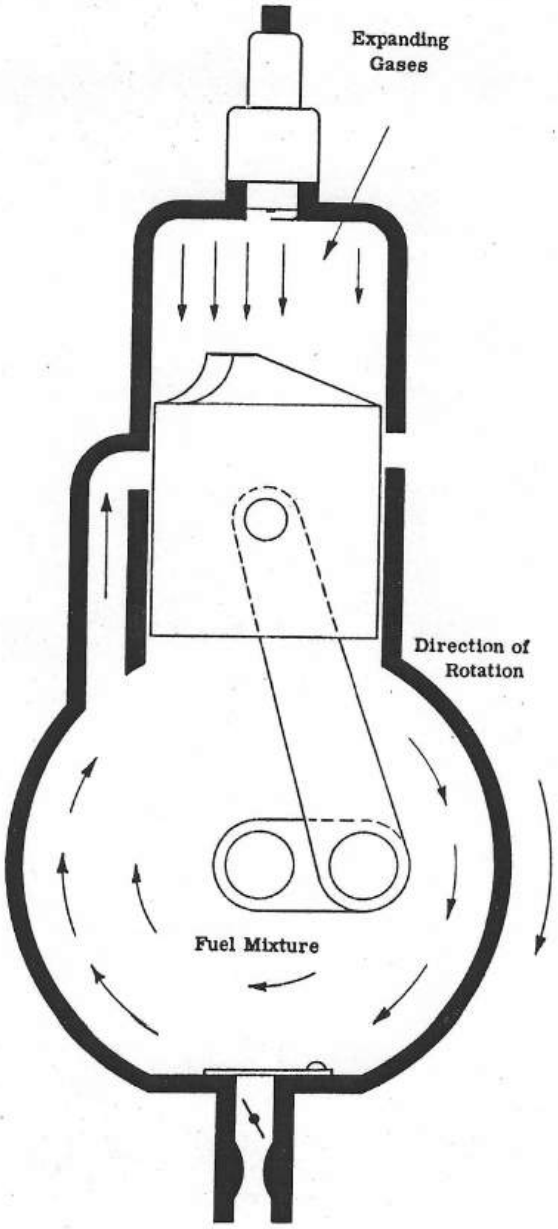


Figure 3

After the piston completes its downward stroke, Figure 4, the momentum of the flywheel continues to turn the crankshaft, applying force through the connecting rod to the piston, forcing the piston upward into the cylinder. The skirt of the piston closes the intake port and the exhaust port, and the new charge of fuel mixture is then trapped in the cylinder.

As the piston moves upward, the fuel mixture is compressed. At the same time, the upward movement of the piston decreases the pressure in the crankcase until it becomes less than atmospheric pressure. This decrease in pressure lifts the crankcase reeds off of their seats and permits air to flow through the carburetor to replenish the fuel mixture in the crankcase.

The fuel mixture also contains oil that lubricates the moving parts. The excess oil in the mixture is burned with the fuel mixture. The amount of fuel mixture that enters the crankcase is controlled by the throttle valve. The wider the throttle valve is opened, the more fuel mixture enters the crankcase and the greater the engine speed.

This is called a cross port-type system of a two-cycle engine because the fuel mixture enters through a port on one side and is exhausted through the opposite port. This type of system is used on the Model AH47 engine.

Loop Scavenging System

The basic difference between the scavenging system and the cross post system is the method by which the fuel mixture is introduced into the cylinder. At this time there are two types of scavenging systems. The first loop scavenging system, used in the Model AH81, is shown in Figure 5. The piston is constructed with large ports in the piston skirt. When the piston is at the bottom of its stroke, these ports line up with passages in the cylinder. The fuel mixture that was slightly compressed during the power stroke of the piston passes through the ports in the piston into the cylinder.

The AH58 engine used on the slim line models uses the newest type loop scavenging system. See Figure 6. It differs with the original scavenging system only in the way that the fuel mixture is transferred into the cylinder. This new system doesn't use any ports in the piston skirt for transfer passages. Instead, the fuel mixture is moved through the passage ways entirely within the cylinder walls.

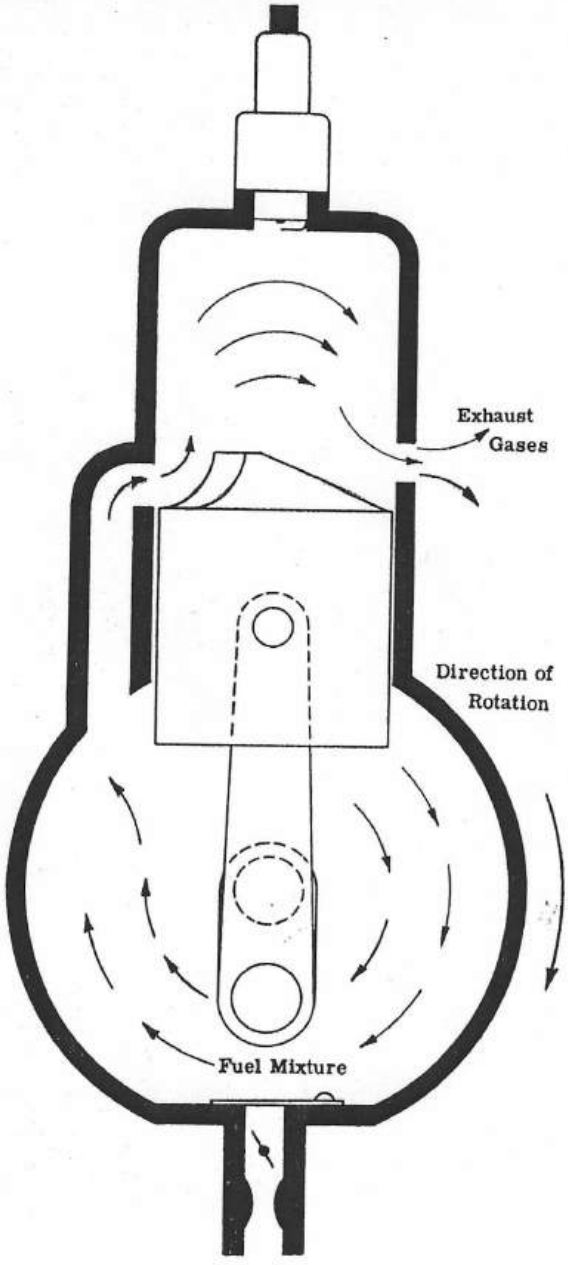


Figure 4

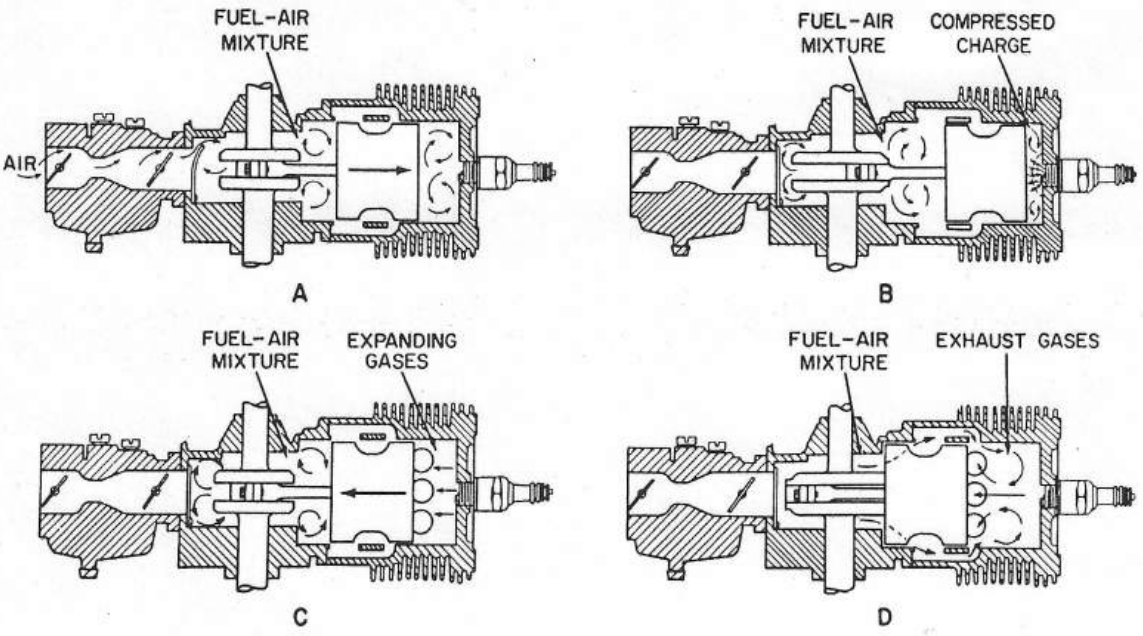


Figure 5

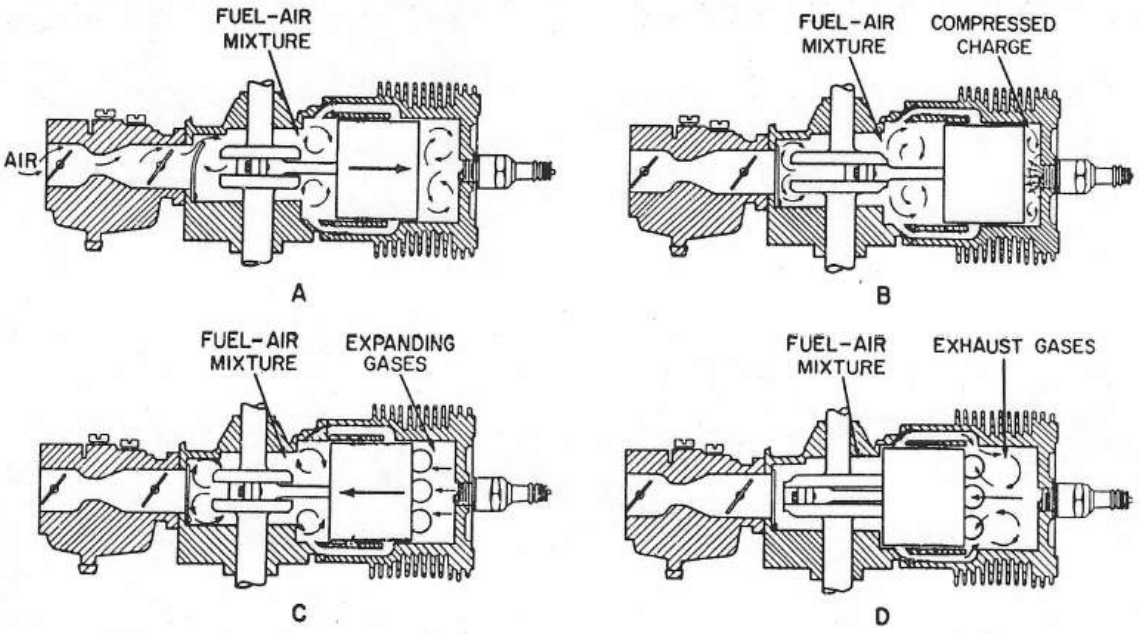


Figure 6

By introducing the fuel mixture at two sides of the cylinder, the need for the conventional piston with sloped head is eliminated. As a result, a flat headed piston is used. This system also produces a somewhat greater horsepower per unit weight by providing a more complete removal of the exhaust gases at the end of the power stroke.

II. Trouble Shooting

A thorough check of the two-cycle engine, before overhauling, will frequently point up a cause of improper operation. If checking the carburetor and ignition system doesn't show a faulty operation, check the following steps:

(A) Remove the spark plug and insert a compression gauge in the spark plug port. Crank the engine by pulling the starter rope and checking the compression reading on a gauge. The compression on the AH47 engines should be approximately 70 pounds, while the compression on the AH58 engines should be about 90 pounds.

(B) If a compression gauge is not available, disconnect the spark plug lead to insure that the engine will not start. Then, crank the engine by hand in direction of normal rotation. There should be considerable resistance to turning, as the piston approaches top dead center. Hold the piston against compression for several seconds. If the resistance to pull decreases rapidly, it indicates poor compression. Poor compression is usually the result of worn piston rings, worn cylinder bore or the ring gaps are not staggered around the piston.

Usually, on these engines, poor compression can quickly be remedied by replacing the rings. These engines have cast iron lined cylinder walls, which do not wear very easily.

(C) Crank the engine slowly checking for noise, binding, scraping or other signs of improper operation. These symptoms may be due to damaged bearings or to a bent crankshaft or connecting rod.

(D) Rock Crankshaft back and forth to check for excessive play. Excessive play indicates worn rod bearings or a worn piston pin.

(E) Check seals at the ends of the crankcase for evidence of oil leaks which indicates a faulty seal. A leaking crankcase or seal will result in erratic operation and hard starting.

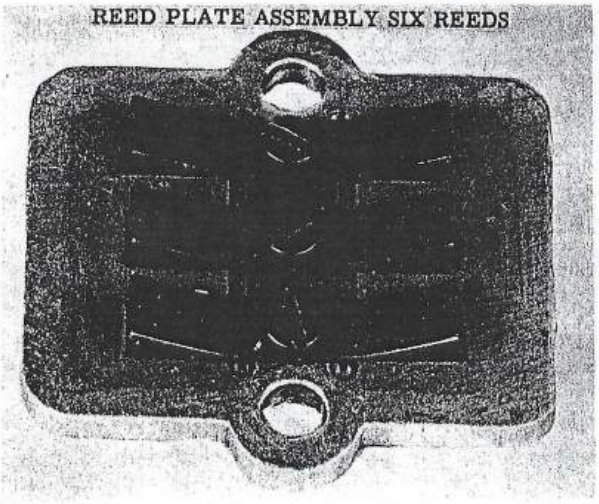


Figure 7

(F) Check around the entire crankcase for leaks where crankcase halves are joined.

(G) Remove the carburetor and check the reed plate assembly. The reeds should not be warped, bent or cracked. Also, the reeds should not be opened more than a .005 inch. Note that the Model AH58 has a six reed reed plate. See Figure 7.

III. Magneto (See Figure 8.)

The main purpose of the magneto assembly is to concentrate the electricity that is generated into a very high voltage discharge of short duration. Every time an electric current flows, it sets up a magnetic field. Also, everytime a magnetic field is increased, decreased or changed in

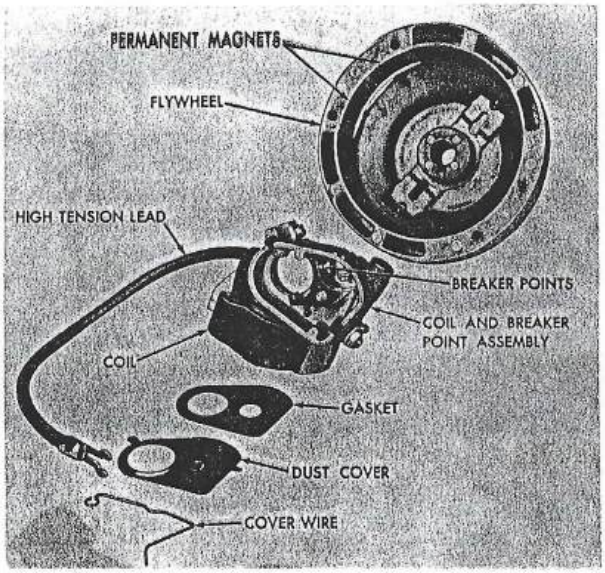


Figure 8

direction, an electric voltage is set up in any nearby conductor. Thus, if electricity flows through a coil around an iron core, it will make an electromagnet out of the iron core. Also, if the direction of magnetism passing through an iron core is reversed, a voltage will be generated in the windings of a coil of wire around this core.

A magneto is simply a specialized form of electric generator which uses this principle in order to generate electricity.

The condenser is a storage reservoir for electricity. It consists of two strips of foil with paper insulation between them, wound together so that one of the strips of foil can be grounded and the other strip of foil connected to the live breaker point. At the instant of breaker point opening, the insulating paper between the two strips of foil acts as a storage reservoir for electricity during an extremely small fraction of a second to prevent the arc from crossing the breaker points. This insures long life of breaker points by preventing pitting.

If the breaker points are dirty, the discharge will be very weak. The points can be cleaned with clear gasoline. If the points are severely burned or worn, both the points and the condenser should be replaced.

The particular engines on the slim line saws, the Model AH58, do not require readjustment of the timing plate when replacing the magnetos. These engines have preset timing, the stator assembly being held to the crankcase by two screws. (See Figure 9, illustration A.)

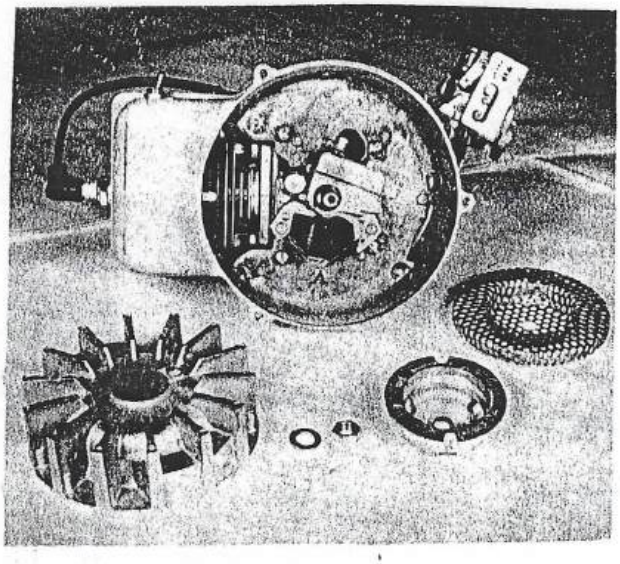


Figure 9

NOTE: The dust cover on the magneto is stamped with the correct setting to be used for the points. Some early production of these engines will have a breaker point setting of .020, but all other production will have a .15 setting. Be sure to check the dust cover for the proper setting, as each cover will be so marked.

IV. Carburetor

Figure 10 is a display of the three different carburetors used on the slim line and unit frame saws.

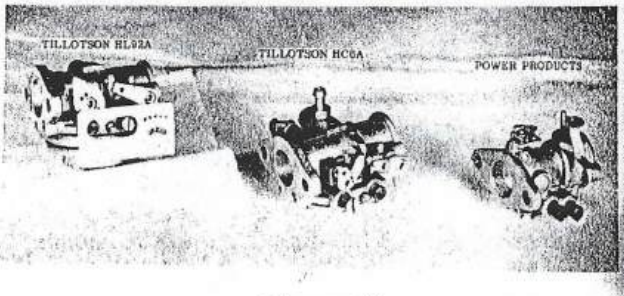


Figure 10

The Tillotson carburetor on the left, HL92A series, is used on the slim line units. The Tillotson carburetor in the middle is the HC6A series and the Power Products carburetor on the right, will be used on the unit frame saws.

Until this time, all the Daved Bradley saws used Tillotson carburetors. The new Power Products carburetor will also be used on some of the production of the new Unit Frame saws.

Figure 11 shows a close-up view of the Power Products carburetor. Follow the steps below for proper adjustments:

1. Idle adjustment: turn the idle screw in finger tight in a clockwise direction, then back out idle screw 5/8 turn. If the idle screw is knurled, back it out one full turn.

2. High speed adjustment: turn the high speed screw in finger tight in a clockwise direction. Then, back out high speed screw the same number of turns as the idle screw - one (1) complete turn if the idle screw was knurled and 5/8 of a turn if it was smooth.

3. Make the final adjustments on the carburetor after the engine has warmed up.

4. If the carburetor is extremely dirty, the Welsh plug can be removed. To remove this plug, drill near the top and then pry out. (See Figure 11.)

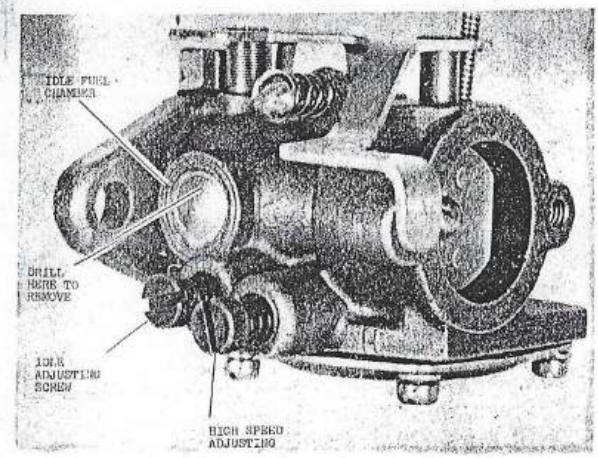


Figure 11

5. The diaphragms are easily serviced or replaced by removing the four screws that hold the diaphragm cover to the carburetor body. (See Figure 12.)

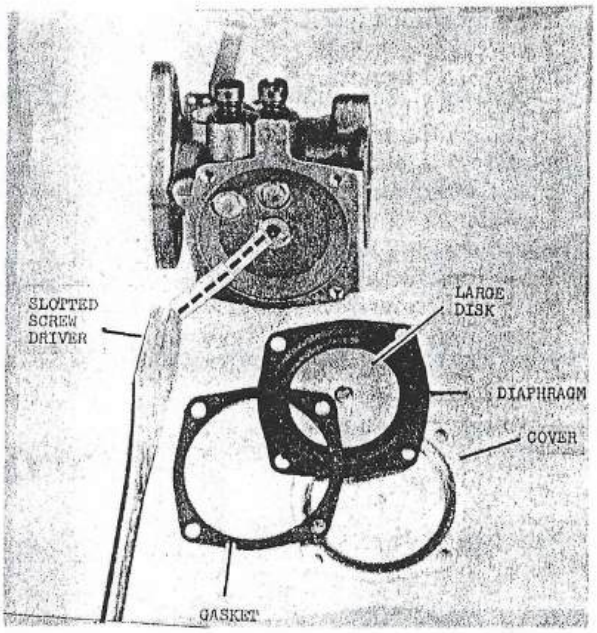


Figure 12

6. Be sure and inspect the diaphragm for cracks or tears. The gasket is placed between the main body of the carburetor and the diaphragm. Then, place the metal disc against the diaphragm, insert and tighten screws.

Disassembling Carburetor (See Figure 13)

When disassembling the carburetor, it is important that the outside of the carburetor be

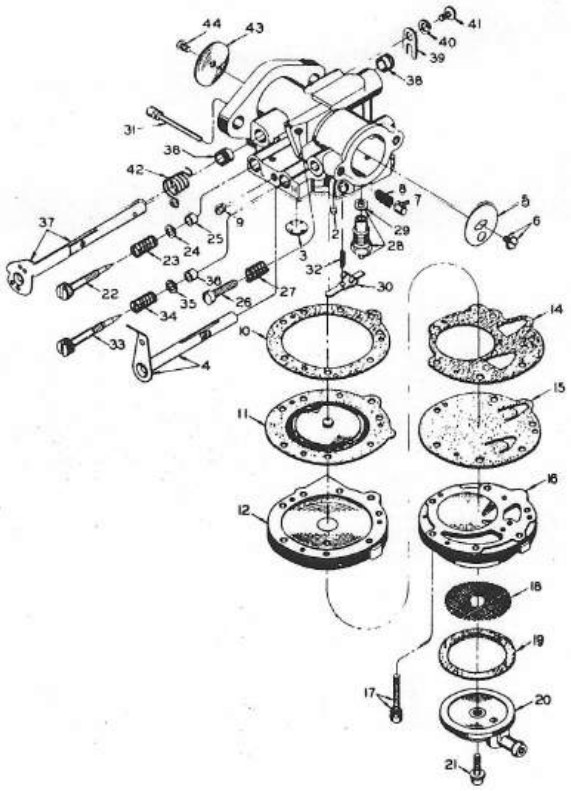


Figure 13
HL-92A TILLOTSON CARBURETOR

Used on the "Slim Line" AH58 Engines. (See chart on following page.)

cleaned of all dirt and grime. To disassemble the Tillotson HL92A carburetor, follow the steps listed below:

1. Remove the nylon strainer cover retaining screw and cover.
2. Remove the strainer cover gasket and strainer screen.
3. Remove the screws and fuel pump body.
4. Remove the fuel pump diaphragm and gasket.
5. Remove the main diaphragm cover plate.
6. Remove the main diaphragm gasket.
7. Remove the main diaphragm.
8. Remove the inlet control lever fulcrum pin, lever and tension spring.

CARBURETOR	(HL92A)
Ref. No.	Part Name
2	Body Channel Cup Plug
3	Body Channel Welch Plug
4	Choke Shaft & Lever
5	Choke Shutter
6	Choke Shutter Screw & Lockwasher
7	Choke Friction Pin
8	Choke Friction Pin, Spring
9	Diaphragm Chamber Drain Screw
10	Diaphragm Gasket
11	Diaphragm
12	Diaphragm Cover
14	Fuel Pump Gasket
15	Fuel Pump Diaphragm
16	Fuel Pump Body
17	Fuel Pump Body Screw & Lockwasher
18	Fuel Strainer Screen
19	Fuel Strainer Cover Gasket
20	Fuel Strainer Cover
21	Fuel Strainer Cover Retaining Screw
22	Idle Adjustment Screw
23	Idle Adjustment Screw Spring
24	Idle Adjustment Screw Washer
25	Idle Adjustment Screw Packing
26	Idle Speed Regulating Screw
27	Idle Speed Regulating Screw Spring
28	Inlet Needle, Seat & Gasket
29	Inlet Seat Gasket
30	Inlet Control Lever
31	Inlet Control Lever Pinion Screw
32	Inlet Tension Spring
33	Main Adjustment Screw
34	Main Adjustment Screw Spring
35	Main Adjustment Screw Washer
36	Main Adjustment Screw Packing
37	Throttle Shaft & Lever
38	Throttle Shaft Bushing
39	Throttle Shaft Clip
40	Throttle Shaft Clip Lockwasher
41	Throttle Shaft Clip Ret. Screw
42	Throttle Shaft Return Spring
43	Throttle Shutter
44	Throttle Shutter Screw & Lockwasher

9. Remove the inlet needle.

10. With a thin wall 5/16 hex socket wrench, carefully remove the inlet seat . The fuel inlet seat should not be removed unless it has been definitely decided that the seat is faulty as evidenced by persistent flooding of the carburetor. In such case, complete replacement of the inlet needle and seat assembly should be made.

11. Remove idle adjustment screw.

12. Remove main adjustment screw.

Before reassembling the carburetor (in reverse order to the above steps), wash all parts in clean gasoline.

In making carburetor adjustments, turn adjustments carefully and do not force needles into their seats.

When servicing carburetors, use a good brand of carburetor cleaner and soak only the metal parts. Be sure to use new gaskets when reassembling the carburetor. Never use the old gaskets.

Carburetor Troubleshooting

Trouble	Cause	Remedy
Carburetor Floods	Dirt or foreign particles preventing inlet needle from seating.	Remove, clean & replace.
	Diaphragm lever spring not seated on lever dimple.	Remove lever and reinstall.
	Diaphragm distorted and interferring with the lever operation.	Replace diaphragm.
Engine will not accelerate	Idle adjusting screw set too lean. Incorrect setting on diaphragm lever. Inlet Needle binding. Diaphragm cover plate loose. Diaphragm gasket leaking.	Enrich idle adjustment. Reset. Remove, clean & replace. Tighten. Replace.
Engine will not idle	Incorrect idle adjustment. Idle discharge ports clogged. Diaphragm lever set incorrectly.	Reset to best idle. Blow out with compressed air. Reset Diaphragm lever so it is flush with the floor of the diaphragm chamber.
Engine runs out lean in a cut	Tank vent not operating correctly. Leak in Fuel System from tank to pump. Main fuel orifice plugged. Ruptured fuel pump.	Clean or replace. Tighten or replace fittings. Clean. Replace.
Carburetor runs rich with main adjustment shut off.	The 1/8" diameter nozzle channel plug is not sealing.	Install new plug.

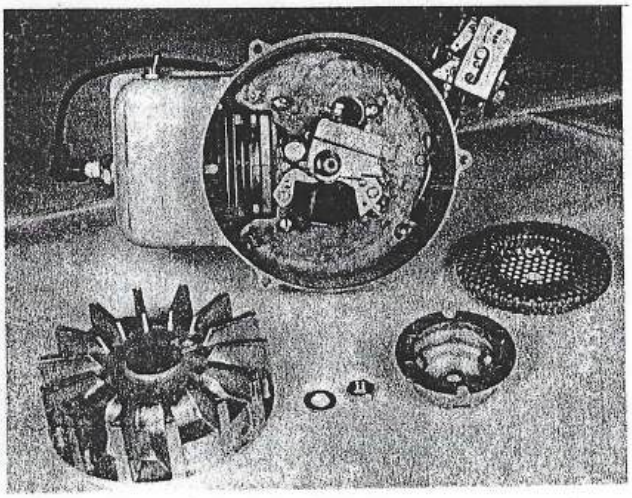


Figure 14

V. Governor

The air vane governor (see Figure 14) on these saws are quite different from the air vane types used on lawn mowers. Whereas the governors on lawn mowers open the throttle for heavy loads, the chain saw engine governor works differently. The speed of the chain saw engine is controlled manually for the cutting operation; however, when it is out of the cut, the air vane governor keeps the engine from increasing the RPM to an excess speed and damaging the guide bar and chain.

VI. Separating Crankcase Halves From Crankshaft

Remove all of the screws that hold the crankcase

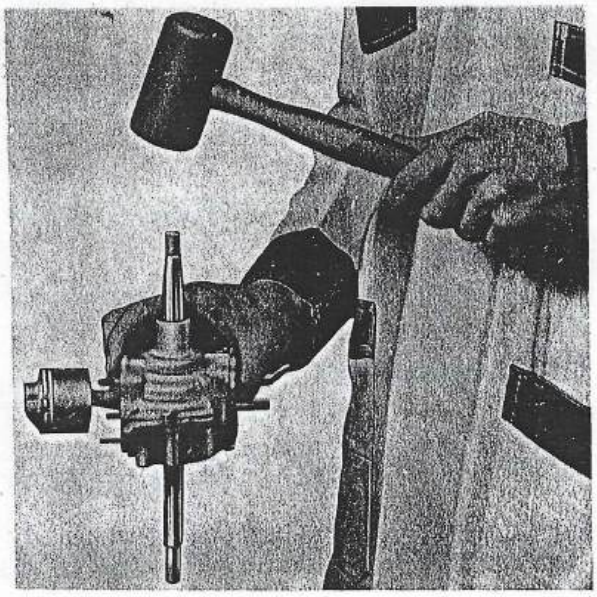


Figure 15

halves together. Hold the crankshaft vertically, as seen in Figure 15. Grasp the top half of the carnkcase and hold firmly. Strike top end of the crandshaft firmly with a mallet. The halves of the crankcase should then separate. Be careful that the bottom of the crankcase doesn't suddenly fall loose and become damaged. Make sure that the mating edges of the crankcase halves are thoroughly clean to insure a good seal on reassembly. Crankcase halves are always matched. Never replace just one half. When installing the crankcase halves on the crankshaft, special tools should be used. (See Figure 16.)

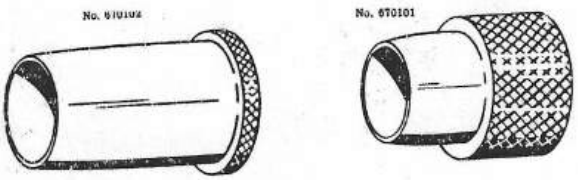


Figure 16

These specially designed tools are needed to prevent damage to the seals. The seal tool, No. 670101, is used on the seal at the magneto end of all crankcases. The seal tool, No. 670102, is used on the seals at the power take-off end of the crankcase with a 5/8" crankshaft. The seal tool, No. 670115, is used on all 7/8" crankshafts. The AH47 and AH58 have a 5/8" crankshaft. The sleeve tool should be placed in the crankcase bore from the direction opposite the crankshaft. Be sure and check the shaft for burrs, nicks, or scratches before inserting it through the tool. Insert tapered end of the crankshaft through half of the crankcase that has the long, thin hub. Order these tools from Department 806, Chicago, Illinois.

VII. Connecting Rod

The connecting rod is an alloy steel forging which is machined as one piece. At the crankshaft end, a bearing composed of a cartridge-type needle bearing is pressed into the wrist pin end. Thirty needle bearings are used on Model AH47. A crankshaft bearing of 28 needle bearings is used on the AH58. (See Figure 17.)

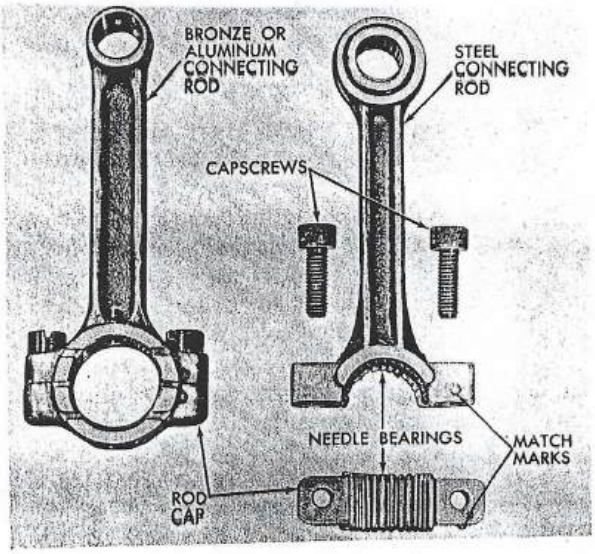


Figure 17

Each time the crankshaft is removed from the crankcase, the seals in the crankcase should be replaced. To remove these seals, use a sharp soft metal tool, such as an ice pick. (See Figure 18.)

Insert the pick between the retainer spring "A" and the crankcase retainer spring groove so that the point of the pick is near the gap in the spring. Carefully pry the retainer spring out of the groove, and then remove the retainer "B" and the seat "C". Do not remove the ball bearings from the crankcase halves unless they are worn or noisy.

To remove the ball bearings from the crankcase halves, it is necessary to apply heat to expand the crankcase halves. Remove the seals and place the crankcase halves face down on a 1/8" piece of steel plate and place it on an electric plate. (See Figure 19.)

The crankcase halves should be heated to about 400F. At this temperature, the bearings should drop out. If the bearings fall out without applying heat, both the bearings and the crankcase should be replaced.

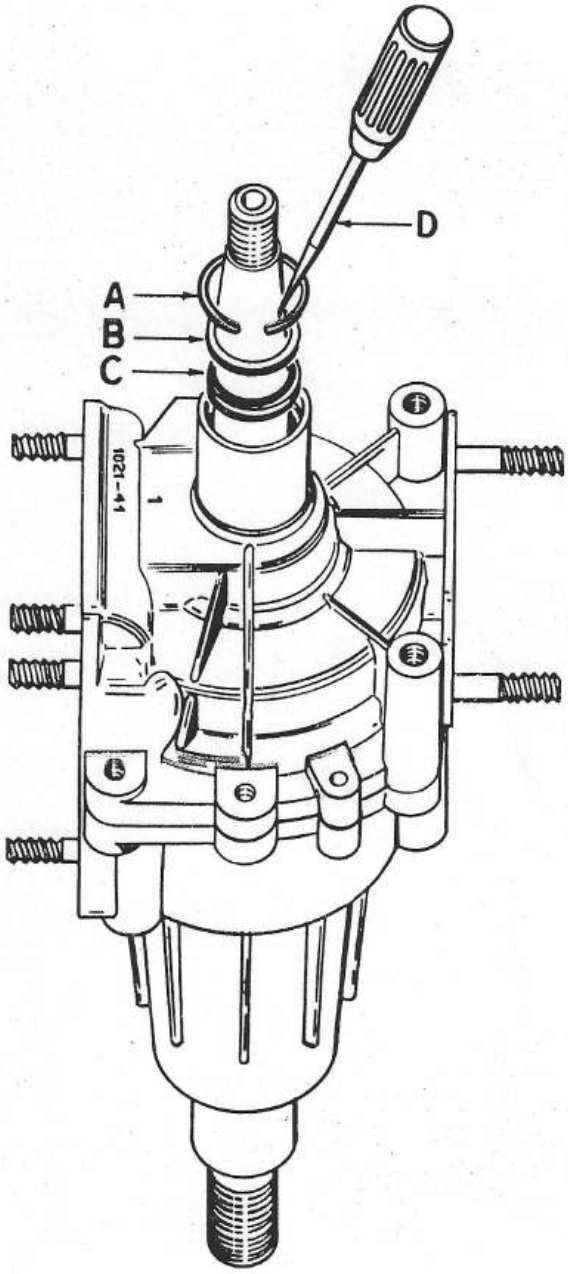


Figure 18

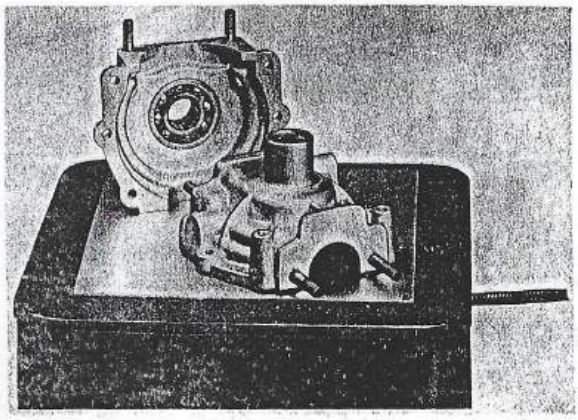


Figure 19

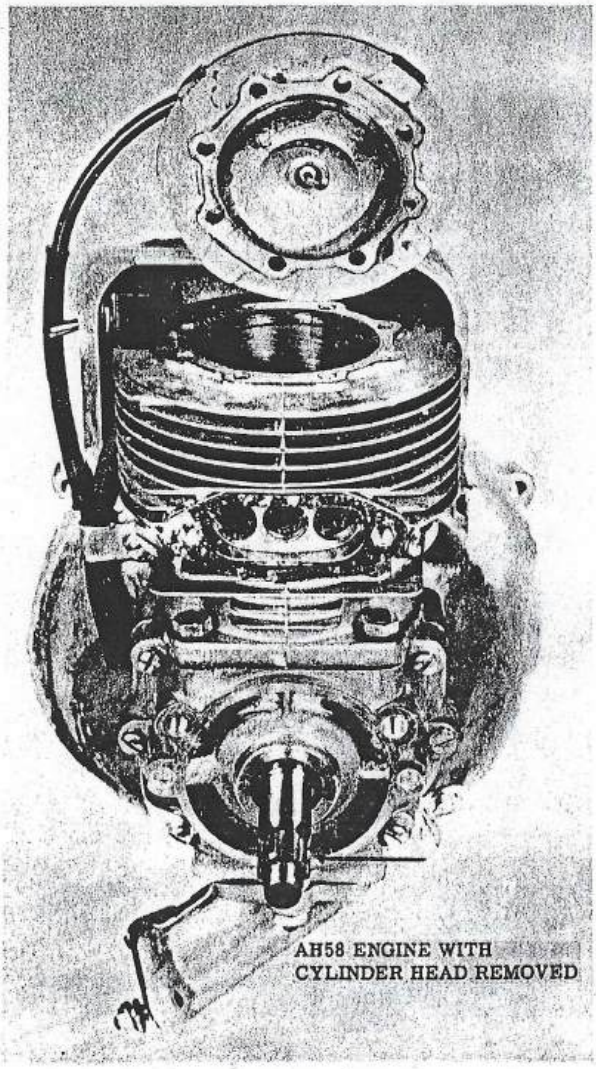


Figure 20

To install new bearings, the crankcase halves should again be heated and the new bearings placed in position.

Figure 20 shows the AH58 engine with the cylinder head removed.

NOTE: This engine does not use a head gasket.

This is the first chain saw engine in the Bradley line with a removable bolt on head. This, of course, makes it easier for cleaning carbon from the piston top. Note the crankshaft extension is machined with a spline gear near the end. This type of extension is used on all gear driven saws. Figure 20A shows a view of both the AH47 and AH58 engines. The arrows point out the difference in cran aft extensions for direct drive and gear drive saws.

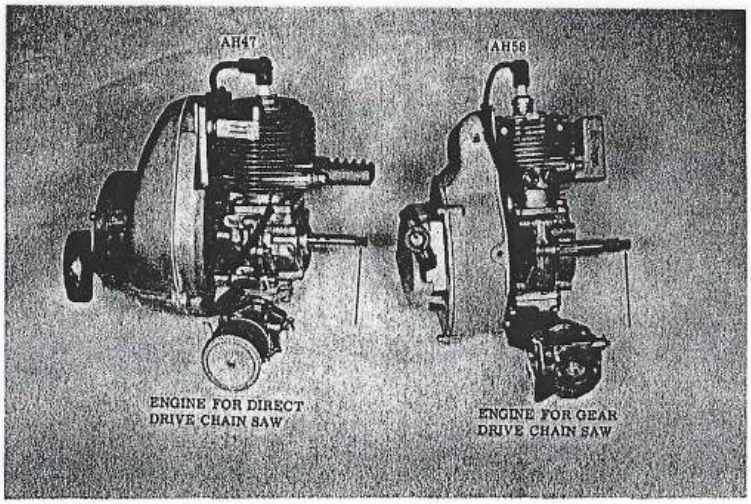
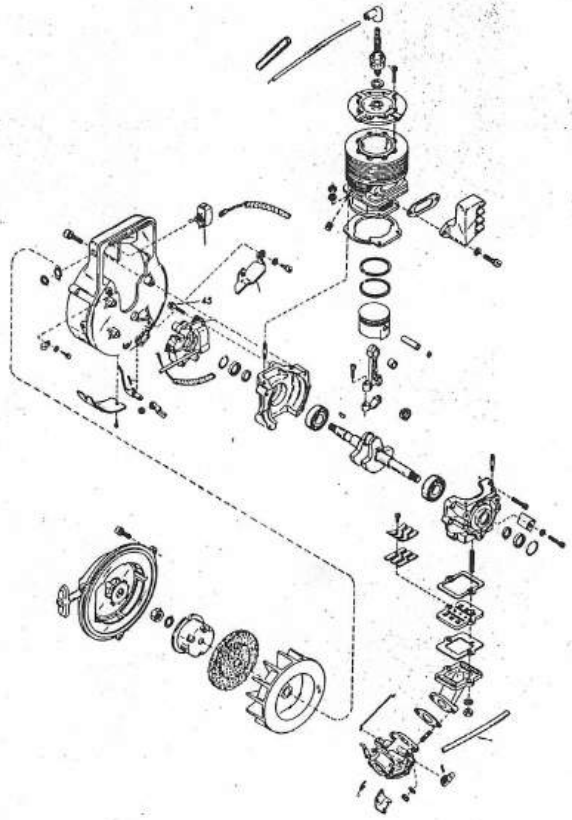


Figure 20A



EXPLODED VIEW OF AH 58 ENGINE

Two-Cycle Engine Specification

	AH 47	AH 51	AH 58	AH 82
Cylinder Bore	2.000 2.001	2.000 2.001	2.093 2.094	2.5030 2.5035
Piston Diameter	1.9949 1.9954 Includes Tin Plate	1.9949 1.9954 Includes Tin Plate	2.0883 2.0880	2.4960 2.4963
Connecting Rod Diameter Crankshaft End	.6936 .6939 without needles	.6936 .6939 without needles	.9407 .9412 without needles	.9407 .9412 without needles
Connecting Rod Journal	.5615 .5618	.5615 .5618	.7499 .7502	.7499 .7502
Lower Main Journal	.6690 .6694	.6690 .6694	.6994 .6990	.7871 .7875
Top Main Journal	.6690 .6694	.6690 .6694	.6994 .6990	.7498 .7501
Piston Pin Diameter	.3750 .3751	.3750 .3751	.4999 .4997	.4997 .4999
Width Piston Ring Groove	.0965 .0975	.0965 .0975	Top .0665 .0655 Lwr .0655 .0645	Top .0655 .0665 Lwr .0645 .0655
Width Piston Ring	.093 .0935	.093 .0935		.0615 .0625
Connecting Rod Needle Diameter	.0653 .0655	.0653 .0655	.0943 .0945	.0943 .0945

VIII. Centrifugal Clutch

All the Bradley chain saws, both gear and direct drive, use the centrifugal type clutches.

These clutches are so designed that they will not engage while the engine is idling. The weight of the friction shoes will not overcome the spring tension until the crankshaft turns at approximately 2350 RPM. When this speed is reached, the friction shoes and the drum are fully engaged. The clutch springs then disengages the shoes from the drum when the RPM of the crankshaft drops below 2350 RPM.

The clutches used on these saws have all been of the two-shoe variety; however, with the new unit frame saws, a four-shoe clutch has been introduced. This clutch engages at approximately 2700 RPM.

Clutch Failures

1. Chain pinched while making a cut.

Remedy: Always release the throttle immediately. Continual running of the engine will rapidly wear the clutch shoes.

2. Clutch engages intermittently during idling periods.

Remedy: The stretched or broken springs should be replaced.

3. Noisy or chattering clutch.

Remedy: Remove clutch drum and clean bearings with steel wool and lubricate.

Removing Clutches

In order to easily remove the clutches from the crankshaft, a clutch puller should be used. Two tapped holes are provided in the drive plate for use of a clutch puller. (See Figure 21.)

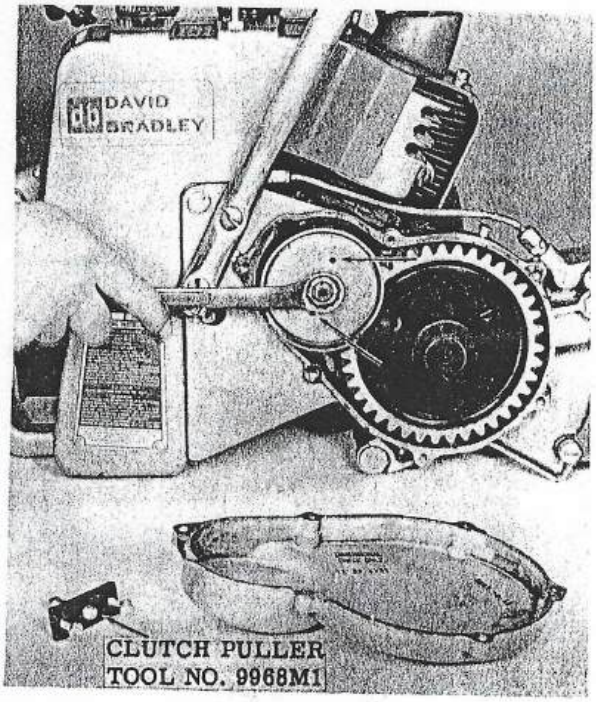


Figure 21

Some clutches used on previous model saws used set screws for securing the clutch unit to the engine crankshaft. With this type of clutch, the two tension springs holding the friction shoes must be removed. Then remove the shoes in order to loosen the set screws. (See Figure 22.)

In order to remove the new four-shoe clutch from the crankshaft, follow steps listed below:

1. Remove the guide bar and chain.

2. Remove the muffler from the engine.

3. Rotate the flywheel until the piston is below

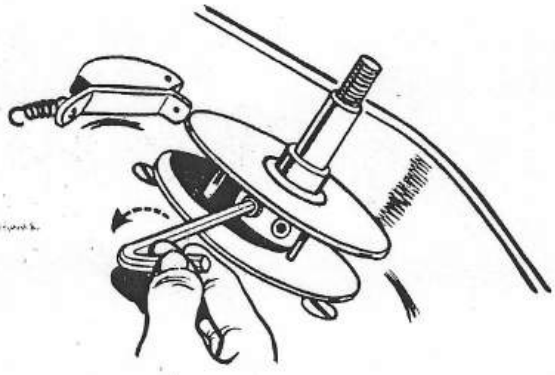


Figure 22

the exhaust port holes, and insert a wooden dowel in the holes. This will keep the crankshaft from turning.

4. Remove the nut and flat washer that holds the clutch.

5. Remove the clutch drum from the crankshaft.

6. Pull the clutch from the crankshaft using the clutch puller.

The clutch puller, No. 9968M1, is available and can be used on all clutches used by source 917. Order from David Bradley Mfg. Works, Bradley, Illinois.

If the friction shoes of the four-shoe clutch need to be replaced, use a screw driver to remove the two garter-type springs holding the friction shoes. See Figure 23. Be sure, when reassembling the shoes, that the spring coupling is located between the shoe opening. (See Figure 24, illustration A.)

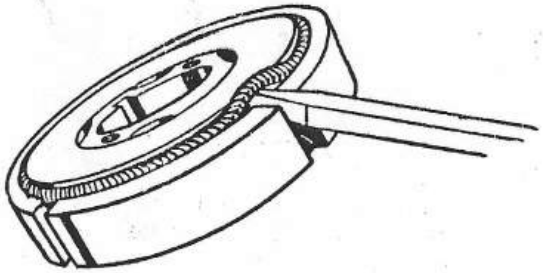


Figure 23

Rewind Starters

The Fairbanks-Morse starters are used on most of the Bradley chain saws. These starters

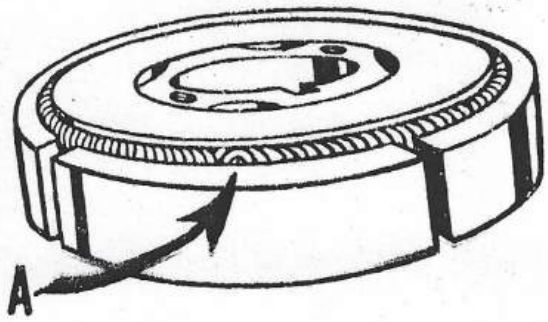


Figure 24

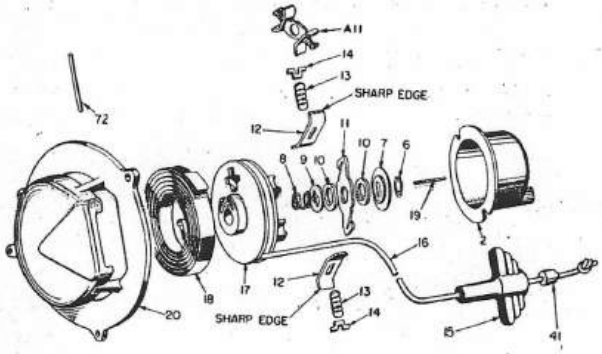
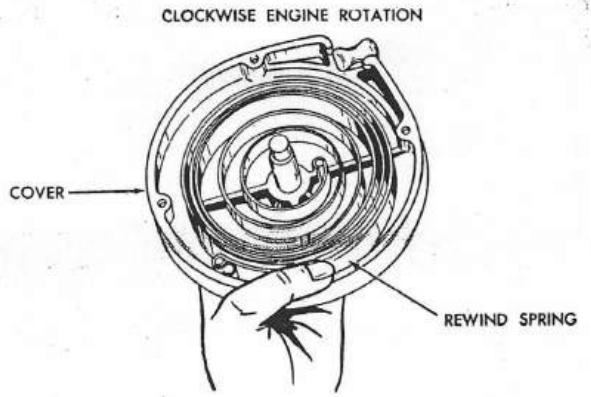


Figure 25

Ref. No.	Part Name
2	Cup
6	Retaining Ring
7	Brake Retainer Washer
8	Brake Spring
9	Brake Washer
10	Fiber Washer
	Friction Shoe Assembly
11	Brake Lever
12	Friction Shoe Plate
13	Friction Shoe Spring
14	Spring Retaining Plate
15	Handle
16	Cord
17	Rotor
18	Rewind Spring
19	Centering Pin
20	Cover
41	Handle Washer
72	Roll Pin

are quite rugged and will give long service. Through use, several things have to be checked; rope wear and dull edges of the friction shoes. The friction shoes each have one edge ground to produce a sharp edge. This edge tends to round off, causing the starter to slip



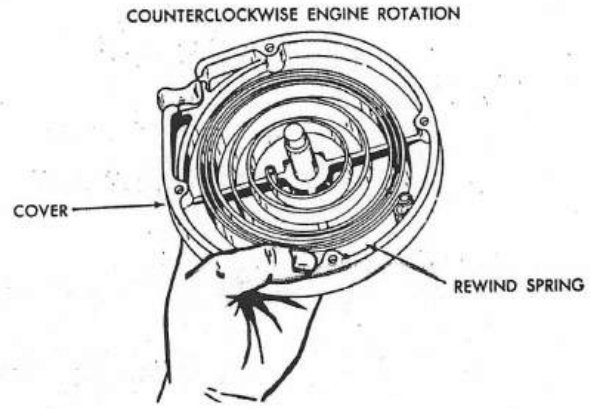


Figure 26

Spring Rotation for Clockwise and Counterclockwise Rotating Engines

and not grab the shaft cup properly. This can quickly be remedied by using a file on the dulled edges to restore their sharpness. This starter can be removed from the engine as a complete unit. (See Figure 25.)

To disassemble the starter:

1. Remove the retaining clip No. 6, brake retainer No. 7 and brake spring No. 8.

2. Then remove the Friction Shoe Assembly No. A11. Very seldom is it necessary to dismantle this assembly.

3. Next remove the rotor No. 17, being careful that the rewind spring doesn't fly loose.

4. If the spring is then removed from the rotor, be sure to reinstall in the same direction. The springs and ropes on starters for gear drive saws are wound in the opposite direction than those for direct drive saws. (See Figure 26.)

5. Wash all parts in clean gasoline.

The Eaton Starter Is Used On The Unit Frame Saws

1. The entire starter unit can be removed from the engine as an assembly. (See Figure 27.) However, when removing the brake screw No. 7, hold the pulley assembly No. 10 in position with one hand to avoid the loss of the spring No. 15.

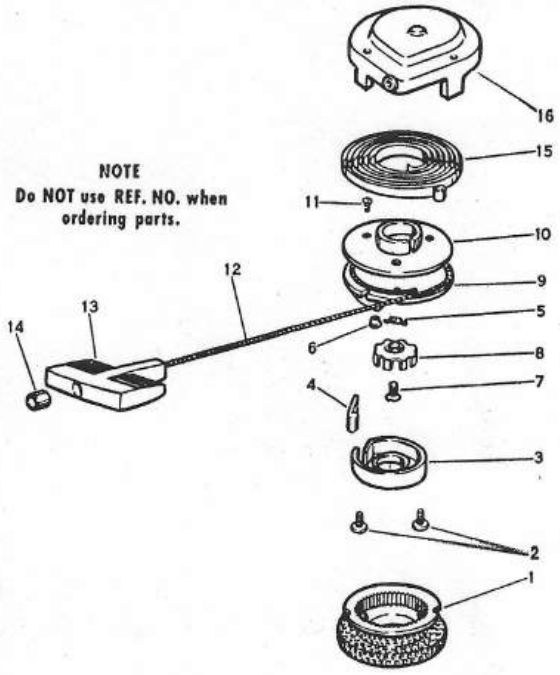


Figure 27

Ref. No.	Part Name
1	Starter Hub
2	Retainer Screw
3	Retainer
4	Starter Dog
5	Retainer Spring
6	Eyelet
7	Brake Screw
8	Starter Brake
9	Pulley
10	Pulley Sheave
11	Pulley Screw
12	Rope
13	Handle
14	Handle Bushing
15	Spring
16	Housing Assembly

2. Carefully lift the pulley assembly No. 10 about 1/4" from the housing cover No. 16. Then with a small screw driver, detach the inside loop of the spring from the pulley assembly.

Cord Replacement

1. When installing a new cord in the pulley, remove the three (3) screws No. 11. Lift the pulley sheave No. 10 from the pulley assembly and pull out old cord.

2. Replace the new cord, making sure the cord is wrapped around the stud on pulley No. 9. See Figure "Q". Replace pulley sheave No. 10, and the three (3) screws No. 11. Be sure and tighten the screws securely.

3. Hold the pulley assembly with the three (3) screws down. Then wind the cord in a clockwise direction. Insert cord through housing cover No. 16 and then into handle.

CAUTION: Springs and ropes for gear drive saws are wound in opposite direction than those for direct drive. Check winding before disassembly. (See Figure 26.)

In Figure 28, the tank and handle assembly is shown in an exploded view. This tank assembly is from the Model 917.60024 Slim Line Saw; however, it is basically the same for the previously built saws.

A. Fuel Tank Cap - Red

B. Fuel Tank Cap Gasket

C. Oil Reservoir Cap - Black

D. Oil Reservoir Cap Gasket

E. Left Hand Tank Half

F. Gasket

G. Oil Plunger Shaft & Knob

H. Oil Plunger

I. Throttle Lever Return Spring

J. Oil Line Check Valve

K. Fuel Line & Filter Weight

L. Fuel Shut-off Valve

M. Throttle Lever

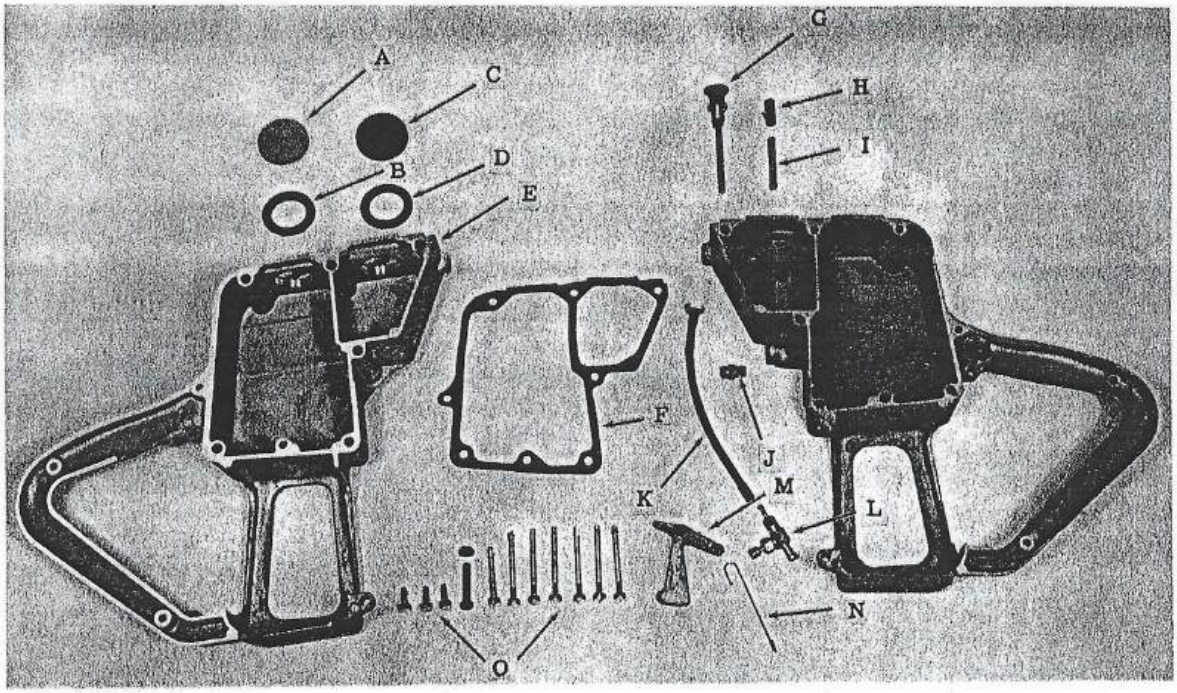


Figure 28

N. Spring

O. Slotted Fillister Head Bolts for Handle

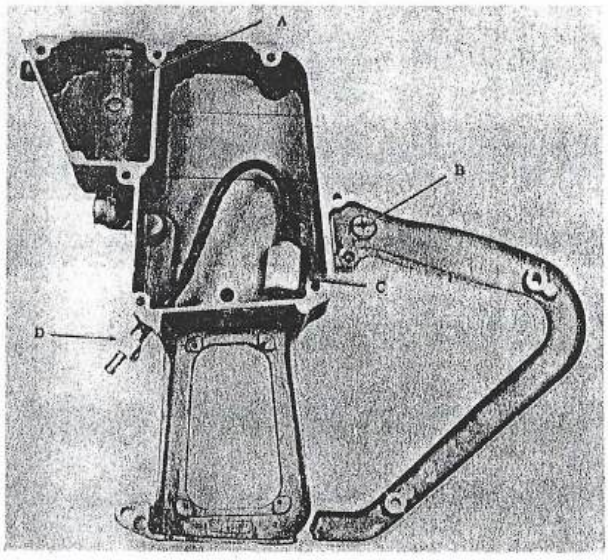


Figure 29

Figure 29

A. Oil Reservoir & Filter Screen

B. Throttle Lock Button

C. Filter Weight

D. Fuel Shut-Off Valve

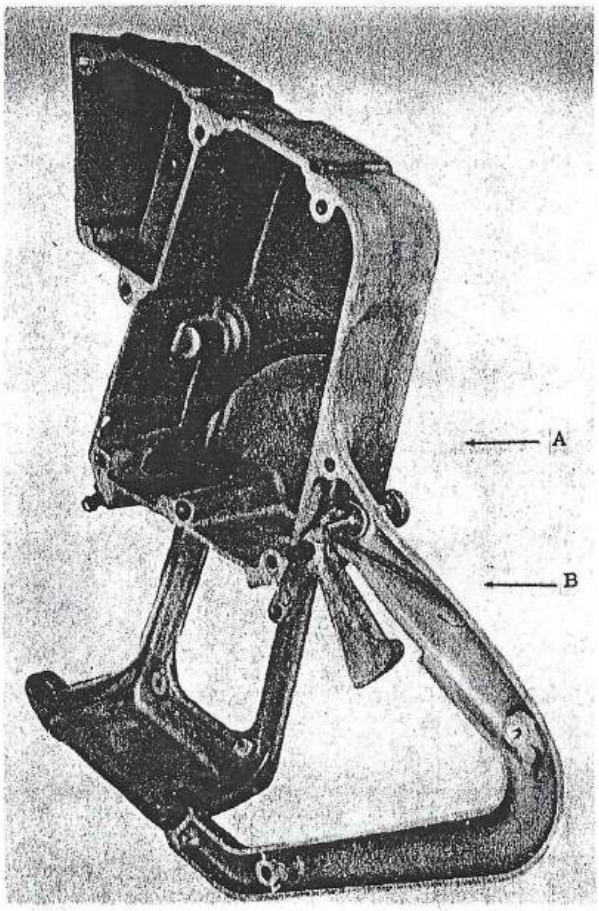


Figure 30

A. Throttle Lock Button

B. Throttle Lever Return Spring

To be sure that the fuel mixture is clean it is important to flush out the tank every once in awhile. Sometimes water and dirt is found in the tank and will restrict the flow of fuel to the carburetor.

Many times the filter weight and fuel line are often overlooked. It is also important that inspection of these are made from time to time.

Figure 31 shows how to reinstall the line and weight. Using a stiff wire "B" insert through fuel shut-off valve mounting hole, push wire up through tank and out the fuel tank filter hole. Then insert fuel line "A" on the end of the wire and pull wire down through the tank and out the fuel shut-off valve mounting mole "C".

Engine heat and age contribute to fuel line failures. Check fuel line often for cracks and splits. This flexible-type hose is of special rubber and is not affected by gas and oil.

It will be noticed that on the 917.60026, and 917.60027 economy-type saws, there isn't a filter weight and fuel line on the inside of the fuel tank. This assembly is used only on the higher priced saws because when the saw is used in different angles, or upside down, the weighted fuel line falls to the lowest point inside the gas tank, allowing the carburetor to draw gas at any angle.

As the wire is pulled back through the tank and out the shut-off valve hole, remove the wire once you can grab the fuel line "A". (See Figure 32.) Then insert the shut-off valve "B" and screw into place. Clamps are not used to hold these gas lines in place. Each hose fits snugly over the carburetor and shut-off valve fitting.

Air Filter

Should a "choking" action become evident, a possible cause could be a dirty air filter. The air filter should be serviced frequently to prevent clogging and also to prevent dust and dirt from entering the engine. There are several different types of air cleaners; however, the David Bradley chain saws all use the type illustrated in Figure 33. This particular type filter is easily accessible for quick cleaning.

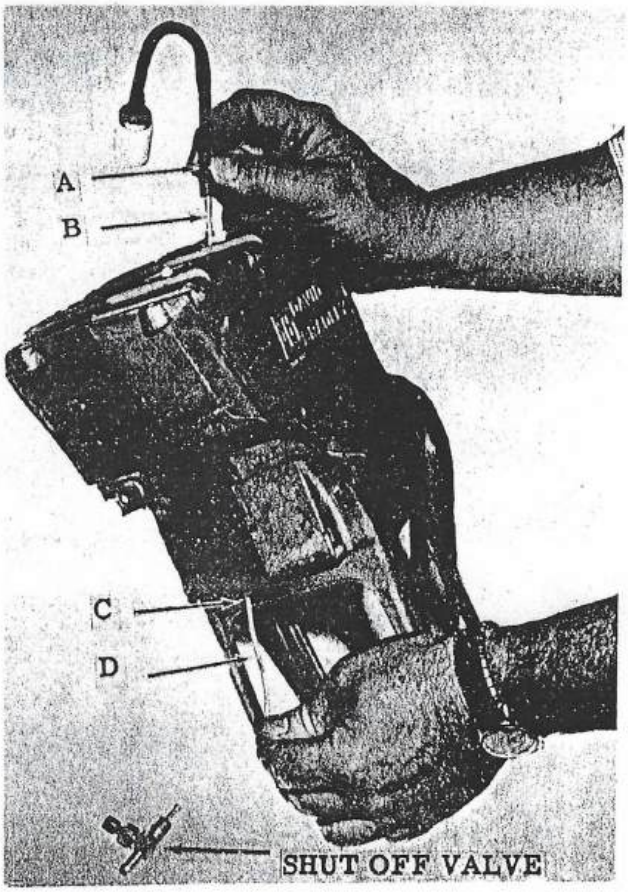


Figure 31

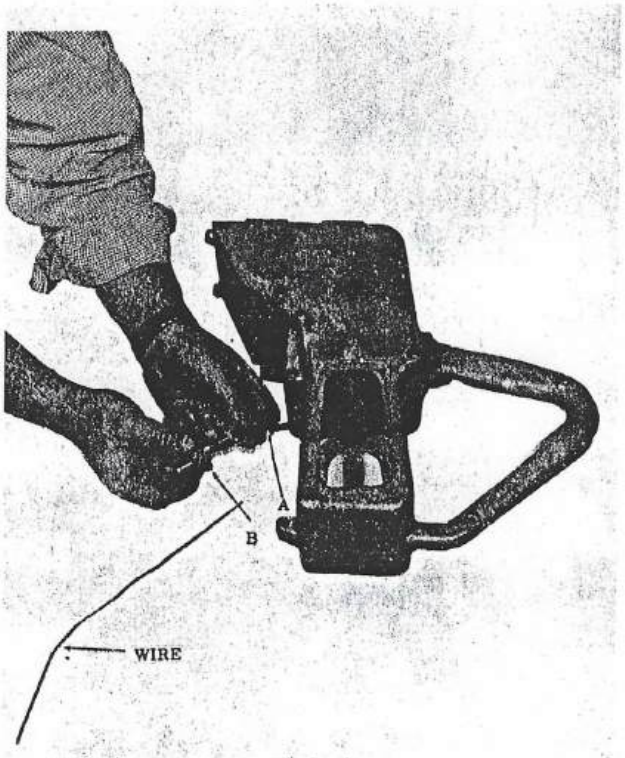


Figure 32

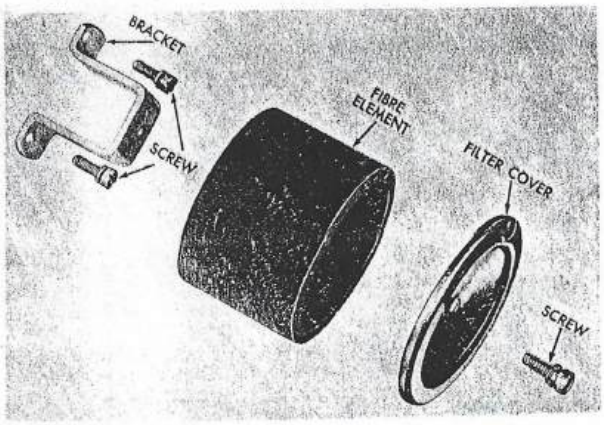


Figure 33

1. Remove screw that holds filter cover to bracket.
2. Clean fiber element thoroughly in clean gasoline.
3. Shake dry before replacing.

Exploded View of Unit Frame Saw (Figure 34.)

The unit frame is a new version in building an economy-type chain saw. This saw is referred to as the "Unit Frame" because the entire saw frame is a one piece casting, the gas tank and engine being assembled to it. (See Figure 34.)

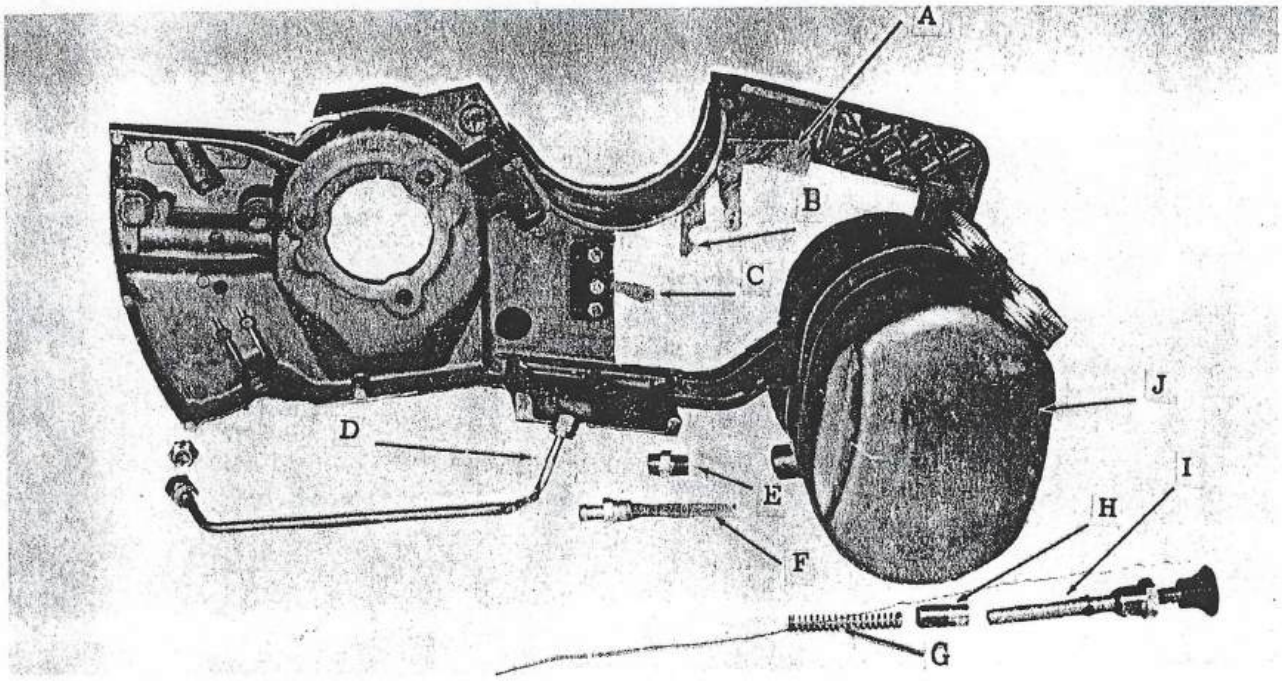


Figure 34

A. Throttle lever control

B. Throttle lever lock

C. Ignition Switch

D. Oil Line

E. Oil Line check valve and screen

F. Gas tank Filter

G. Spring

H. Oil Plunger

I. Oil Plunger Shaft Assembly

J. Fuel and Oil Tank

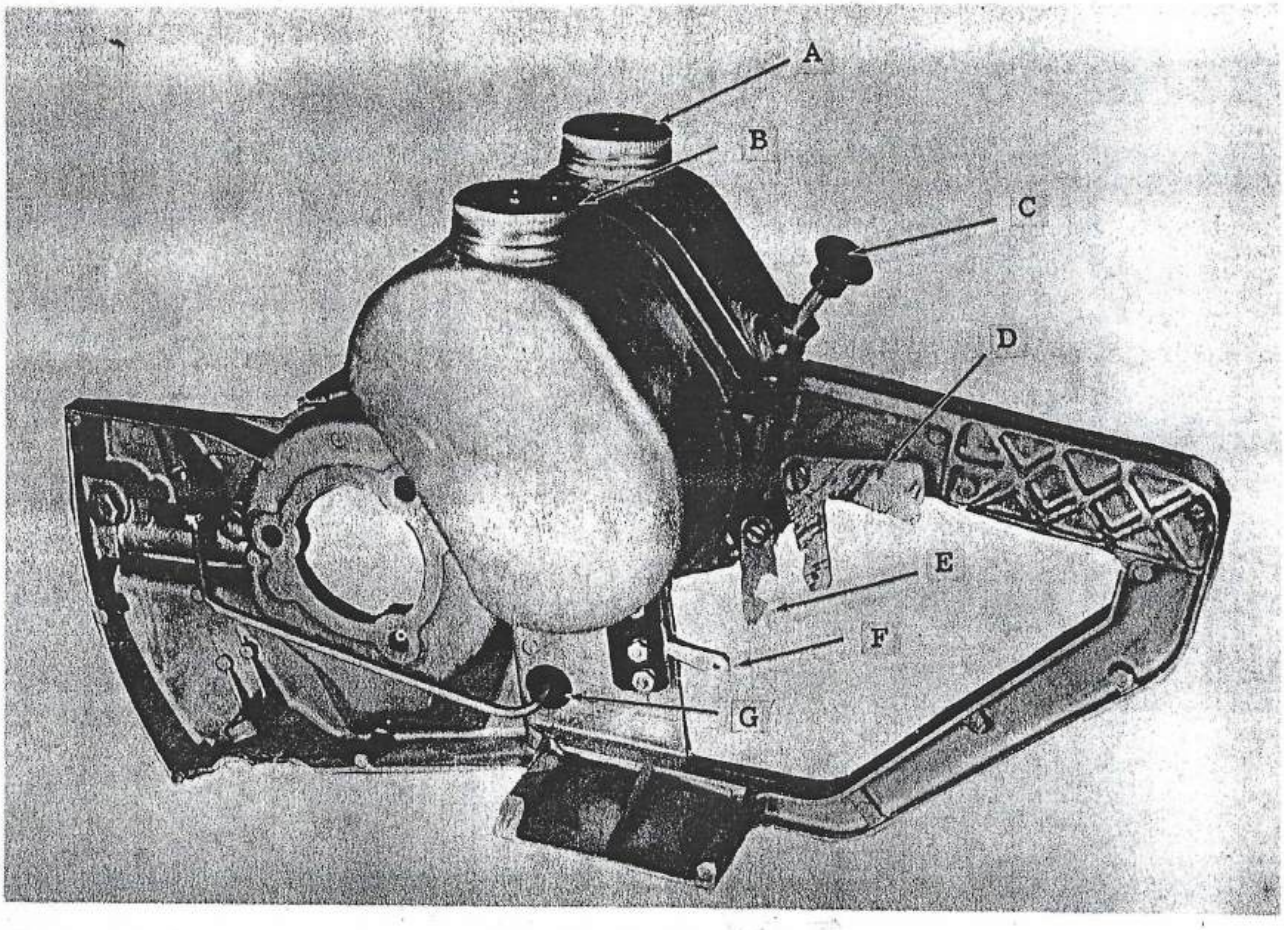


Figure 35

A. Oil Cap

B. Gas Cap

C. Oil Plunger Button

D. Throttle Lever

E. Throttle Lever Lock

F. Ignition Switch

G. Oil Line

Maintenance

Because the internal moving parts of the engine are lubricated by the oil mixed with the gasoline, the wrong type of oil or incorrect type of oil or incorrect type of mixture will cause damage to the engine. The proper fuel mixture is important to the useful and long life of the engine. The correct mixture is 3/4 pint of two-cycle oil to every one gallon of gasoline. Never put the oil and gasoline in the fuel tank separately. Always make the mixture in a separate clean container.

The exhaust ports should be cleaned of carbon periodically; otherwise, there will be a loss of horsepower. The muffler and exhaust ports should be cleaned at least every 50 hours of engine use. Figure 37 shows a view of carbon deposits beginning to clog the exhaust ports.

To properly clean the exhaust ports, remove the spark plug and pull the starter rope so that the piston is at the bottom of the stroke below the

EXPLODED VIEW OF 917.60026

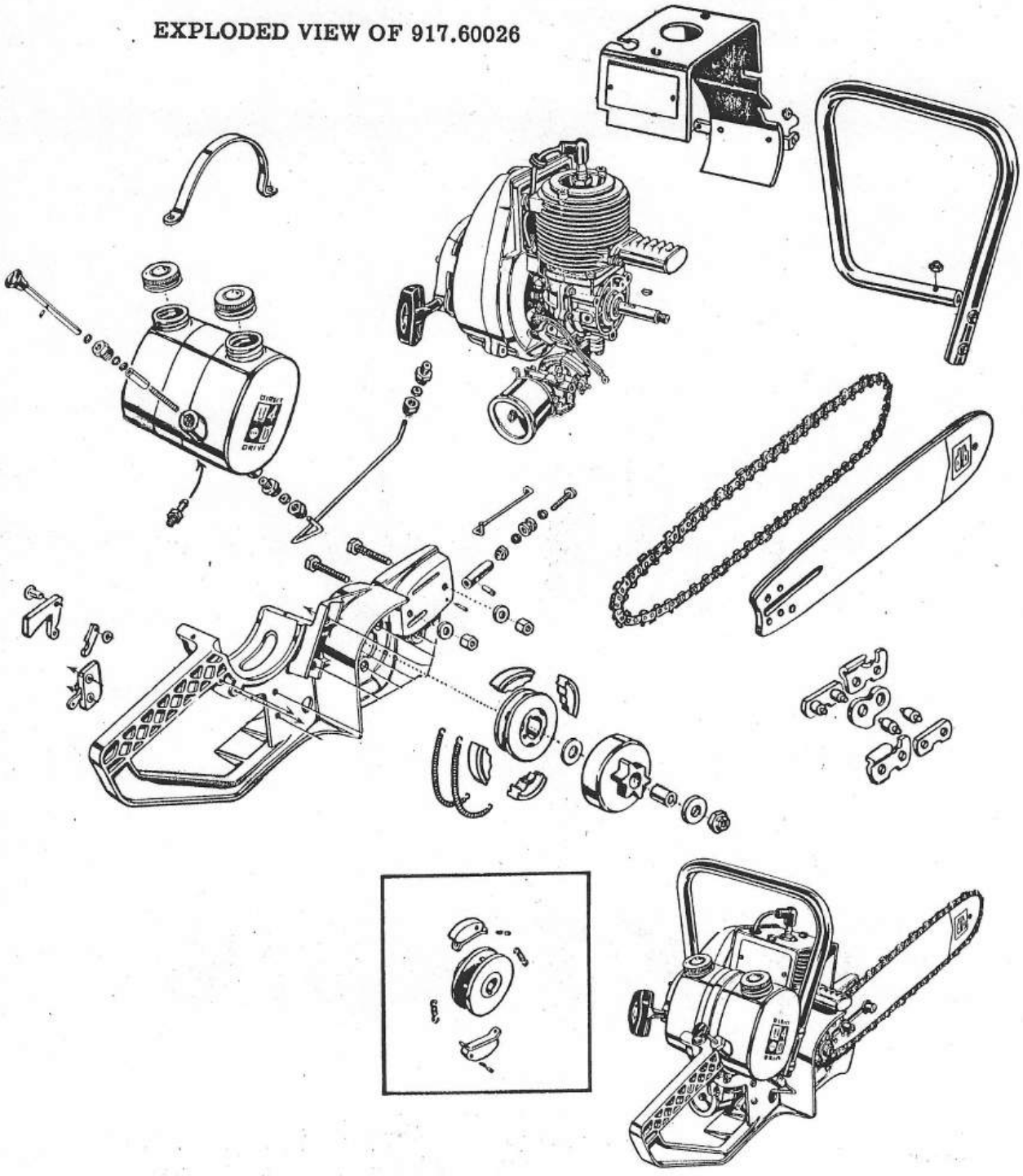


Figure 36

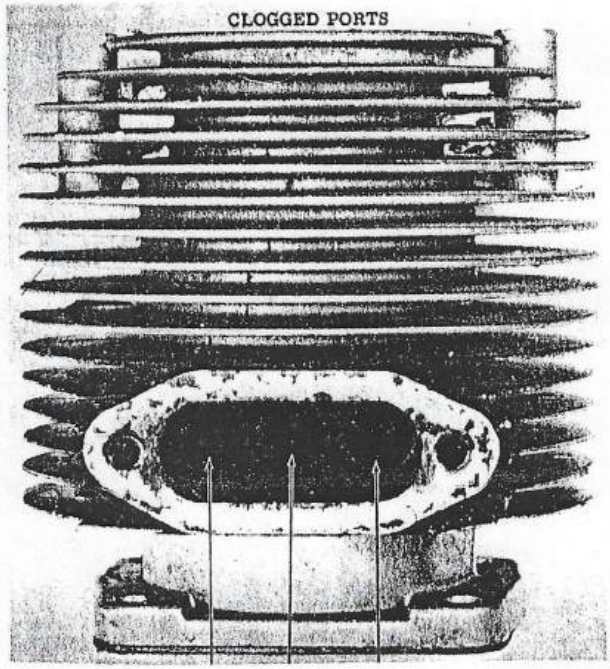


Figure 37

Figure 39

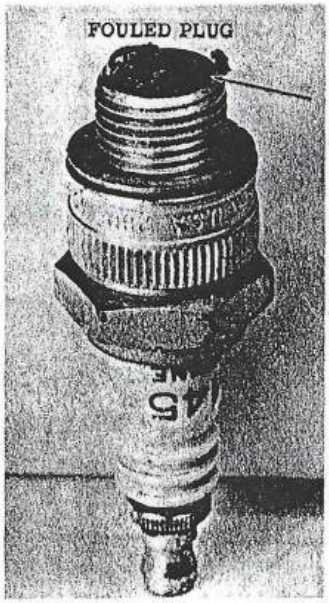


Figure 38

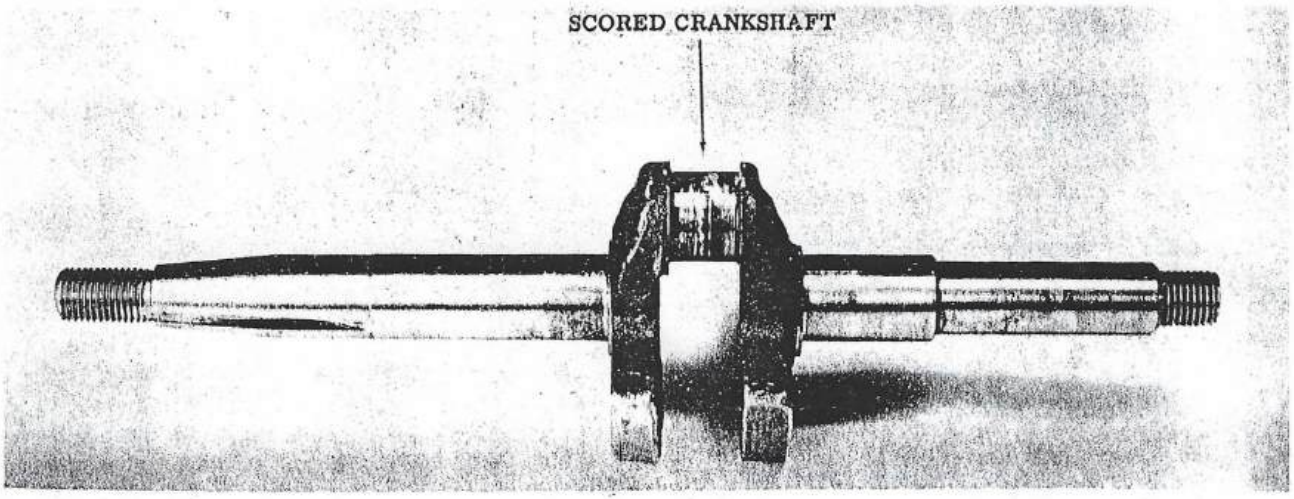


Figure 40

exhaust ports. With a stick, scrape the carbon from the three exhaust ports. Blow out the loosened carbon by pulling the starter rope several times. Excessive carboning of the exhaust ports is caused by a too rich mixture of oil. This also causes fouling of spark plug points as seen in Figure 38. Dirty spark plugs produce poor spark and, as a result, creates hard starting and poor operation. The plug should be cleaned at least every 40 hours of use and more often if necessary. Figure 39 shows a piston encrusted with carbon, plus scoring marks on the piston skirt. This again is a result of improper fuel mixture. This is usually caused by an insufficient amount of oil in the fuel mixture.

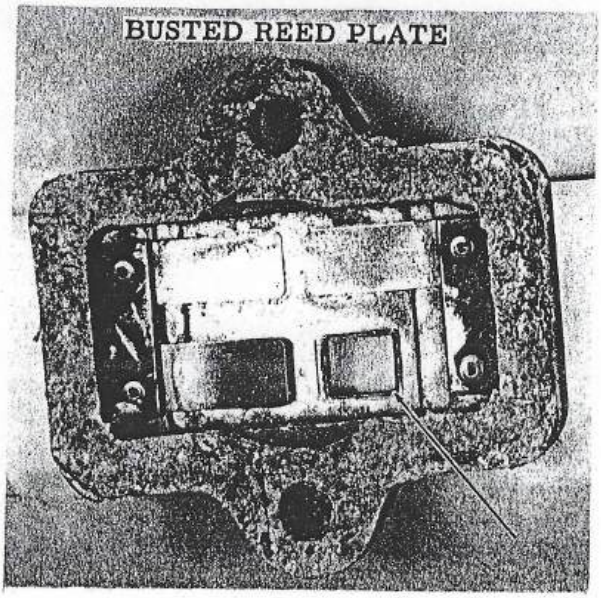


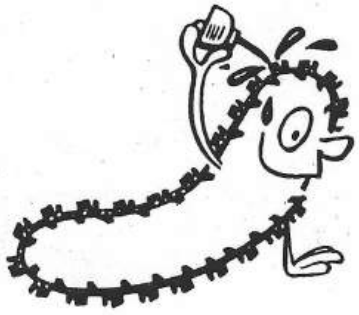
Figure 41

Figure 40 shows a deeply scored crankshaft journal; a result of improper fuel mixture. Figure 41 shows a reed plate with one broken reed.

PROPER CHAIN MAINTENANCE GIVES TROUBLE FREE CUTTING

How To Lubricate

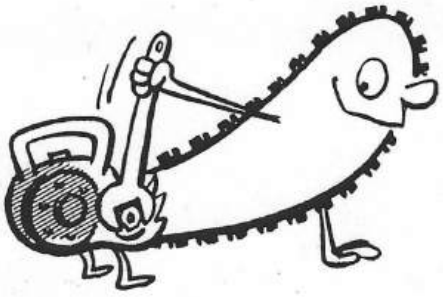
The oily substance on a new chain is not a lubricant - it's a rust preventive. Oil the chain thoroughly before you use it. Oil all moving parts, and work oil into the rivet holes. Oil the bar groove where chain contacts it - especially where chain rides onto the bar. While cutting, pump the oiler often. Stop the



saw periodically and pump the oiler as you pull the chain around the bar slowly.

How To Adjust Chain Tension

Before making your first cut, check chain tension. Chain should be tight enough so you can just pull it around the bar easily by hand. While operating, stop the saw every now and then and check tension. If chain appears loose, let it cool a few minutes. Cooling removes expansion caused by heat. If it is loose after cooling, tighten as described above.

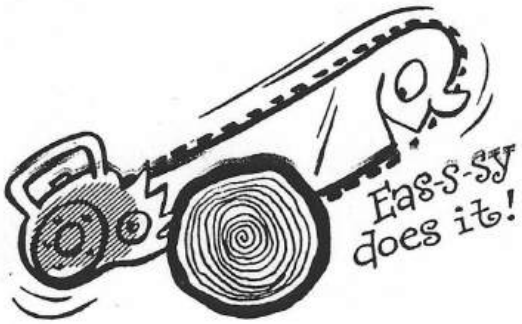


How To Break In New Chain

The first step is to oil your new Chipper Chain. Soak it in a pan of oil overnight if possible.

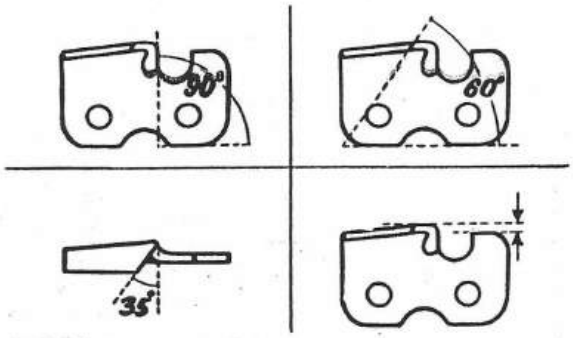
USE PLENTY OF OIL DURING BREAK IN PERIOD.

Adjust chain tension so you can just pull chain around the bar easily by hand. Start the saw motor. Run chain slowly at idle speed or just above clutch engagement speed for a minute or two. Stop motor and check chain tension again. If it has loosened, tighten it. Start saw and make a few easy cuts. Watch chain tension carefully for first half hour of cutting. Never break in chain under a heavy cutting load.



File Chain Correctly

The most important part of trouble-free saw chain operation is correct filing. More chain, bar and sprocket troubles are caused by improper chain filing than all other causes combined. Study the filing methods shown on the next page and teach your customers how to file right. When you do, their chain problems and yours will be at a minimum.



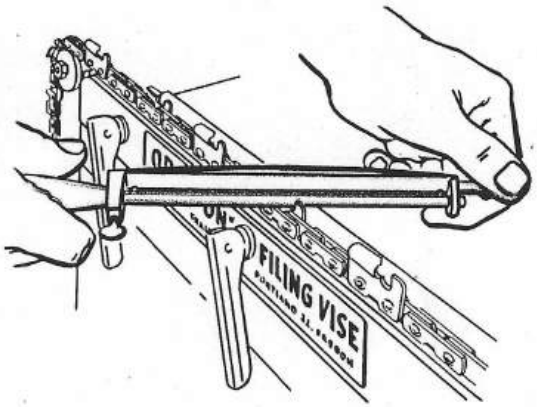
HOW TO FILE SAW CHAINS

CHIPPER

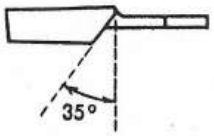
Filing Without File Holder

Hold file parallel with top plate of cutter so 1/10 of file diameter is above top plate to obtain "hollow ground" edge. Use firm strokes, applying pressure on forward stroke away from you. Hold file as shown at right.

File With A File Holder



Maintain These Filing Angles

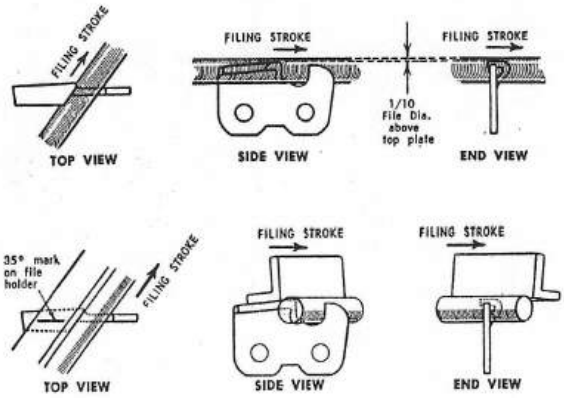


35° TOP PLATE FILING ANGLE

Hole the file in one position perpendicular to the side of the cutter and at 35° angle to the length of the chain. If this angle is less than 35°, the cutter is blunt and cutting is slow. If greater than 35°, the cutter is feathered and will dull fast.

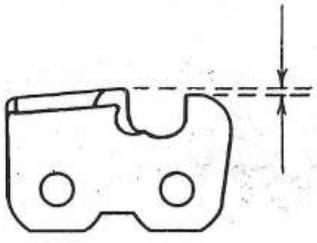
DEPTH GAUGE SETTING

Correct depth gauge settings are as important as cutter filing for efficient cutting and long chain life. If depth gauges are too low, chain will grab, jerk, hang up and overload motor. If they are too high, cutters will not be able to bite into wood, and cutting is slow. Every time you file cutters, check depth gauges and file them if needed.

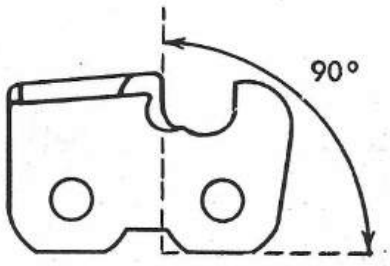


1. Press flat side of file holder firmly against top of cutter. Hold file at right angle to side of cutter. See above.
2. Line up filing angle marks on file holder parallel to the chain. Keep the guide line in this position and you will file your chain close to the recommended 35° angle.
3. A few firm strokes will put a keen edge on each "Fast-File" tooth.
4. Occasionally rotate the file in the holder to get maximum life from your file.

Depth Gauge Setting

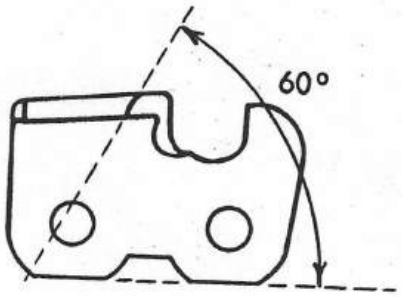


Side Plate Angle



90° SIDE PLATE ANGLE

The side plate must be 90° to the bottom of the cutter. Use firm, long, even strokes, applying pressure on forward stroke away from you. If this angle is negative (back-slope) cutting will be slow as cutters try to rise out of cut, requiring more pressure to operate saw. Positive angle (hook) feathers top plate which dulls fast and causes chain to grab, hang up.



60° TOP PLATE CUTTING ANGLE

This angle must be 60°. It is formed by the position in which you hold the file and it determines whether the cutter is dull, sharp or has a feather edge. If you hold file low, you get a feather edge. Hold it too high, you get a blunt edge. Hold file well up against top plate so about 1/10 of file diameter is above top plate.

RECOMMENDED DEPTH GAUGE SETTINGS

.020"- 12C, 20AC2, 21AC2, 22AC2, 40AC2, 41AC2, 42AC2, 61AC2, 62AC2.

.030"- 20AC3, 21AC3, 22AC3, 40AC3, 41AC3, 42AC3, 51AC3, 52AC3, 61AC3, 62AC3.

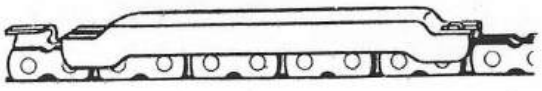
.040"- 8BC, 9AC, 10AC, 40AC4, 41AC4, 42AC4, 4C, 5AC, 6C, 7C, 16C, 17C.

.045"- 1AC, 2BC, 3DAC, 3MAC.

.060"- 11AC, 11BC.

USE "GAUGIT" DEPTH GAUGE JOINTER

Use a pre-set "Gaugit" depth gauge jointer when lowering depth gauges. Place on top of chain so cutter projects as shown, and file down top of depth gauge level with the opening in the



jointer. Round off leading edge of depth gauge to retain its original shape.

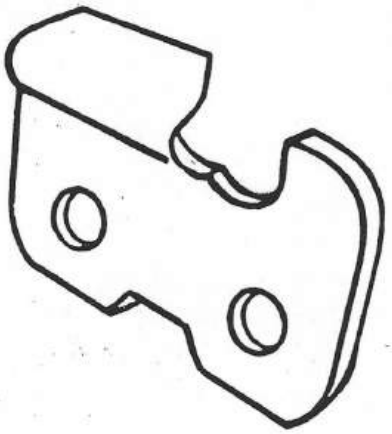
"Gaugit" depth gauge jointers are made in five sizes, giving ten different settings.

SAW CHAIN TYPES AND PARTS

CHAIN TYPE

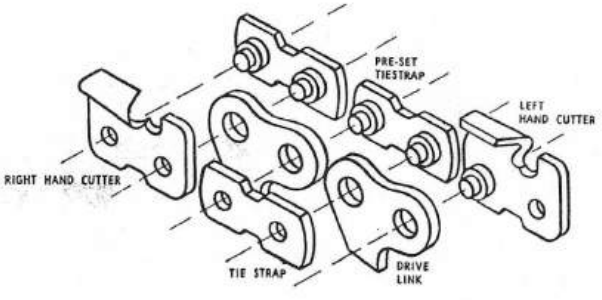
Chipper

The Chipper Chain is easiest of all saw chains



to file right. It is for general purpose use. Note the rounded side and flat top plate. A round file sharpens both edges.

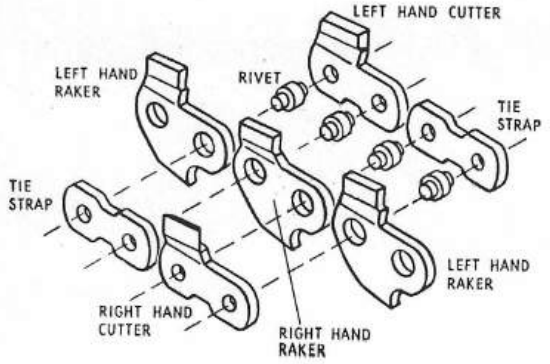
CHIPPER CHAIN



Chipper Chain

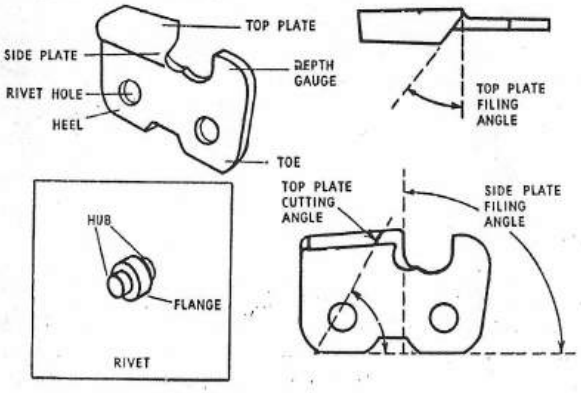
Learn the chain parts' names and how they are put together to avoid using wrong parts or assembling them wrong when repairing chain.

CROSS CUT CHAIN



Note: Chisel Chain is made the same except for cutter shape.

PARTS NAMES

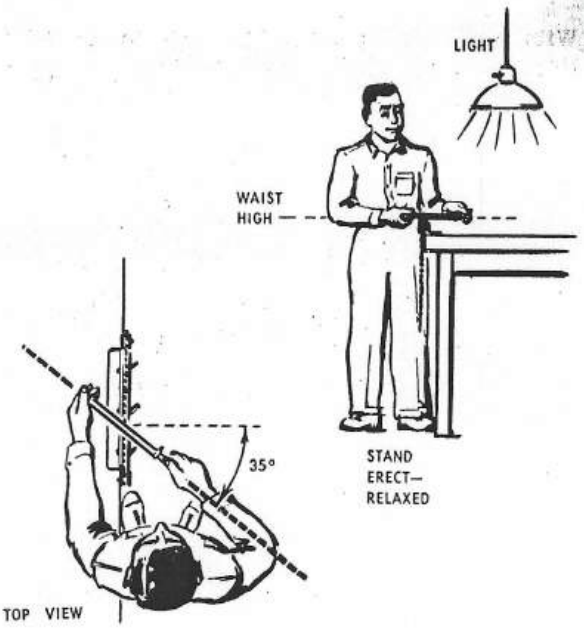


SERVICING CHAINS IN USE

Teach Your Customers How To File

Good filing is the result of correct practice. By following these instructions and the filing instructions on page 25, your customers can learn to file correctly. The elements of proper saw chain filing are:

1. Vise position about waist high.
2. Good lighting over work area.
3. Body position. Stand erect (don't bend over) and relaxed so the file may be pushed straight through the cutter.

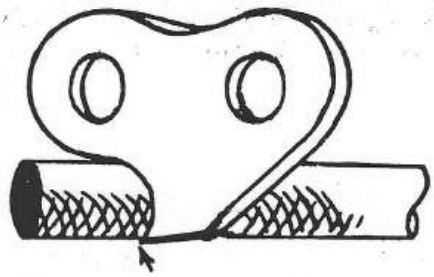


4. Use the shoulder of the arm holding file handle to push the file through the cutter. Keep file in straight line with arm.
5. Use the other hand to hold file in position and to guide it straight.
6. Follow correct cutting angles.

Chain Repair Techniques

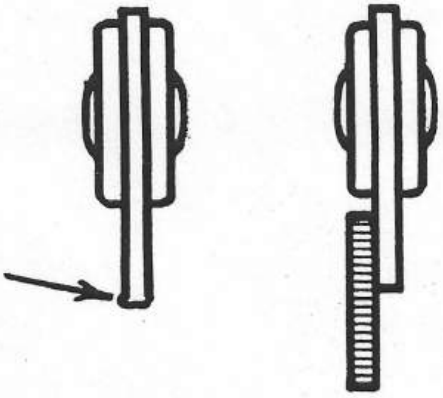
HOW TO REPAIR DRIVE LINKS

Drive link tangs become worn and need re-sharpening. Use a 1/4" round file and with a few light strokes put a sharp point on each drive link.

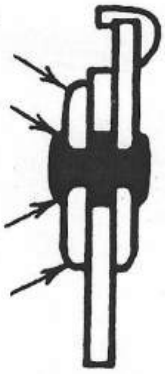


Sharpening Tangs

With a flat file smooth the sides of the drive links to remove burrs or peened edges.

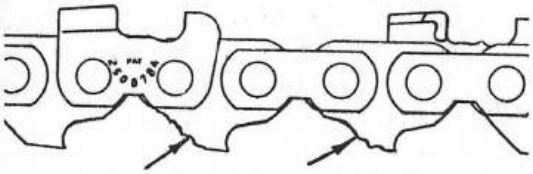


Smoothing Sides



Rounded and Countersunk Edges Face Out

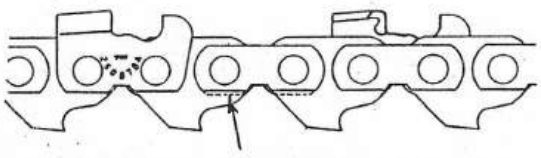
Always replace badly damaged or broken drive links when servicing a chain.



Replace Broken Drive Links

HOW TO REPLACE TIE STRAPS

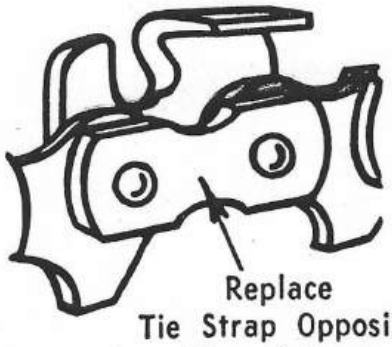
When installing new tie straps, be sure you place the rounded edges and countersunk holes facing out from the chain. Otherwise, you will get a tight joint when you rivet the parts together. Also, file down the bottoms to match the wear on the bottoms of the other tie straps to prevent the chain from tilting to one side.



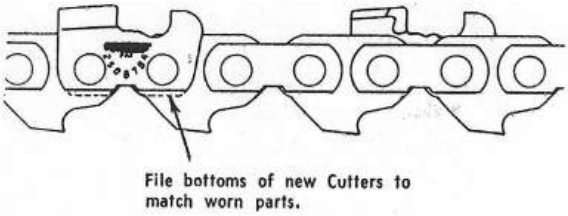
File bottoms of new Tie Straps to match worn parts.

HOW TO REPLACE CUTTERS

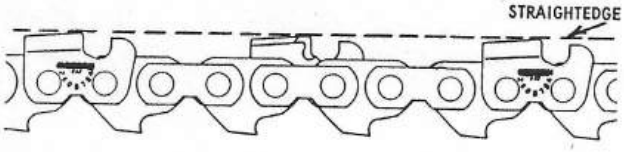
Install a new tie strap opposite the new cutter and file the bottoms of both to match the wear on the rest of the chain. File back the cutting edges to match the rest of the cutters, so they are all the same height.



Replace Tie Strap Opposite New Cutters

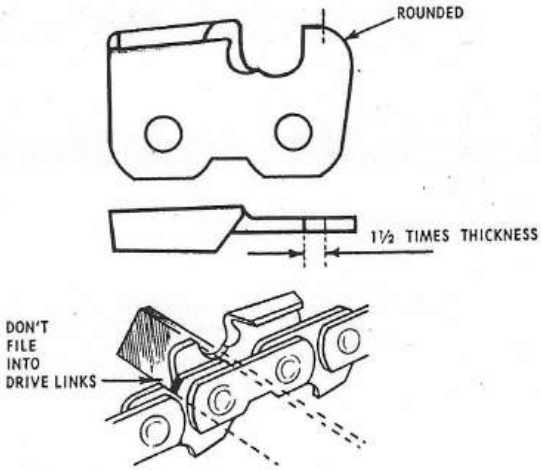


Jointing Mis-Filed Cutters



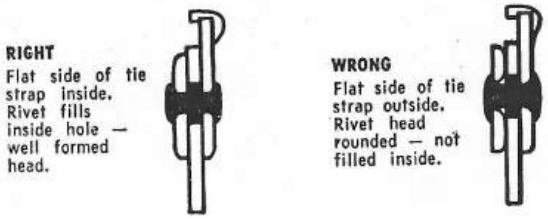
Where chain has been improperly filed and a great amount of filing is needed to correct the cutter angles, check the height of the cutters with a straight edge. File all cutters back to the same height. Do not file on top!

Depth Gauge Filing Techniques



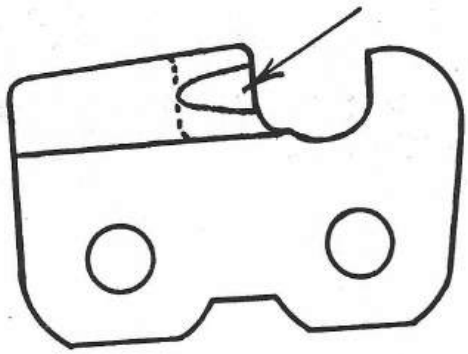
When filing depth gauges after lowering them, round off the leading edge as shown. Cover the sharp edge of the cutter with a piece of wood or your depth gauge jointer to protect it against nicks from the flat file. Keep the flat length of the depth gauge 1-1/2 times its thickness. Avoid nicking the drive links or tie straps when rounding the corners.

Techniques of Riveting



When riveting, assemble chain parts carefully. Make sure no parts are backwards, or wrong side facing in. First hit 2 or 3 solid blows on rivet center to fill inside tiestrap. Then, peen rivets carefully with a gentle tapping action, using the ball of your hammer - don't smash, as you will damage the rivet flange. Check joints after repairing chain to make sure none are too tight.

Removing Abrasive Damage



When chain has been damaged by abrasion or rocks, (running under sandy or muddy conditions) it will not cut. The damaged part of the cutter must be filed out as shown. Naturally, the chain must be filed oftener when used in abrasive conditions. If this is not done, chain will not be sharp and will wear away rapidly.

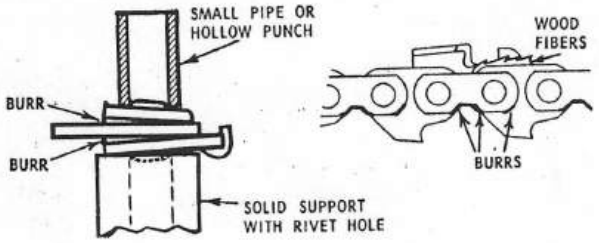
Relieving Tight Joints

Causes:

1. A sprocket with heavy tooth wear, or wrong size, peens chain drive links or tie straps and cutters at the notch area.

2. Burrs at the front lower corner of tie straps and cutters result from loose chain "diving" onto guide bar, or hitting back of a bar too wide for sprocket.

3. Ripping, limbing, or cutting up stumps may cause long wood fibers to jam in between cutter depth gauge and drive link.



Remedy:

For any tight joint, first loosen rivet slightly on a chain breaker (pocket or bench type).

Burrs:

1. Support chain on solid block, with hole for rivet head (such as chain breaker anvil turned over).

2. Rotate the joint to place burr over smooth surface of drive link.

3. Flatten burrs by hammering a small pipe or hollow punch set on opposite side. Do not hit the rivets.

Wood Fibers:

1. Soak chain in solvent to remove oil and grit.

2. Dry wood fibers thoroughly by placing chain by stove or warm oven.

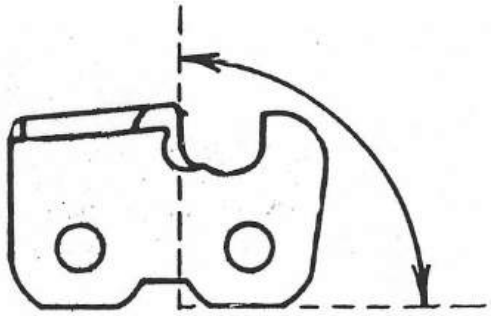
3. Fibers will shrink enough to remove by pocket knife or by flexing joints.

After relieving tight joint, respin rivets on Hand Spinner.

POINTERS FOR FILING CHAINS UNDER SPECIAL OPERATING CONDITIONS

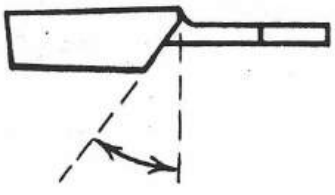
Pond and Deck Chain Filing Angles

Pond and deck saws use 3/4" pitch Chipper Chains 1AC, 11AC and 11BC. File them as shown below with a 3/8" diameter round chain file. Clean out the gullet before sharpening the cutter.



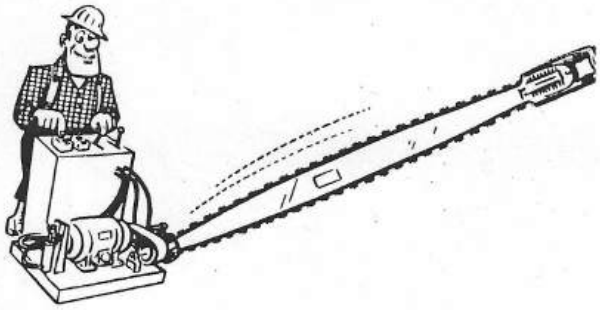
90° Side Plate Angle

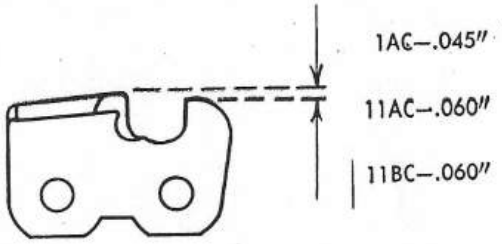
This angle is the same as other chains. If angle slopes back, cutting will be slow. If it slopes forward, cutters will dull fast and hang up in the cut.



35° Top Plate Angle

Top plate has same angle as other chains. This angle may be reduced to 30° under certain cutting conditions.

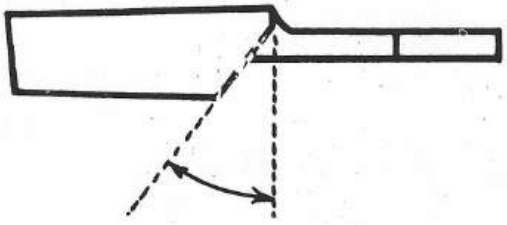




Depth Gauge Setting

Every time the cutters are filed, check the depth gauges and lower them as needed to maintain the following setting:
For 1AC chain, .045".
For 11AC chain, .060".

Revising Cutter Angles For Ripping



Filing Cutters For Boring

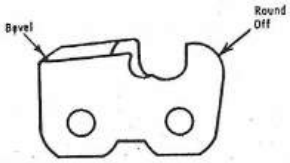
When the saw is being used for much boring, the cutters may be filed, as shown, to prevent rough and jumpy cutting. Round off the leading edge of the depth gauge and bevel off the back corner of the cutter.

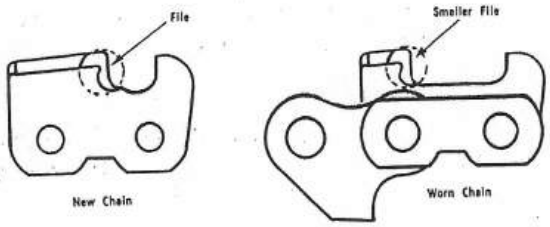
Filing Narrow Kerf Chain As It Wears Back

When narrow kerf chains are used back halfway, the next smaller file should be used for sharpening, so the correct angles can be maintained without filing into the drive links. For example, if the chain is filed with a 1/4" file, drop to a 7/32" file.

Chain Type	File Size (New Chain)	File Size (Worn Chain)
21C, 41C	1/4"	1/4"
61C, 62C	1/4"	7/32"
51C, 52C	7/32"	3/16"

When a saw is used primarily for ripping, the cutter top plate angles only may be revised. If large logs are being ripped, a skiptooth chain is recommended as it will not load up with chips. When ripping, be sure chain is always sharp to prevent jamming wood fibers into joints.



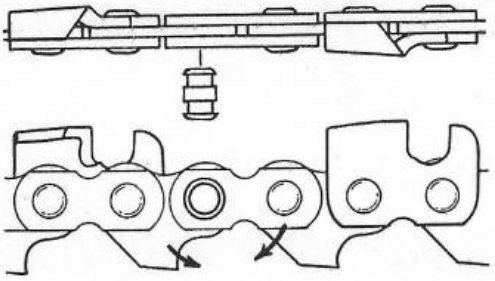


SERVICING THE SAW CHAIN SALE

How To Make Endless Chain

Most chains made now are of the endless type as chains are easy to change on modern saws, and this type of chain is stronger than the master link ending type. Endless chains are easy to make with a Rivet Spinner. This tool simplifies chain repair and makes a factory-type rivet head which is much stronger than a rivet peened with a hammer.

How To Install Master Links And Pins



The Rivet Spinner can be used for all Chains except 3/4" pitch chain. Take-up Handle and Insert marked "A" are for 3/8" and .404" pitch chains. Those marked "B" are for all other pitch chains except 3/4".

To use, assemble the chain and form a closed loop so it hangs from front side of spinner. Be sure there are not kinks in chain and drive links all face inside of loop.

1. Screw correct size Take-Up Handle into frame and place the matching Hex Spinner Insert into Spinner Head, as shown in Figure 1.

2. Assemble chain parts as shown in Figure 2, using a preset tie strap or cutter. Use a cutter or tie strap on opposite side, whichever is needed.

3. Screw in Take-Up Handle until there is enough clearance to insert the assembled parts between it and Spinner Insert.

4. Center one of the rivet heads on the preset tie strap against Take-Up Handle, then screw in Handle until hub end of rivet is firm against Spinner Insert. DO NOT USE PRESSURE. Turn Spinner Handle once or twice to center rivet hub.

5. Turn Take-Up Handle about 1/4 turn . . . . . turn Spinner Handle 2 or 3 times . . . . . another 1/4 turn of Take-Up Handle.

6. Repeat this operation 4 to 6 times until rivet head is fully set and formed to match the rivet head of preset tie strap. Put a few drops of oil in holes in top of Rivet Spinner often.

If you are making up a chain with a Master Link ending, proceed as follows:

1. Rivet the master links to the drive link in back of a cutter, then line up the large holes of both master links.

2. Insert the drive link to be connected between the master links, lining up the holes.

3. Rotate master links and drive link as shown by arrows, keeping holes centered.

4. Insert master pin and straighten chain. Chain is now ready for use.

5. Do not hammer or otherwise secure master pin.

6. Be sure master pin is in back hole of master link.

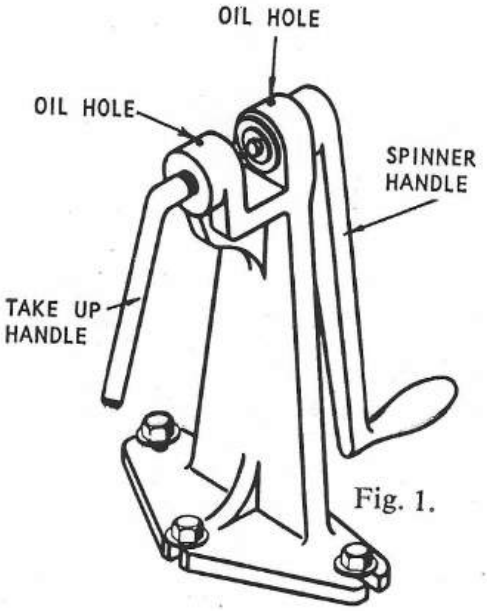


Fig. 1.

RIVET SPINNER NO. 57000

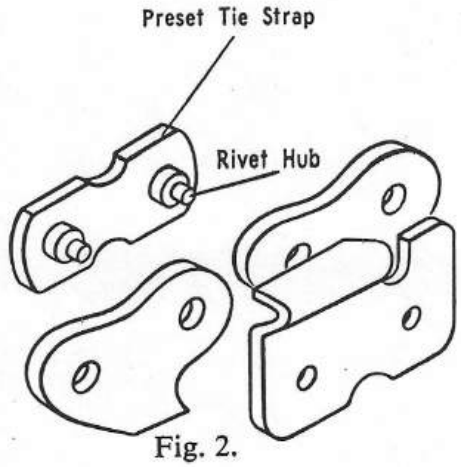
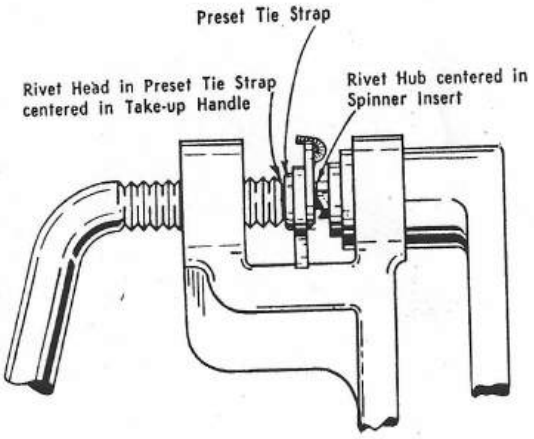


Fig. 2.

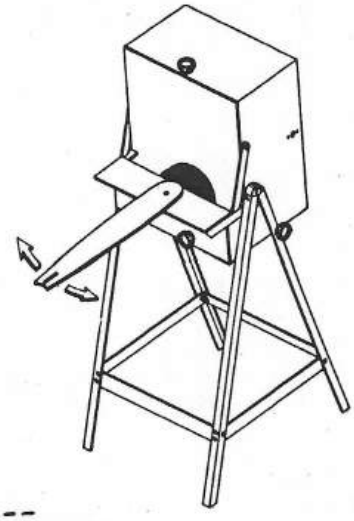


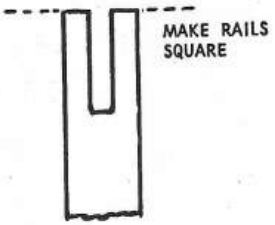
BAR REPAIR WORK

Periodic Bar Maintenance Gives Longer Life

Jointing Uneven Rails or Tip

1. Lock the table in the position shown.
2. Hold bar flat and firm against table. Start grinding on nose of bar, then swing toward rear of bar with a sweeping continuous motion to maintain original contour. Don't stop in the middle of a stroke or overgrind in one spot.
3. Don't feed bar too heavily as bar will "burn" and soften the rails.
4. Repeat on both sides of bar until rails are square. Finish nose in a true radius.
5. Most saw bars now have hardened rails. Grind only enough to square rails and tip, but don't grind through the hard portion (approximately 1/16" deep).





Jointing

Regrooving

1. Pivot table in position shown and lock firmly. Adjust "up or down" control so wheel enters bar groove without pressing heavily against either bar rail. Groove must be centered to get equally thick rails.
2. Do not try to widen groove. Grooving wheels cut only on the edge - not on the sides!
3. Set depth control so groove is about 1/16" deeper than drive link tang length.
4. Start grinder and make trial run around bar, then check rails to be sure they are equally thick and there is not groove runout.

5. Start grinding from mounting end of bar, readjusting depth control as necessary. Hold bar firmly while grinding.

6. Do not feed bar too heavily or twist it while wheel is in groove as wheels break easily under strain.

ALWAYS WEAR GOOGLES WHILE USING BAR TENDER.

Recommended Bar Groove Depths

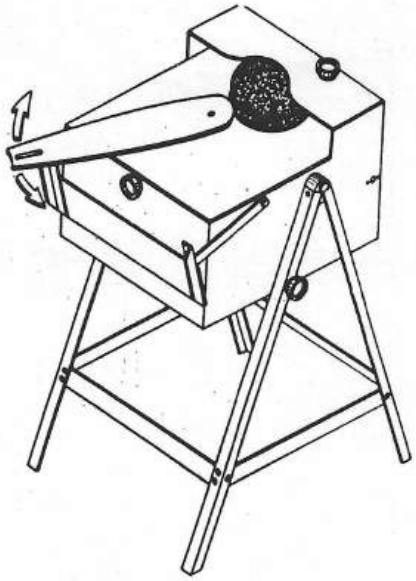
Chain Pitch	Drive Link Tang Length	Minimun Recommended Bar Groove Depth
3/8"	3/16"	7/32"
.404"	17/64"	21/64"
7/16"	1/4"	5/16"
1/2"	17/64" except No. 9 is 1/4"	21/64"
9/16"	9/32"	11/32"
5/8"	5/16"	3/8"
3/4"	3/8" except 3D is 19/64"	7/16"

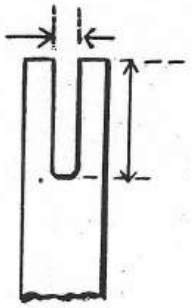
Closing Spread Rails

1. Place a Groove Gauge about .004" thicker than drive links of chain in bar groove, and lay bar on anvil with thin rail up.

2. Use 3-pound hammer and tap rail snugly against gaige.

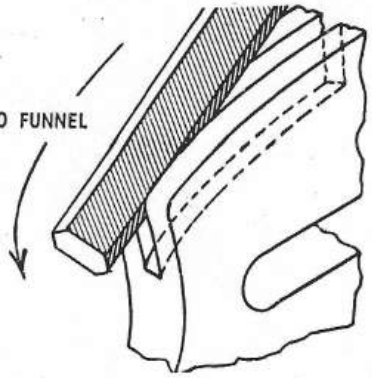
3. Drive gauge forward and repeat around entire bar.

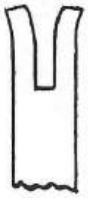


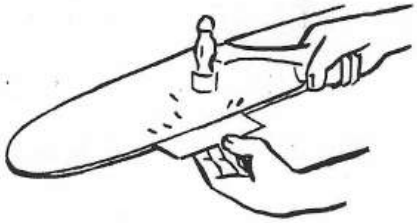


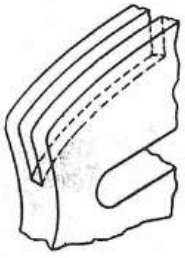
Regrooving

Funneling Chain Entry

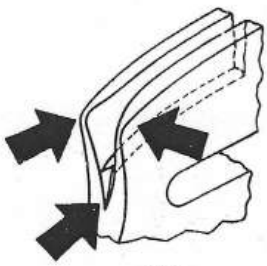






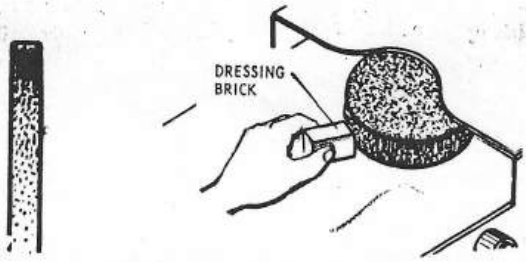


WRONG



RIGHT

Funnel the groove at the motor end of the bar with a double-beveled chisel chain file, as shown. The file widens and deepens the groove so the chain will enter the bar smoothly without striking it.

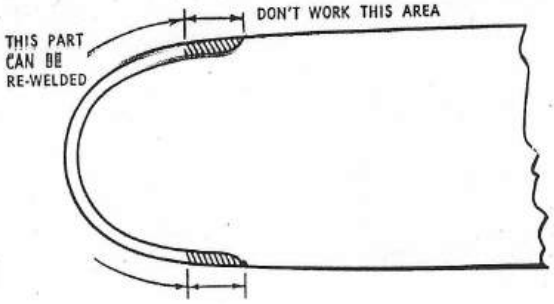


How To Dress Bar Tender Grinding Wheels

Grinding wheels should always be kept in best condition possible - to do a good job and for safety. A chipped or cracked wheel can fly apart or grab a saw bar.

Use a small dressing brick to reface the re-grooving wheel of the bar tender. Simply lay the brick on the table and press against the wheel while it is running.

The wheel corners should have a slight radius because square corners in the bottom of the bar groove can lead to split rails on the bar.



Bar Tender Maintenence

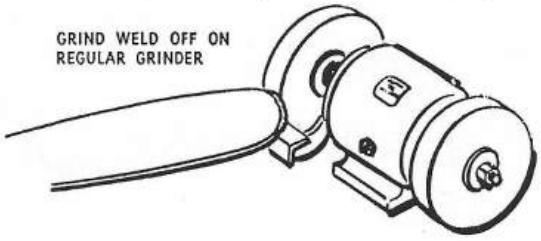
1. Use your bar tender only for jointing and regrooving bars, not as a work or welding bench.

2. Motor does not need oiling as it is lifetime lubricated.

3. Keep table tops clean, free of scars, rust and dents. Keep them square with motor shaft by use of the leveling adjustment.

Re-Tipping Noses and Hard Rails

Hard tips on bars can be repaired if wear is not excessive. Repair should be done before there is much wear at the point where the hard tip joins the rails. At least one-inch of length of the hard tipping must remain so new material can be welded on nose without drawing the temper from the rails. This work can be done only by experienced personnel with the proper equipment.



Grinding Excess Weld Material From Bars

After welding a bar, grind off the excess weld material on a regular grinding wheel - not on the bar tender wheels as they are not made for this kind of work. After grinding down to desired contour, finish on the bar tender to make rails and tip square, as shown under "Jointing" instructions.

Dressing Rails For Contour

When repairing bars, be sure to retain the original contour while grinding off weld material

and when jointing. Use a template made before welding or use a new bar as a template. Do not grind through hardened rail into softer material underneath as this will wear rails rapidly.

Other Bar Repairs - Cautions

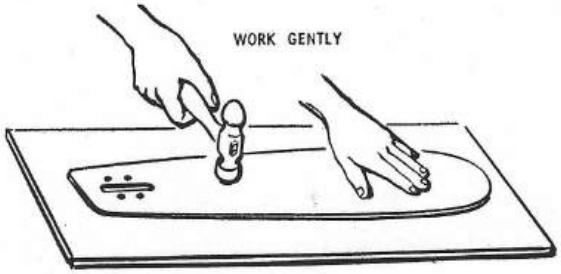
These bar repairs should be done only by experienced mechanics with proper equipment.

Welding Split Rails

Split rails are usually caused by pinching the bar when it is hung up in the cut. Bars with nonhardened split rails can be repaired by ordinary welding techniques if the splits are not over two inches long. Bars with hardened rails are difficult to repair as the excessive welding heat fractures the rails. Bars with hardened rails should be repaired only by specialists with proper equipment for rehardening rail surfaces.

Straightening Kinks and Bends

Small kinks or bends can be removed from a bar by hammering. Use a large flat, true anvil or steel work surface. Use light blows to move the metal to desired position. This work is similar to straightening other flat metal pieces and requires skill achieved through practice.

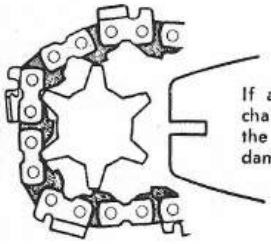


LARGE FLAT
STEEL WORK
SURFACE

SPROCKET MAINTENANCE

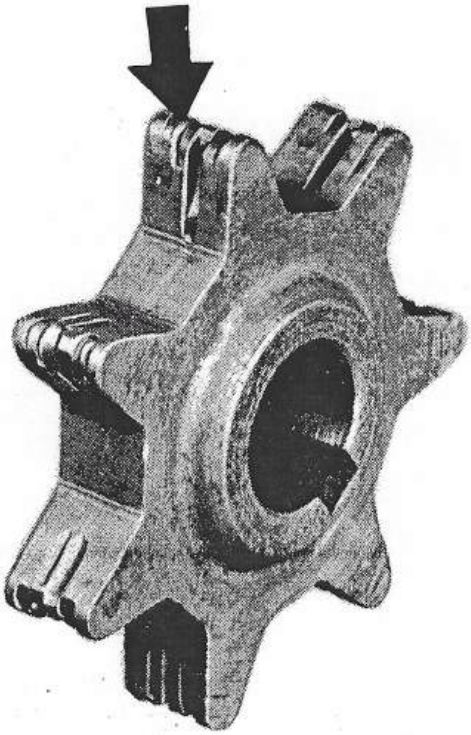
Check Sprockets Often

Chain trouble can be cured or prevented by replacing wornout sprockets. When tips of teeth have excessive wear, the sprocket is out of pitch and will not drive properly, causing chain chatter and early breakage.

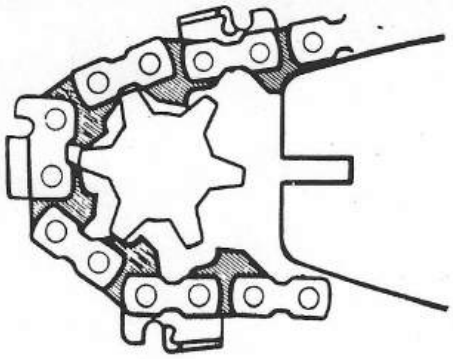


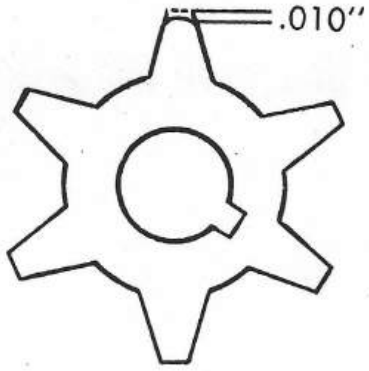
If a sprocket is the wrong pitch for the chain it will not deliver the full power of the saw, and there will be very rapid damage to the chain and sprocket.

Sprocket pitch too large for chain.



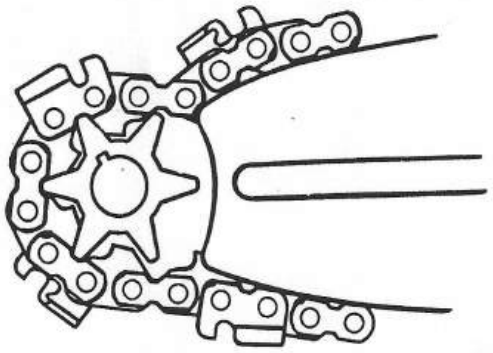
Worn sprocket teeth caused by chain chatter. Abrasion or chain stretch makes a groove. Install new sprocket; adjust chain tension.





Maximum wear on tips of teeth allowed for efficiency is .010". Replace if worn more.

Sprocket pitch too small for chain.



If a saw bar is too wide at the mounting end for the sprocket size,the chain will strike, or climb over, the rear of the bar rails. This will cause serious damage to the chain parts, resulting in tight joints, and early breakage (especially on direct drive saws).

CHAIN, BAR AND SPROCKET MAINTENANCE TIPS

This is not intended as a complete trouble shooting guide. However, it does show the most common chain troubles and how to correct them.

TROUBLE	REMEDY
1. Drive Link Breakage	Caused by chain chatter from uneven filing and depth gauge setting, lack of break-in, bad bar or sprocket, loose chain. See Pages 23, 25, 33 and 36, to correct.
2. "Soft" Chain Complaint	Caused by improper top plate filing and high depth gauge setting. See Page 25.
3. Excessive Chain Stretch	Caused by tight chain, lack of oil, no break-in, abrasive conditions, or incorrect filing angles. See Pages 22 and 27. Also, caused by chain hitting bar entry. See "Funneling Chain Entry," Page 35.
4. Chain "Leads" to One side	Caused by difference in filing or uneven bar rails. File all cutters uniformly. See Page 25, or repair bar.
5. Tight Joints	See Pages 30, 33 and 37.
6. Loose Rivets and Cracked Parts	Caused by dull, blunt or backsloped cutters and high depth gauges. See Page 25 to correct filing; plunging hot chain into snow after making a cut.
7. Chain Chatter	Caused by high depth gauges or uneven filing - see Page 25; by loose chain-see Page 23; by shallow bar groove-see Page 33; bad sprocket-Page 36.
8. Excess Sprocket Wear	Caused by chain chatter, tight chain, abrasive conditions. See above, Page 36.
9. Excess Bar Wear	Caused by heavy pressure applied to cut with improperly filed chain. See Page 25. Also caused by lack of oil or by abrasive conditions. See Page 22.
10. Split Bar Rails	Caused by pinching bar when it is hung up in cut due to improper filing or uneven bar rails. See Page 25.
11. Soft Spots on Bar Rails	Caused by improper welding methods when repairing bars. See Page 36. A chattering chain will find all these soft spots.

DAVID BRADLEY CHAIN SAW MODEL AND ENGINES

SAW MODEL	MODEL NO.	POWER HD. BUNDLE NO.	CATALOG NUMBERS	ENGINE NO. D.B.	ENGINE TYPE POWER PRODUCT	REMARKS
360 Gear Drive	917.60001	600x1,2	8357, 8360, 8361, 8362	600PA2C	1050E	
3 HP Direct Drive	917.60003	600x5	8380	600PA31C	1079B	
360 Gear Drive	917.60003	600x1,2,21	8357, 8360, 8361, 8362, 8363	600PA2C	1050E	
3 HP Direct Drive	917.60004	600x5	8380	600PA31C	1079B	
5 HP Gear Drive	917.60005	600x13	8365, 8366, 8367, 8368	600PA64	40005	
360 Gear Drive	917.60006	600x23	8372, 8373, 8371	600PA204	1124	
3 HP Direct Drive	917.60007	600x18	8380,8381	600PA31C	1079B	
3 HP Direct Drive 5D	917.60008	600x24	8378, 8379	600PA205	1125	
5 HP Gear Drive 8G	917.60009	600x13	8365, 8366, 8367, 8368	600PA217	40005A	
360 Gear Drive 5G	917.60010	600x23	8371, 8372, 8373	600PA204	1124	
5 HP Direct Drive	917.60011	600x58	8375, 8376	600PA225	40006A	
Low Cutting Attachment	917.60012	600x61	8377	None	None	
3 HP Special Gear Drive	917.60013	600x64	8390, 8391	600PA204	1124	
3 HP Special Direct Drive	917.60014	600x65	8392, 8393	600PA205	1125	
6 HP Gear Drive 8G	917.60015	600x69	8365, 8366, 8367, 8368	600PA217A	40005C	
5 G 21	917.60016	600x70	8369, 8374, 8375, 8376	600PA285	1148A	
5 D 19	917.60017	600x71	8396, 8397, 8398	600PA286	1149A	
4 G 24	917.60018	600x72	9100, 1901, 1902	600PA283	1152	
D 21	917.60019	600x73	8329	600PA284	1153	
5 G 21	917.60020	600x70	8369, 8374, 8375, 8376	600PA285	1148A	
8 D 22	917.60021	600x58	8382, 8383, 8384	600PA225A	40006A	
8 G 24	917.60022	600x69	8365, 8366, 8367, 8368	600PA217B	40005C	
6 G 22	917.60023	600x79	8330, 8331, 8337	600PA438	1214	
6 D 20	917.60024	600x80	8308, 8309, 8310	600PA439	1215	
3 HP Special Gear Drive	917.60025	600x23A	8372A	600PA204	1124	
U D 4	917.60026	600x81, 82	9130, 9131	600PA454A	1225A	
U G 4	917.60027	600x83, 84	9134, 9135	600PA463A	1224A	