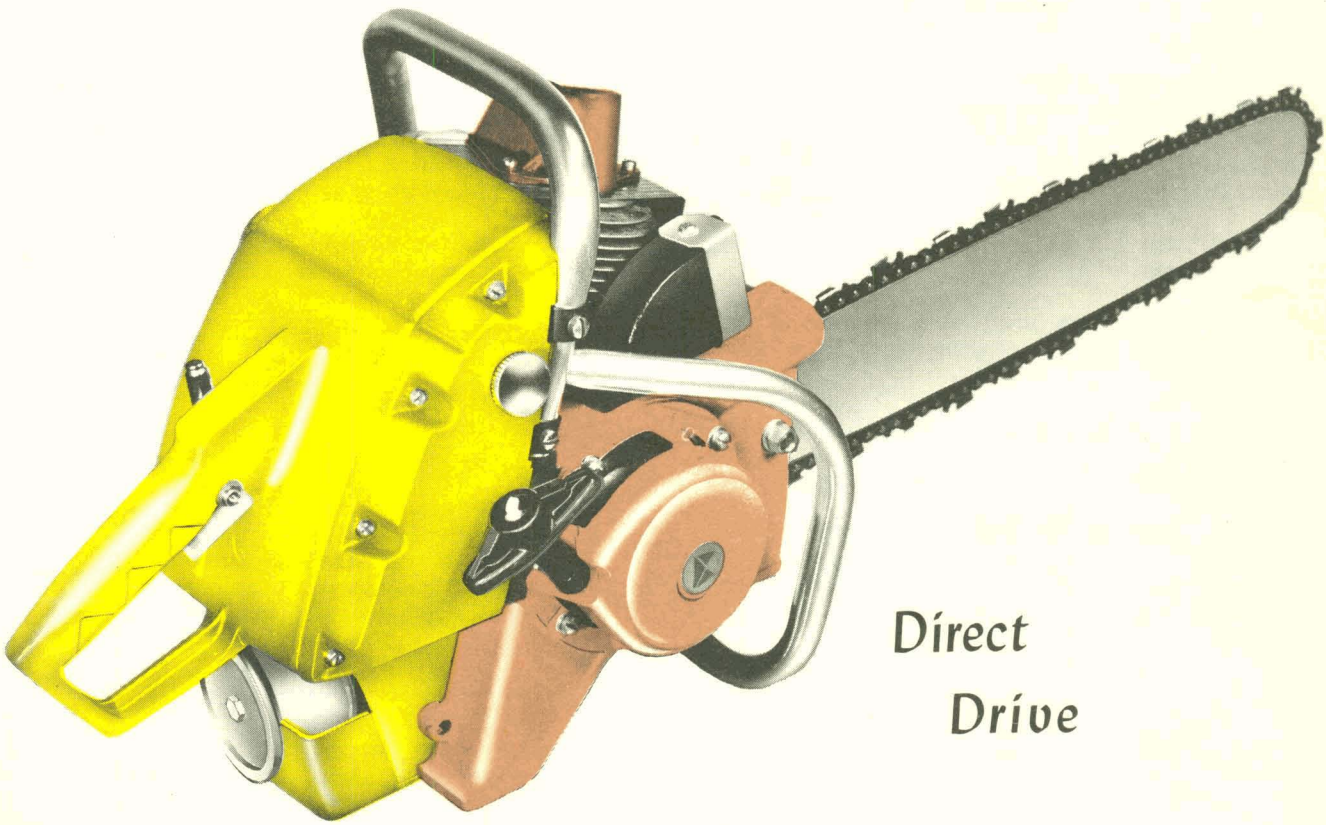
Owner Manual with Parts List

TITAN

4900 SERIES



Direct Drive

fmc FOOD MACHINERY AND CHEMICAL CORPORATION ®

PROPULSION ENGINE CORPORATION

SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

311 Marion Ave., South Milwaukee, Wis.

FORM NO. 1893053

INTRODUCTION

Your Chain Saw is precision built and specifically engineered. It has been carefully inspected throughout all phases of its production and assembled by men who are well trained in the production of fine air-cooled gasoline engines and equipment. Your Chain Saw is the finest that money can buy.

We suggest for continued successful operation of your Chain Saw that all service and major repair be handled through an authorized Dealer who is experienced in servicing the equipment and has the necessary parts on hand to give you prompt and efficient service.

IMPORTANT INSTRUCTIONS

SAFETY AND FIRE PRECAUTIONS

Do not start the engine in closed room, make sure there is ample ventilation.

Do not touch chain when engine is running, even at idle speed.

Keep engine adjusted to an idle speed, which stops chain completely.

Always stop engine when moving from one location to another.

During break-in period (5 hours) never run engine at top throttle unless under load.

Do not allow machine to run while it is resting on concrete floor.

A dull or improperly filed chain will cause the saw to buck and jump.

After refueling move machine a few feet to another location before starting engine again (Fire Precaution).

Keep saw clean of sawdust and inflammable material.

Keep spark plugs and wire connections tight.

PREVENTIVE MAINTENANCE

Remove sawdust and dirt daily so that a thorough inspection of the chain saw can be made.

Tighten loose nuts and screws.

Make sure the fan screen is clean.

Check fuel and oil line connection for leaks.

Check air filter. If necessary, clean by rinsing in pure gasoline.

Check chain.

NOTE

Do not use compressed air to remove sawdust from the outside of the carburetor. Be sure that cutting chain and guide bar are receiving sufficient lubrication. Check cutting chain for worn or loose rivets.

Chain Saws, as shipped from the factory, are precision-sharpened and ready for general purpose cutting. When you sharpen the chain, keep the same shape of the cutting edge.

TO OBTAIN THE GREATEST EFFICIENCY FROM THE CHAIN YOU MUST:

1. Keep the same cutting angle on all teeth.
2. Use the right size file or ginding stone.
3. Keep the side cutting edge vertical.
4. Shape in the top cutting edge correctly.
5. Keep all depth gauge clearances the same.

WARRANTY

ALL CHAIN SAWS ARE GUARANTEED TO BE FREE FROM DEFECTS IN WORKMANSHIP AND MATERIAL AND WILL WITHOUT CHARGE BE REPAIRED OR REPLACED WHEN, UPON INSPECTION AT OUR FACTORY, THEY ARE FOUND DEFECTIVE. THIS GUARANTEE TO COVER MERCHANDISE WITHIN 30 DAYS FROM DATE OF PURCHASE.

THIS GUARANTEE DOES NOT OBLIGATE US WHERE EQUIPMENT HAS BEEN DAMAGED BY CARELESS HANDLING OR BY IMPROPER APPLICATION OR INSTALLATION. NO LIABILITY FOR CONSEQUENTIAL DAMAGES OF ANY KIND ARE ASSUMED BY THE COMPANY. THE PURCHASER BY ACCEPTANCE OF THIS EQUIPMENT, ASSUMES ALL LIABILITY FOR CONSEQUENCES OF ITS USE AND MISUSES BY PURCHASER, HIS EMPLOYEES OR OTHERS.

TO YOU ------- THE OWNER

This Owner Manual has been especially prepared to give you all the information needed to operate and maintain your chain saw with maximum efficiency. Read these instructions carefully before starting your saw because, regardless of previous experience, you will find new features in this CHAIN SAW never before included in other saws.

Before delivery to you, the Chain Saw has been carefully tested and inspected to assure you the high degree of performance and satisfaction built into it. However, in order to maintain its standard of performance, this equipment requires a small but IMPORTANT amount of attention on your part.

Always observe good operating procedure, make regular inspections, and perform lubrication and other maintenance services regularly as instructed in manual. By studying the manual carefully and following our operation and maintenance suggestions, you will be rewarded by long efficient service from your CHAIN SAW.

CONSULT YOUR DEALER

In appointing dealers, consideration has been given to their ability to provide prompt and efficient service. We recommend that your local dealer be contacted for your service requirements. Your dealer also stocks the genuine factory replacement parts you may need, or through his close contact with the factory, can get them for you with minimum delay.

REGISTER YOUR TYPE AND SERIAL NUMBER

Register your type number and serial number in the spaces provided below and always refer to them when writing for information or ordering parts. Complete the registration card received with the saw and return to the factory.

TYPE NO. _____

SERIAL NO. _____

SPECIFICATIONS

Number of Cylinders	One
Cooling	Air
Bore	2 Inches
Stroke	1-1/2 Inches
Cycle	Two
Fuel	Oil and Gasoline Mixed
Spark Plug	AC 45M or Equal
Breaker Point Gap	.020 Inches
Ignition Timing	1/4 Inch before top dead center
Type of Valve	Reed
Operating Speed	4500 RPM
Carburetor	Diaphragm Fuel Pump
Type of Ignition	High Tension Flywheel
Type of Starter	Recoil
Chain Tension Device	Positive Screw Type
Oiler	Built-in Plunger Type
Type of Chain	Chipper - .063 gauge
Cutting Capacities	16" - 20" - 24"
Fuel Ratio	1/2 pint of Outboard Motor Oil to 1 gal. of gasoline
Recommended Gasoline	Regular gasoline - 72-83 octane
Type of Clutch	Automatic Centrifugal
Capacity of Chain Oiler Tank	5/8 pint
Capacity of Gas Tank	2 quarts

GENERAL INSTRUCTIONS

The Direct-Drive Chain Saws are available in lengths of 16", 20" and 24". Construction is of magnesium and aluminum casting plus a light weight engine resulting in a unit that will give rugged, heavy duty performance with minimum amount of effort on the part of the operator.

The special alloy steel guide bar is hardened throughout and nose is "hard welded" for longer life and smoother performance. Finger tip plunger assures proper lubrication of bar and chain during operation.

The Chain Saw is equipped with an all-position fuel pump carburetor which allows the saw to be operated in any position without interruption of fuel supply.

The handle and pistol grip design gives perfect balance to unit at all cutting angles.

Convenient positioned chain oiler is located close to handle for ease in providing sufficient oil to chain and guide bar.

ASSEMBLY

The unit is shipped in two cartons, one containg the power head and the other the guide bar and chain.

Remove the clamp plate and starter assembly. Position the slot in guide bar over mounting studs. Place chain around drive sprocket and guide bar. Be sure the chain is installed with cutters facing forward on the top side of the guide bar and also that the chain is seated in the guide bar groove at all points.

Replace clamp plate and starter assembly and be certain the tip of the chain tightener assembly is seated in the hole in guide bar. Do not tighten nuts completely. The final chain tension adjustment is made by use of the adjusting screw on the front side of clutch cover and bar clamp assembly. When properly adjusted there should be from 3/16 to 1/4 inch sag at center of bar between the side links of the chain and the edge of the guide bar. Tighten nuts holding clutch cover and bar clamp assembly and then tighten chain adjusting screw. Chain tension is very important and should be watched carefully. Never tighten chain so tightly that it cannot be pulled freely around guide bar.

The cutting efficiency of your direct drive saw depends on proper filing of the chain. Keep the chain sharp!

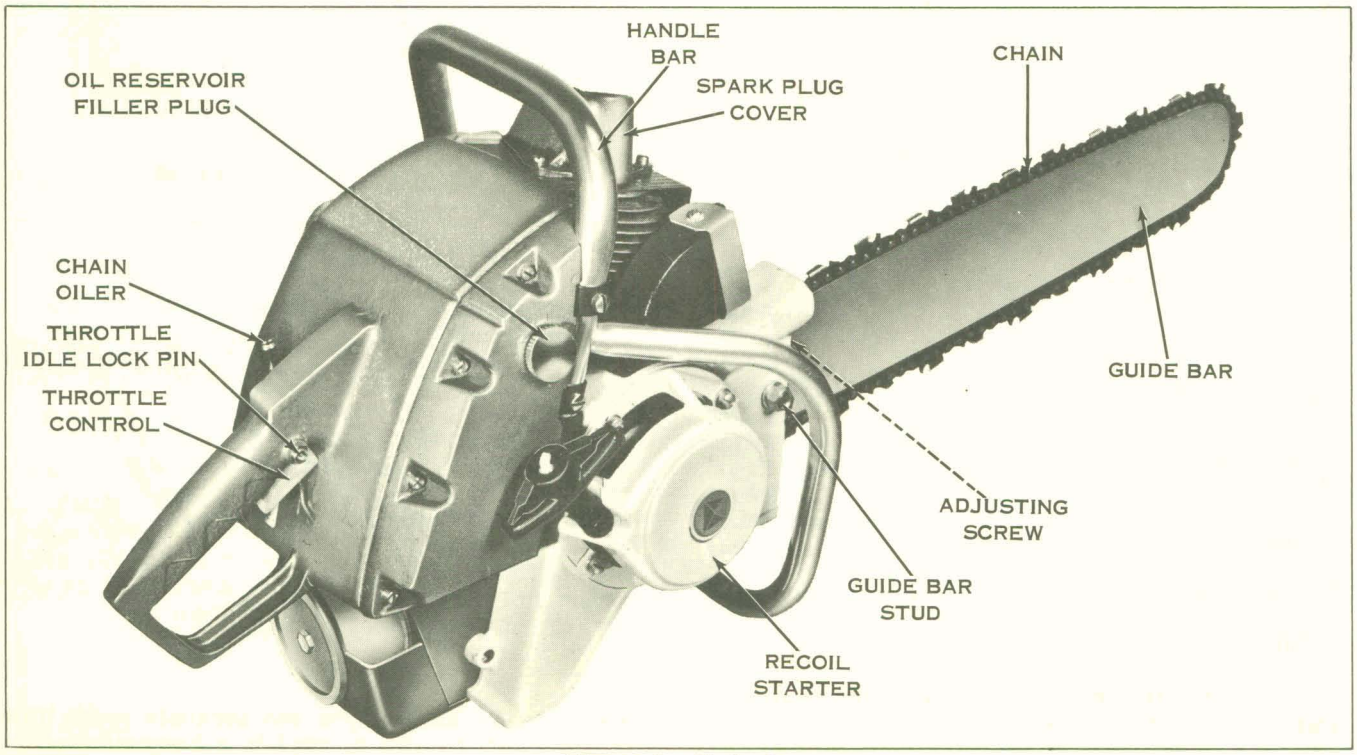


Figure 1. Chain Saw

FUEL AND LUBRICATION

IMPORTANT: UNITS ARE SHIPPED WITH ENGINES COMPLETELY DRY SO FOLLOW INSTRUCTIONS CAREFULLY BEFORE STARTING ENGINE. The lubrication of the two cycle engine depends entirely on the oil mixed with the gasoline. The proper mixture is 1/2 pint of Outboard Motor Oil, to one gallon of gasoline. For the first few hours of operation it is recommended that a mixture of 3/4 pint of oil per gallon of gasoline be used. Be sure to mix gasoline and oil in a separate container. Do not pour unmixed gasoline or oil into engine fuel tank.

Fill the chain tank with #30 oil or heavier for use in warm or moderate temperatures and #10 in winter. In extreme cold weather or when working in pitchy wood a mixture of 4 parts of oil and one part of kerosene is recommended. Before using saw, press chain oiler plunger until a quantity of oil has entered the guide bar groove. During operation use oil pump plunger frequently to keep guide bar and chain adequately lubricated.

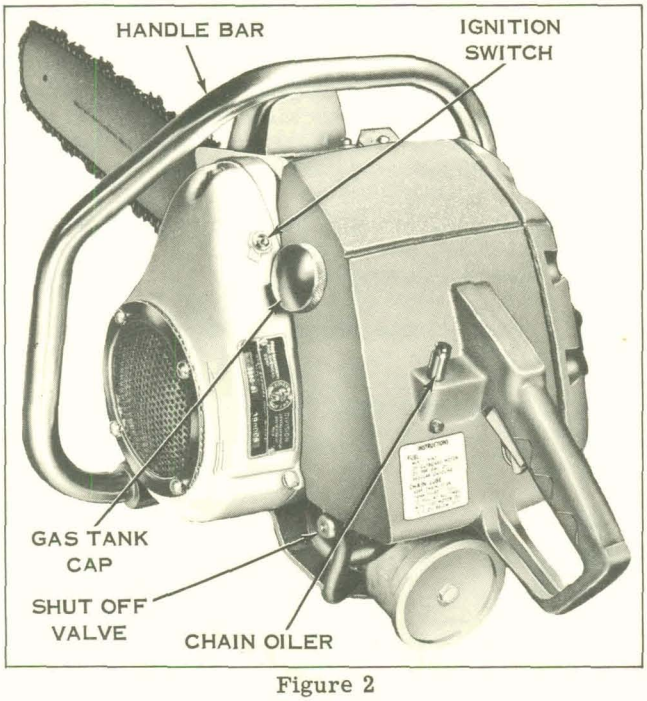


Figure 2

STARTING ENGINE

For new units proceed as follows:

1. Put fuel in tank that is properly mixed as explained in previous instructions.

2. Open shut off valve below fuel tank.

3. Turn switch to ON position.

4. Move choke lever to choke position.

5. Raise throttle trigger and press pin located on right side of handle to lock trigger in raised position.

6. Pull starter cord with quick snap pulls until engine fires.

7. Turn choke lever to open position and again pull starter cord. If engine fails to start, close choke for one pull of starter cord and again open choke and pull starter cord. When engine starts immediately press trigger to release throttle lock as engine should not be run at full throttle without load. It may be necessary to maneuver the choke lever from three to ten seconds while engine is warming so that it will idle satisfactorily.

CARBURETOR ADJUSTMENT

The carburetor is adjusted when chain saw leaves the factory but if adjustment becomes necessary proceed as follows:

Turn Low Speed screw and High Speed screw clockwise until completely closed. Open Low Speed screw 3/4 turn and High Speed screw 1-1/4 turns. Start engine and when warm adjust Low Speed screw so that engine idles smoothly at no throttle. Next make a test cut and adjust High Speed screw so that engine will not stall under full load. Be sure the bar and chain are properly oiled and that engine is at maximum speed before starting cut. Finally check engine for quick acceleration and if necessary slightly increase opening of mixture screw.

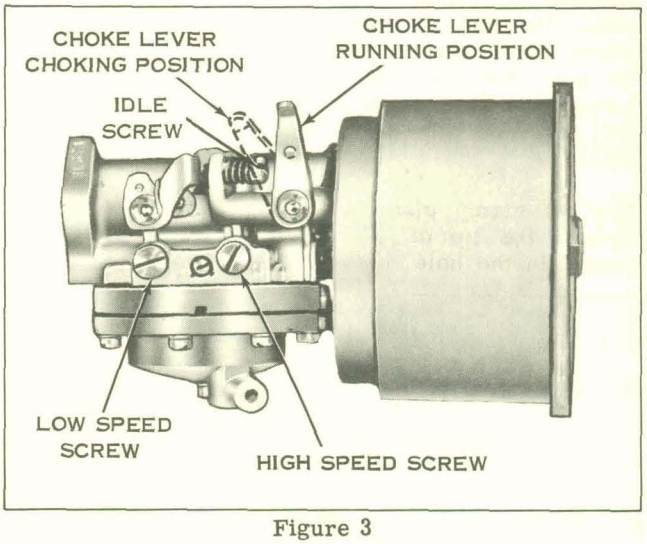


Figure 3

STARTER

If starter is removed, before replacing, pull centering pin out 1/4" and be sure pin is seated in hole in end of crankshaft.

SPARK PLUG

The spark plug should be checked periodically. A fouled plug causes starting trouble and poor operation. The plug should be cleaned and points set at .028 to .032 inch. If there is any doubt as to the condition of the plug it should be replaced.

AIR FILTER

Air filter is the dry type and normally needs little attention. If the saw is used in a dusty atmosphere the filter element should be removed and cleaned with air or brush.

MUFFLER AND EXHAUST PORTS

The exhaust ports should be cleaned approximately every 50 hours of operation. Failure to do this may result in loss of engine power. Remove the spark plug and muffler and turn engine so piston is at the bottom of the stroke. With a blunt instrument scrape carbon from exhaust holes and surrounding chamber. Pull starter cord several times to blow out loose carbon and replace plug and muffler.

CLUTCH

The saw is designed with an automatic clutch which requires no adjustment. If the chain creeps when engine is idling, adjustment should be made on the carburetor idler control.

ENGINE FAILURE

If engine fails to start, check fuel supply, shut-off valve and gas line.

Test spark by removing wire from plug, hold wire approximately 3/16 inch from plug and pull starter cord. If spark fails to jump gap it is due to faulty points, coil or condenser. If there is spark, remove plug, attach wire and again pull starter cord to check spark at plug points. If necessary clean and reset plug points.

Keep engine shroud and cylinder clean as restricted air flow may cause engine to overheat.

CHAIN

To get top efficiency from your direct drive saw the chain must be kept in top condition. A dull chain produces a rough action and causes chain to bind in the cut. This action loosens the teeth and rivets of the chain and causes excessive wear of groove in guide bar.

The chain is sharpened best by removing it from the saw and sharpening in a filing vise designed for the job. Several acceptable models are on the market.

File the cutting angle exactly the same on all cutting teeth, 35°, using a 7/32 inch round chain saw file. This will insure maintaining the correct shape of the cutting teeth. Keep the file horizontal and use firm strokes, applying pressure only on the forward stroke.

If it is necessary or expedient to file chain on the guide bar be sure to take the following precautions:

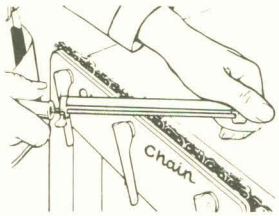
1. When clamping the guide bar in a bench vise take care that you do not pinch the guide bar groove.

2. After filing the chain on the guide bar, slacken chain and run free with a surplus of chain oil to flush out filings.

The performance and life of any chain depends upon how well it is maintained. If the filing is 50% below standard, the performance will be 50% below standard. If the filing is up to standard but the chain is being run under adverse conditions which include, for example, a bad sprocket, shallow bar channel, lack of lubrication, the life of the chain will be shortened.

In replacing damaged cutters be sure they are correct as to right or left. When peening the rivets, do not strike too hard as this will bulge the large diameter of rivet and cause chain to bind. Always check chain for flexibility after repair.

FILING WITH A FILE HOLDER



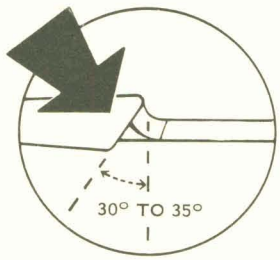
1. Press flat side of file holder firmly against top of cutter, holding file parallel with top plate of cutter and with 1/5 of its diameter above top plate.

2. Line up notched angle guides on file holder frame parallel to chain. Maintain these notches in parallel position and you are filing the cutting edge close to the recommended 30 to 35 angle.

3. A few firm strokes will put a keen cutting edge on each "Fast-File" tooth. Always apply pressure on the forward stroke away from you.

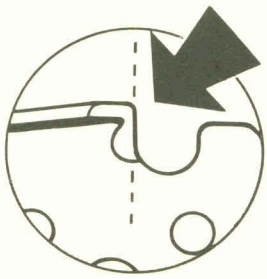
4. Occasionally rotate file in the holder to get maximum use from file.

ALWAYS KEEP TOP OF CUTTING EDGE AT 30° TO 35° ANGLE



Be sure to maintain this angle on both left and right hand cutters, otherwise saw will lead off to one side.

KEEP SIDE OF CUTTING EDGE VERTICAL



(straight up and down and at right angle to bottom of cutter)

To obtain this vertical edge, hold the file parallel with top plate of cutter and with 1/5 of its diameter above top plate.

SUPPLEMENT

TO

4900 SERIES CHAIN SAW MANUAL

The standard Titan Model 4900 Chain Saw uses a 7/16 pitch chain and sprocket. It may, however, be purchased from the factory with 1/2 pitch chain and sprocket as optional equipment.

For easy identification the 7/16 pitch sprocket for the 4900 Series saw is seven tooth and the 1/2 pitch sprocket is six tooth.

Whenever ordering replacement sprockets, chains or guide bars, refer to the following list for applicable part numbers.

SPROCKETS

Part No. 1707870	Sprocket and Drum Assembly (7 tooth)
Part No. 1708490	Sprocket and Drum Assembly (6 tooth)

CHAINS

Part No. 1708389	16" Chain - 7/16 Pitch - Blue Jet
Part No. 1708390	20" Chain - 7/16 Pitch - Blue Jet
Part No. 1708391	24" Chain - 7/16 Pitch - Blue Jet
Part No. 1708256	16" Chain - 7/16 Pitch - Oregon
Part No. 1706607	20" Chain - 7/16 Pitch - Oregon
Part No. 1706608	24" Chain - 7/16 Pitch - Oregon
Part No. 1708413	16" Chain - 1/2 Pitch - Blue Jet
Part No. 1708414	20" Chain - 1/2 Pitch - Blue Jet
Part No. 1709745	24" Chain - 1/2 Pitch - Blue Jet
Part No. 1708144	16" Chain - 1/2 Pitch - Oregon
Part No. 1708145	20" Chain - 1/2 Pitch - Oregon
Part No. 1709749	24" Chain - 1/2 Pitch - Oregon

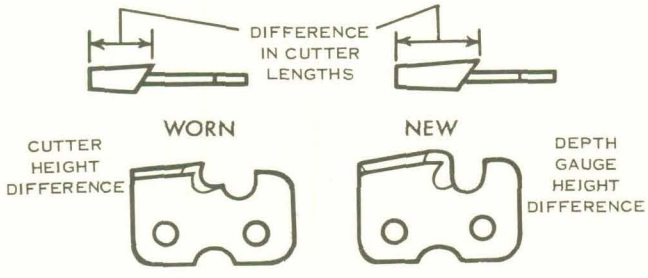
GUIDE BARS

Part No. 1707587	16" Guide Bar - Speed Ply
Part No. 1706603	20" Guide Bar - Speed Ply
Part No. 1706604	24" Guide Bar - Speed Ply

MAINTAIN HOLLOW-GROUND FORM OF CUTTER

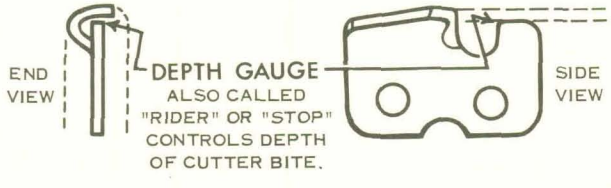
Be careful not to drop the file too low and get a weak razor edge. If file is held too high, the edge will be blunt.

FILING NEW CUTTERS



When a new cutter is installed in a chain it should be filed back to correspond with the top plates of the other cutters. Also be sure that the depth gauge is set to match the others.

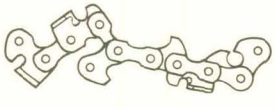
CORRECT DEPTH GAUGE SETTING IS IMPORTANT!



Depth Gauge, also called "rider" or "stop" controls depth of cutter bite.

CHAIN, BAR AND SPROCKET MAINTENANCE TIPS. The following are some of the points to look for when a chain is not giving satisfactory service.

CORRECT ASSEMBLY



Check the parts assembly. Frequently, the user will install the wrong parts when he repairs his chain.

1. See that parts have not been installed backwards.

2. See that all parts are correct size and pitch. Sometimes a 7/16 inch pitch chain will be repaired with 1/2 inch parts.

3. Tight joints. If the rivet has been struck too hard, the center hub will be broken, resulting in a tight joint.

4. Discourage the installation of used parts in chain repair. For example, if a used rivet is placed in a chain, it may break off, and a piece of the rivet head or spindle will become lodged between the tie strap, or cutter and drive link. A tight joint results.

"SOFT" CHAIN

If the chain will not hold an edge, look for these faults:

1. When the file has been held too low, the top plate will be feathered, or filed too thin. The cutting edge will then break off and quickly become dull.

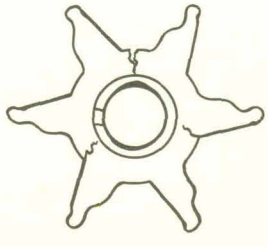
2. If the file is held too high, the result is a blunt cutting edge on the front of the top plate. In effect, the chain has not been sharpened at all.

3. Incorrect setting of depth gauges or "stops." Depth gauges should be adjusted to the power of the saw and the type of wood being cut. If they are too high, the cutter will not perform, and will become rounded no matter how frequently the chain is sharpened. Adjust the depth gauges downward as the cutters are filed. For Hi-Speed .030 - .035 and Low-Speed .035 - .040 will give best all-around performance.

4. If the chain has been run in rocks, gravel, or grit, some of the chrome may have been knocked off the cutting edges. Rapid cutter wear will result if the chain is operated under these conditions.

5. The front angle of the top plate on both right and left hand cutters should be approximately the same. If not, the cutters on one side will be doing most of the work and the chain will lead off to that side.

EXCESSIVE SPROCKET WEAR

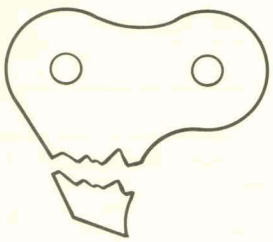


An excessively tight chain or a chain being out of pitch will cause undue sprocket wear.

1. Do not put a new chain on a worn sprocket.

2. Do not put an out-of-pitch chain on a new sprocket.

DRIVE LINK BREAKAGE



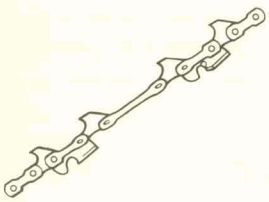
Breakage in a chain generally occurs in drive links. The following factors contribute to this condition:

1. Chain has been run on a bar with a shallow groove or a worn rail. This causes excessive chain chatter which produces heat and strain on the drive links.

2. Improper depth gauge setting. To reduce chain chatter, depth gauges should be set uniformly at the correct height. For example, ten depth gauges in a row set at .035 inch below the cutters, followed by one set at 0.60 inch, will result in chatter and undue strain on the latter. In such a case, all depth gauges should be set at .035 inch.

3. Drive links striking the back or motor mount end of the saw bar, or at any other point, will produce undue strain or breakage.

EXCESSIVE STRETCH



More than 1/4 inch stretch to the lineal foot of chain will change chain pitch so much that the chain cannot be used satisfactorily. The following are causes of "stretch."

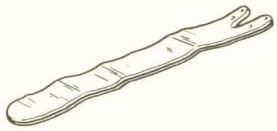
1. The chain has been run too tight on the bar.

2. Sufficient lubricant has not been applied to the chain during operation.

3. Depth gauges have not been properly set, resulting in excessive chatter.

4. Faulty bar. When drive links strike any portion of the mounting end, the tang or point of the drive link will be broken or rounded off. This permits sawdust to build up in the bar channel and produces excessive stretch by tightening the chain.

GUIDE BARS



Some causes of poor chain performance and short chain life, resulting from faulty bars, follow.

1. The bottom of the drive links riding on the bottom of the bar channel. This prevents the chain from being seated properly. Many bars have shallow grooves all the way around. Some are shallow only on the mounting end or at the nose of the bar. Either bar condition is undesirable.

2. Faulty bar groove is usually caused by the thinner of the two rails leaning out, resulting in improper support for the chain.

3. Defective chain entry at the motor mount end of the bar causes excessive wear and breakage of the drive links.

CARBURETOR TROUBLE CHART

TROUBLE	POSSIBLE CAUSE	REMEDY
CARBURETOR FLOODS	Dirt or foreign particles preventing inlet needle from seating	Remove, clean and replace
	Diaphragm lever spring not seated on lever dimple	Remove lever and reinstall
	Diaphragm distorted and interfering with the lever operation	Replace diaphragm

CARBURETOR TROUBLE CHART (CONT)

TROUBLE	POSSIBLE CAUSE	REMEDY
ENGINE WILL NOT ACCELERATE	Idle adjusting screw set too lean	Enrich idle adjustment
	Incorrect setting on diaphragm lever	Reset
	Inlet needle binding	Remove, clean and replace
	Diaphragm cover plate loose	Tighten
	Diaphragm gasket leaking	Replace
	Main fuel orifice plugged	Remove diaphragm cover, diaphragm, diaphragm lever and main adjusting screw. Clean out orifice by blowing through main adjustment threaded hole
ENGINE WILL NOT IDLE	Incorrect idle adjustment	Reset to best idle
	Idle discharge ports or channels clogged	Blow out with clean compressed air or if compressed air is not available clean and flush with gasoline
	Diaphragm lever set incorrectly	Reset diaphragm lever so it is flush with the floor of the diaphragm chamber
	Throttle shutter cocked in the throttle bore	Reset; this condition caused in an excessively fast idle
ENGINE RUNS OUT LEAN IN CUT	Tank vent not operating correctly	Clean or replace
	Leak in fuel system from tank to pump	Tighten or replace fittings or line
	Ruptured fuel pump diaphragm	Replace
	Main fuel orifice plugged	Clean
CARBURETOR RUNS RICH WITH MAIN ADJUSTMENT SHUT OFF	The 1/8" diameter nozzle channel plug is not sealing	Install new plug

NOTE: In making carburetor adjustments turn adjustments carefully and gently - do not ram adjustments into seats.

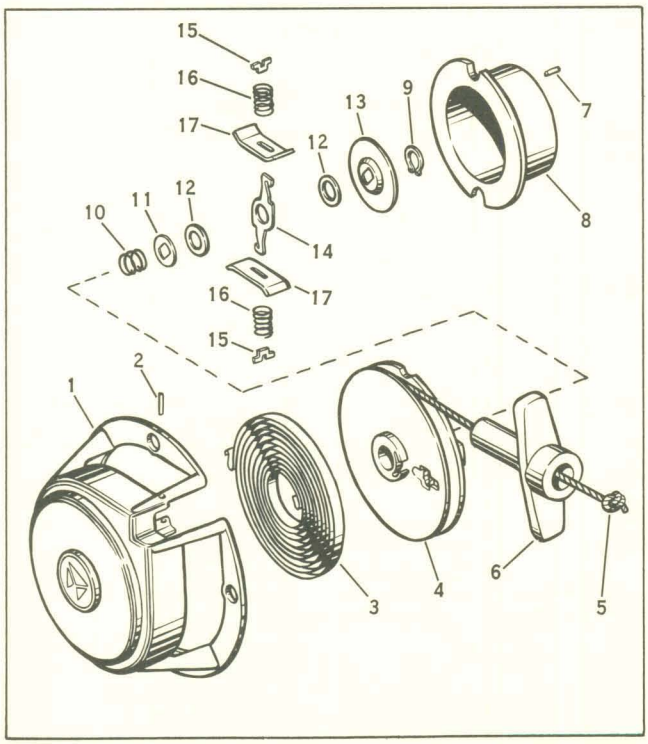


Figure 4

REWIND STARTER

Ref. No.	Part No.	Description	No. Req'd.
1	1709654	Cover	1
2	1704828	Centering Pin	1
3	1709655	Rewind Spring	1
4	1709656	Rotor	1
5	1709657	Cord	1
6	1709658	T-Handle	1
7	1709664	Roll Pin	1
8	1709663	Cup (Incl. 7)	1
9	1709662	Retainer Ring	1
10	1704364	Brake Spring	1
11	1704365	Brake Washer	1
12	1704366	Fibre Washer	2
13	1709661	Retainer Washer	1
14	1704367	Brake Lever	1
15	1704612	Spring Retainer	2
16	1704370	Spring	2
17	1704368	Friction Shoe	2
18	1709660	Shoe Assembly (Incl. 14 thru 17)	1

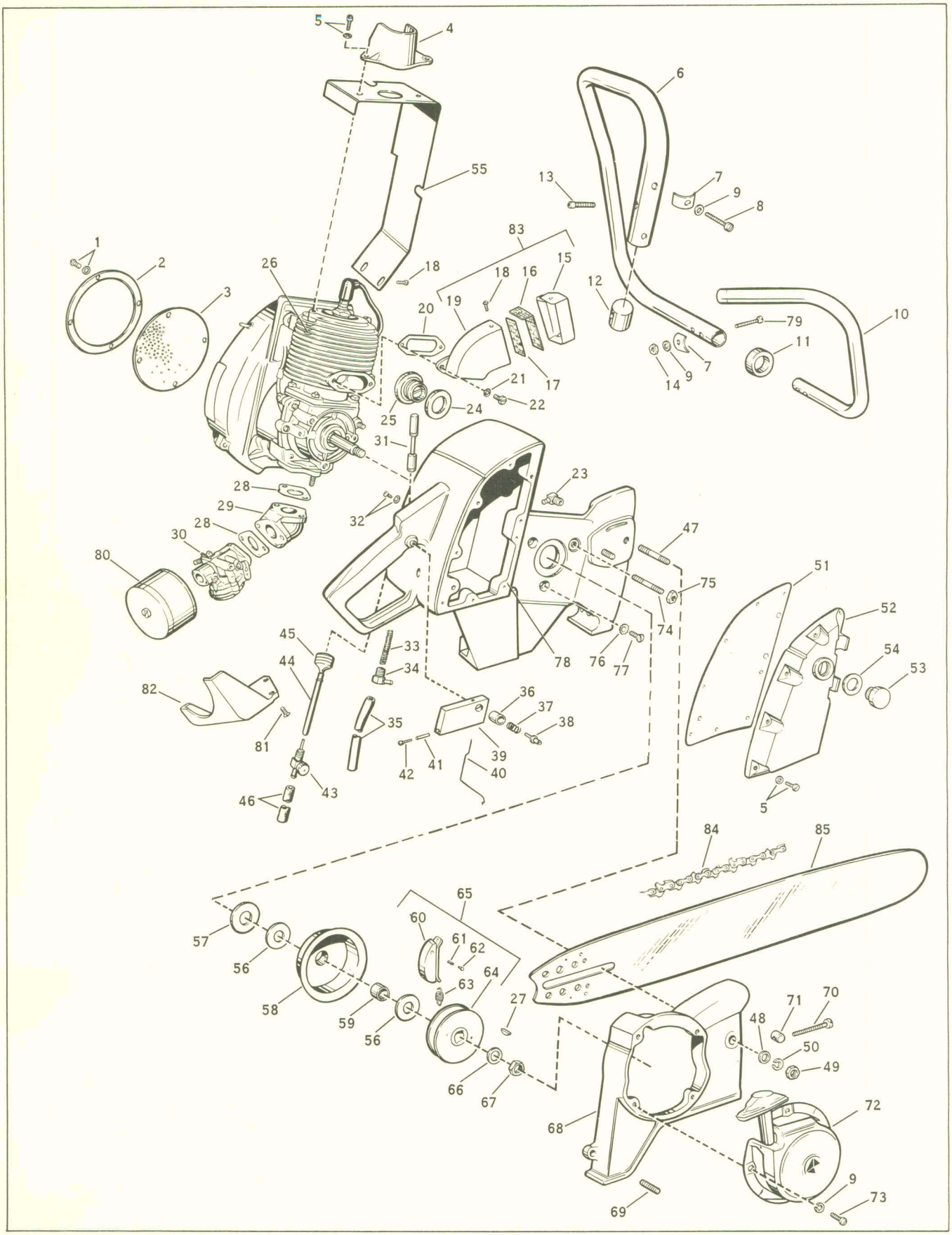


Figure 5

Ref. No.	Part No.	Description	No. Req'd.
1	1185168	Screw 1/4-20 x 3/8" With Lockwasher	4
2	1709222	Engine Shroud Ring	1
3	1707842	Screen	1
4	1709252	Guard	1
5	1185293	Screw No. 10-24 x 3/4" With Lockwasher	9
6	1709276	Main Handle	1
7	1709248	Clamp	4
8	1114479	Screw 1/4-20 x 1-3/4"	2
9	1100241	Lockwasher 1/4"	9
10	1709277	Auxiliary Handle	1
11	1709305	Tube	1
12	1709297	Plug	1
13	1185378	Socket Hd Screw 1/4-20 x 1-1/4"	1
14	1110106	Lock Nut 1/4-20	2
15	1707906	Deflector	1
16	1707674	Spark Arrestor Screen	1
17	1707673	Screen	1
18	1185381	Screw No. 10-24 x 1/2" W/Washer	3
19	1707905	Muffler	1
20	1709718	Gasket	1
21	1187612	Lockwasher	2
22	1102571	Screw 1/4-20 x 3/4"	2
23	1703897	Elbow	1
24	1707895	Gasket	1
25	1707820	Fuel Cap	1
26		Engine (see figure 8)	1
27	1709226	Woodruff Key 1/8 x 5/8"	1
28	1707038	Gasket	2
29	1709244	Carburetor Bracket	1
30	1709725	Carburetor (see figure 7)	1
31	1709245	Oil Pump Piston	1
32	1709246	Screw No. 10-24 x 5/16" With Lockwasher	1
33	1709389	Oil Pump Spring	1
34	1709258	Check Valve Assembly	1
35	1709265	Oil Line	1
36	1709254	Spring Retainer Clip	1
37	1709404	Spring	1
38	1709255	Throttle Lock Button	1
39	1709253	Trigger	1
40	1709269	Throttle Control Link	1
41	1709261	Pin	1
42	1185411	Set Screw 1/4-20 x 3/8"	1
43	1706538	Fuel Valve	1
44	1706540	Tube	1

Ref. No.	Part No.	Description	No. Req'd.
45	1709257	Filter	1
46	1709727	Fuel Line	1
47	1706522	Guide Bar Stud	2
48	1705108	Flat Washer 3/8"	2
49	1109529	Nut 3/8-24	2
50	1100243	Lockwasher 3/8"	1
51	1709271	Tank Divider	1
52	1709281	Frame Cover	1
53	1709286	Oil Cap	1
54	1707872	Oil Cap Gasket	1
55	1709266	Cylinder Shroud	1
56	1706663	Sprocket Flange Washer	2
57	1707839	Sprocket Plate	1
58	1707870	Clutch Cup Assembly	1
59	1709260	Sprocket Bearing	1
60	1709666	Shoe	2
61	1707108	Spring	2
62	1707107	Pin	2
63	1709667	Spring	2
64	1709668	Clutch Plate	1
65	1709262	Clutch Assembly (Incl. 60 thru 64)	1
66	1100244	Lockwasher 7/16"	1
67	1110151	Lock Nut 7/16-20	1
68	1709275	Clamp Plate	1
69	1703090	Rollpin 5/16 x 5/8"	1
70	1707885	Adjusting Screw	1
71	1707884	Adjusting Nut	1
72	1709247	Starter Assy (see figure 4)	1
73	1114457	Screw 1/4-20 x 3/4"	4
74	1707210	Stud	1
75	1110149	Nut 5/16-24	1
76	1185285	Lockwasher 5/16"	2
77	1706573	Screw 5/16-18 x 3/4"	2
78	1709273	Main Frame	1
79	1114474	Screw 1/4-20 x 1-1/2"	2
80		Air Filter (see figure 8)	
81	1706508	Screw 1/4-20 x 5/8"	2
82	1709651	Air Filter Guard	1
83	1708337	Muffler Assembly	1
84	1708256	Chain 16" (Oregon #62)	
	1706607	Chain 20" (Oregon #62)	
	1706608	Chain 24" (Oregon #62)	
	1708389	Chain 16" (Blue Jet #43-2)	
	1708390	Chain 20" (Blue Jet #43-2)	
	1708391	Chain 24" (Blue Jet #43-2)	
85	1707587	Guide Bar 16"	
	1706603	Guide Bar 20"	
	1706604	Guide Bar 24"	

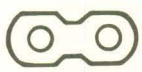
1706678 Pre-Set Tie Strap Incl. (1) 1706687 and (2) 1706677 (Oregon #62)
1708388 Pre-Set Tie Strap Incl. (1) 1708385 and (2) 1708383 (Bluejet #43-2)

Cutting Chain Parts

CHAIN

RIVET

DRIVE LINK

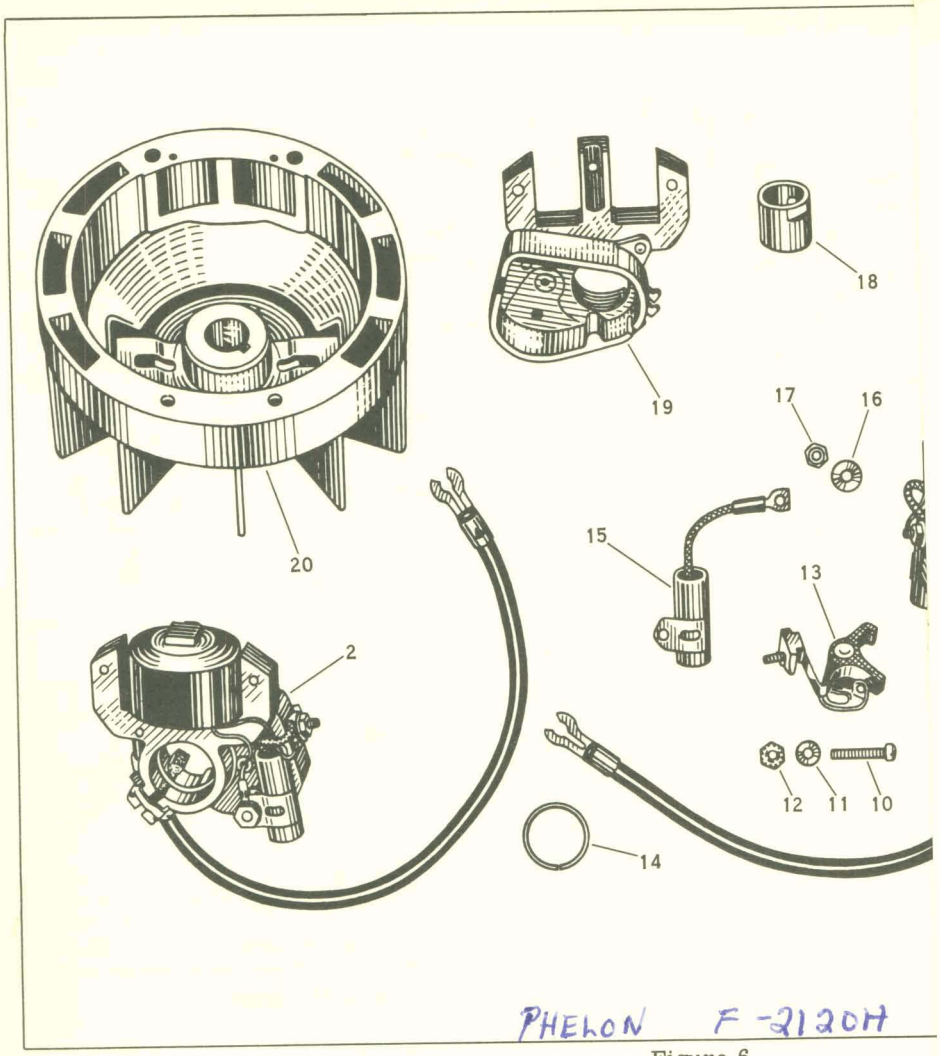


TIE STRAP

R.H. CUTTER

L.H. CUTTER

Oregon #62	1706677	1706688	1706687	1706686	1706685
Bluejet #43-2	1708383	1708384	1708385	1708386	1708387



PHELON F-2120H

Figure 6

USE PAGE 38 PHELON MANUAL

Ref. No.	Part No.	Description	No. Req'd.
1	1707046	Coil	1
2	1707047	Complete Stator Assembly	1
3	1707048	Core Clamp Assembly	1
4		Screw 8-32 x 1	1
5	1707050	Felt	1
6	1707051	Dust Cover	1
7	1707052	Cover Spring	1
8	1707053	Cover Gasket	1
9	1707054	Lead Wire	1
10		Screw 8-32 x 1	1

Ref. No.	Part No.	
11		Wa
12		Nu
13	1707056	Br
14	1707057	Sp
15	1707058	Co
16	1707049	Te
17	1707055	Te
18	1707125	Ca
19	1707060	Co
20	1709732	Fl

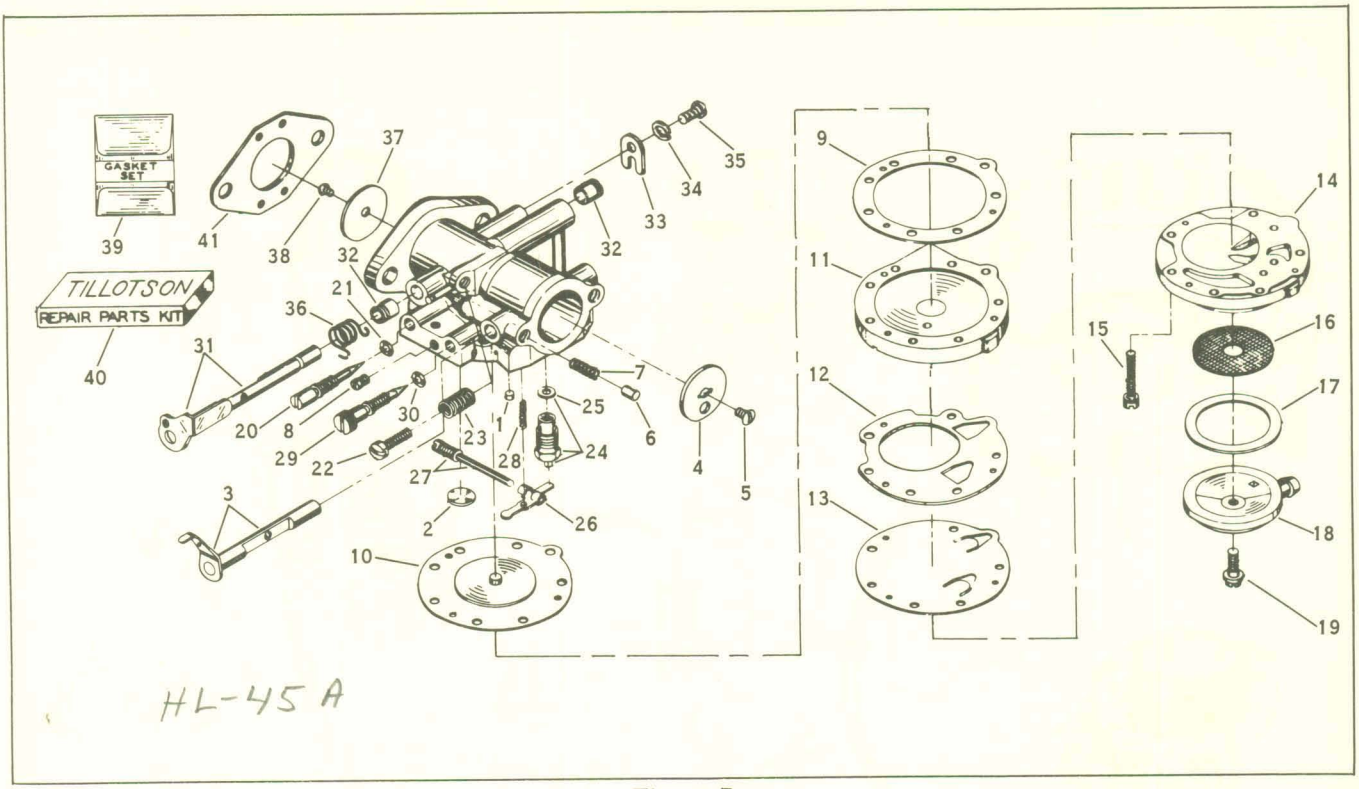


Figure 7

Ref. No.	Part No.	Description	No. Req'd.
1	*1707063	Cup Plug	1
2	*1707064	Welch Plug	1
3	1707605	Choke Shaft and Lever	1
4	1707066	Choke Shutter	1
5	1707100	Choke Shutter Screw	1
6	1707068	Choke Friction Pin	1
7	1707069	Choke Friction Spring	1
8	1707070	Drain Screw	1
9	1707072	Diaphragm Gasket	1
10	*1707071	Diaphragm	1
11	1707073	Diaphragm Cover	1
12	1707075	Fuel Pump Gasket	1
13	*1707076	Fuel Pump Diaphragm	1
14	1707077	Fuel Pump Body	1
15	1707078	Screw and Lockwasher	6
16	*1707079	Fuel Strainer Screen	1
17	1707080	Fuel Strainer Cover Gasket	1
18	1707081	Fuel Strainer Cover	1
19	*1707082	Screw	1
20	*1709733	Idle Adj. Screw (Incl. Ref. 21)	1
21	1707093	Idle Adj. Screw Seal Ring	1
22	*1707085	Idle Speed Reg. Screw	1
23	*1707086	Idle Speed Reg. Screw Spring	1
24	*1707087	Inlet Needle, Seat and Gasket	1
25	1707088	Inlet Seat Gasket	1
26	*1707089	Inlet Control Lever	1
27	*1707090	Inlet Control Lever Pinion Screw	1
28	*1707091	Inlet Tension Spring	1
29	*1709734	Main Adjustment Screw	1
30	1707093	Main Adjustment Screw Seal Ring	1
31	1709735	Throttle Shaft and Lever	1
32	1707095	Throttle Shaft Bushing	2
33	1707096	Throttle Shaft Clip	1
34		Lockwasher No. 8	1
35	1707097	Throttle Shaft Clip Return Screw	1
36	*1709736	Throttle Shaft Return Spring	1
37	1707099	Throttle Shutter	1
38	*1707100	Throttle Shutter Screw	1
39	*1707101	Gasket and Packing Set	1
40	1709737	Repair Parts Kit	1
41	1707074	Flange Gasket	1

(*) Indicates contents of Repair Parts Kit

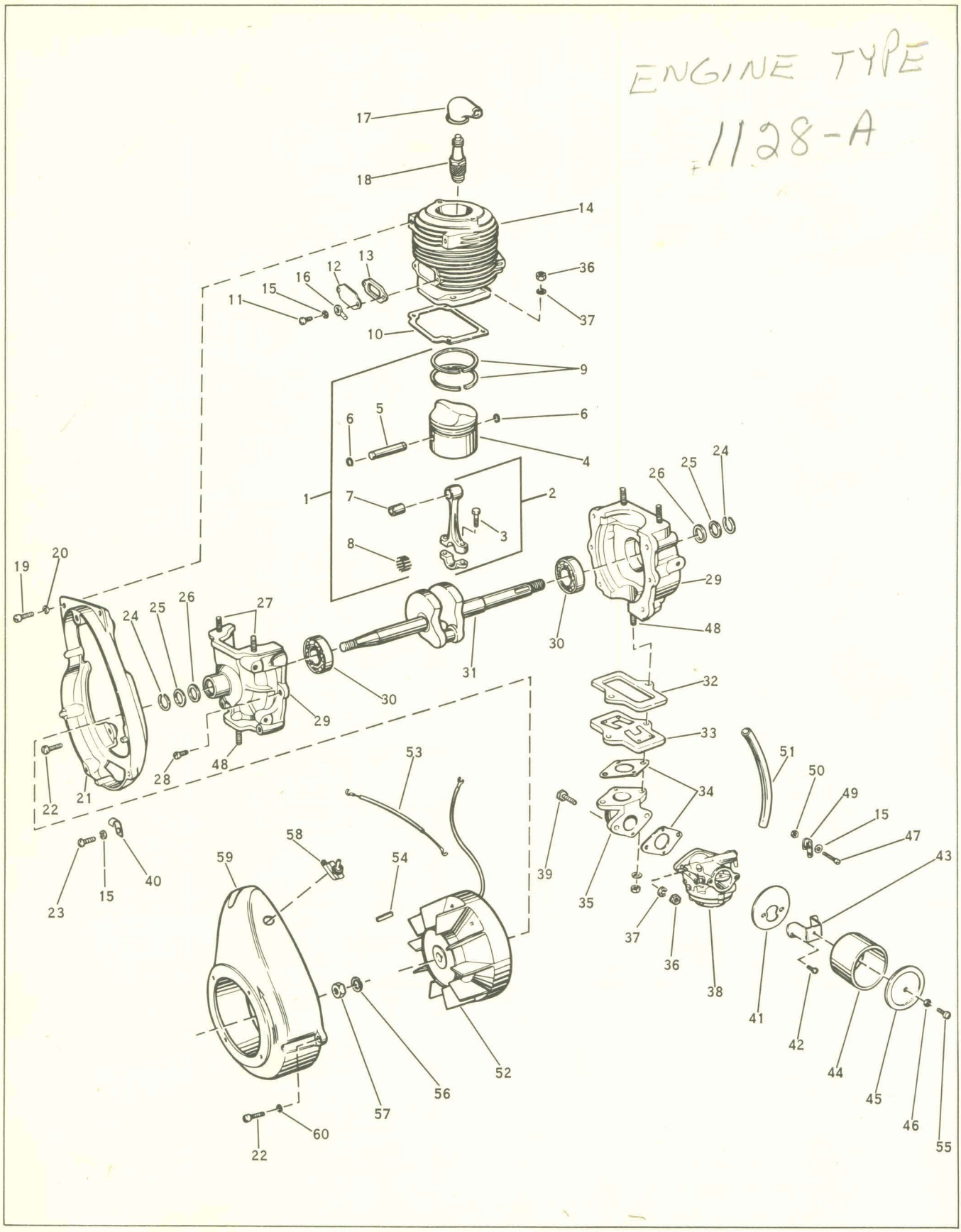


Figure 8

Ref. No.	Part No.	Description	No. Req'd.
1	1709711	Rod and Piston Assembly	1
2	1709712	Connecting Rod	1
3	1709713	Connecting Rod Screw	2
4	1709714	Piston	1
5	1709715	Piston Rod	1
6	1709716	Retaining Ring	2
7	1709717	Cartridge Bearing	1
8	1707008	Needle Bearing Set	1
9	1707009	Piston Ring Set	1
10	1707010	Cylinder Gasket	1
11		Screw 10-24 x 5/8"	2
12	1707011	Transfer Port Cover	1
13	1709718	Gasket	1
14	1709719	Cylinder	1
15		Flatwasher No. 10	2
16	1707030	Cable Clip	1
17	1709720	Spark Plug Cover	1
18	1707017	Spark Plug, 14MM (AC45M or J8J)	1
19		Screw 1/4-20 x 7/8"	2
20		Flatwasher 1/4	2
21	1707119	Shroud Base	1
22		Screw 1/4-20 x 3/4"	3
23		Screw 10-24 x 3/8"	1
24	1707023	Retainer Ring	2
25	1707022	Seal Retainer	2
26	1707021	Crankshaft Seal	2
27	1707016	Cylinder Stud	4
28		Screw 10-24 x 3/4"	6
29	1709721	Crankcase Assembly less Bearings	1
	1709722	Crankcase Assembly with Bearings	1

Ref. No.	Part No.	Description	No. Req'd.
30	1709723	Bearing	2
31	1709724	Crankshaft	1
32	1707040	Reed Plate Gasket	1
33	1707039	Reed Plate Assembly	1
34	1707038	Carburetor Gasket	2
35	1709244	Adapter Elbow	1
36		Hex Nut 1/4-20	8
37		Lockwasher 1/4	8
38	1709725	Carburetor	1
39		Screw, Hex Hd Cap 1/4-20 x 7/8"	2
40	1709730	Cable Clip	1
41	1707045	Air Filter Base	1
42		Screw 10-32 x 1/2"	2
43	1707044	Air Filter Bracket	1
44	1709731	Element	1
45	1707043	Air Filter Cover	1
46		Lockwasher No. 10	1
47		Screw 10-32 x 3/4"	1
48	1707024	Carburetor Stud	2
49	1709726	Clamp on Throttle Lever	1
50		Hex Nut 10-32	1
51	1709727	Fuel Line	1
52		Magneto (See Figure 6)	1
53	1707029	Cutoff Wire and Sleeve	1
54	1707027	Flywheel Key	1
55		Screw 10-24 x 1"	1
56		Lockwasher 7/16"	1
57	1709728	Hex Nut 7/16-20 Left Hand Thread	1
58	1709729	Toggle Switch	1
59	1707123	Air Shroud	1
60		Flatwasher 1/4"	1