

Instruction Manual

No. 400

Lombard
**WOODLOT
WONDER**

MODEL 4D POWER CHAIN SAW

Including Parts List
and
Chain Sharpening Instructions



LOMBARD GOVERNOR CORPORATION

CHAIN SAW DIVISION

ASHLAND, MASSACHUSETTS

MODEL 4-D

IMPORTANT - CORRECTIONS

The following changes have been made since book was printed:

Page 13

Item No. 14 5-42 changed to 5-42-2

Page 15

Item No. 13 PS-402 changed to PS-420-N
Item No. 49 PS-801 changed to PS-217-N

Page 17

Item No. 5 Piston Ring changed to Piston Pin
Item No. 77 Qty. changed from 1 to 2

LOMBARD GOVERNOR CORPORATION

Ashland, Massachusetts

IMPORTANT OPERATING INSTRUCTIONS

AND GENERAL INFORMATION ON

LOMBARD MODEL 4-D

1. ENGINE-STARTING INSTRUCTIONS

NOTE: Special Fuel Mixture for run-in of new engines. Use 3/4 pint SAE 30 motor oil per gallon of gas for first 20 hours of use.

(A) Permanent Fuel

In a clean container thoroughly mix 1/2 pint of No. 30 motor oil with each gallon of gasoline. (Low grade or white gasoline is preferred, but any grade of gasoline will operate satisfactorily.) Fill the tank with this mixture.

(B) Starting Engine

Completely open the shut-off valve, located on the right side of the engine below gas tank. Snap switch to "ON" position.

Move the choke lever to the choke position. NOTE: The choke lever is on the left side of the carburetor and the choke position is back toward the filter.

Pull handle of recoil starter straight out, on same angle that it is mounted, with your left hand. Hold the saw by placing the right hand on the rear handle bar, and at the same time hold the throttle lever in open position. In very cold weather, or if the engine has not been run for a long period, two or more pulls may be necessary. After the engine starts gradually move the choke lever back until the engine has warmed up.

When restarting a warm engine, choking is not necessary. Choking a warm engine, or over-choking a cold engine may result in flooding. If this occurs, continue cranking engine, with the choke pushed back until the engine starts. In severe cases of flooding, the shut-off valve should be closed and the engine cranked until it starts. After the engine starts, the valve should again be opened.

(C) Stopping Engine

To stop the engine, shut off ignition switch located on air shroud, left side of engine. Completely close gas shut-off valve.

2. SAW OPERATION

(A) Chain Tension

To get the correct tension of chain, loosen the two nuts on studs so cutter bar can be moved easily. Tighten chain tension screw until chain is reasonably tight. To check for correct tension, the chain on the lower part of the cutter bar should be hanging loose so there is at least 1/8" between the side links and the edge of cutter bar. The chain tension is an important item and should be watched carefully. If chain tension is too tight, chain will not run, or end of bar may become burnt.

(B) Chain Lubrication

The chain is lubricated by automatic oiler which shuts off automatically when the chain is not moving. Therefore, when engine is idling, the chain will not be oiled. Remove the filler cap on the oil reservoir to fill with SAE #30 oil.

It may be necessary in sub-zero weather to mix kerosene with the oil or use a much lighter oil. Kerosene may also be added to cut gummy pitch.

There is a small hole in the sprocket which allows the oil to get on the chain and this should be checked daily to see that it is not plugged with sawdust.

(C) Gear Lubrication

An oil hole cover on gear case near muffler, has been provided for lubricating gears. Under normal conditions the gears should be oiled two or three times a day. Under severe use, the gears should be oiled hourly. With the engine shut off, rotate the chain slowly by hand while oiling the gears. Remember gear care prevents gear wear, (use two or three squirts from an oil can). There is a small hole in the bottom of the gear case which acts as an overflow if excess oil is used on gears. Leakage through this hole is a normal function and should not cause alarm.

(D) Positions of Cutting

This model 4-D saw will cut in any position. When starting a cut be sure engine is up to speed before entering chain into wood.

3. ENGINE MAINTENANCE

(A) Spark Plug

The spark plug should be checked periodically. A dirty, oily or carboned plug causes starting trouble and poor operation.

The spark plug should be cleaned, and the points set at .030 inches. If there is any doubt about the condition of the plug, it should be replaced with a Champion No. JT-6-J or equivalent.

(B) Air Filter

This engine is equipped with a dry type tubular filter. It should be cleaned in gasoline twice a week and allowed to drain. The filter should be dry before replacing.

(C) Muffler & Exhaust Ports

The muffler and the exhaust ports should be cleaned every 50 hours. Failure to clean these parts periodically results in loss of power.

To clean the muffler, remove from cylinder and scrape carbon from all cavities and the exhaust outlet space.

To clean the cylinder exhaust ports, remove the spark plug, and turn the starter pulley so that the piston is at the bottom of the stroke, below the exhaust holes. With any blunt instrument scrape the carbon from the three cylinder exhaust holes so that they are completely open and remove the carbon from the surrounding exhaust chamber. Crank the engine several times to blow out the loosened carbon. Replace the spark plug and muffler.

(D) Starter

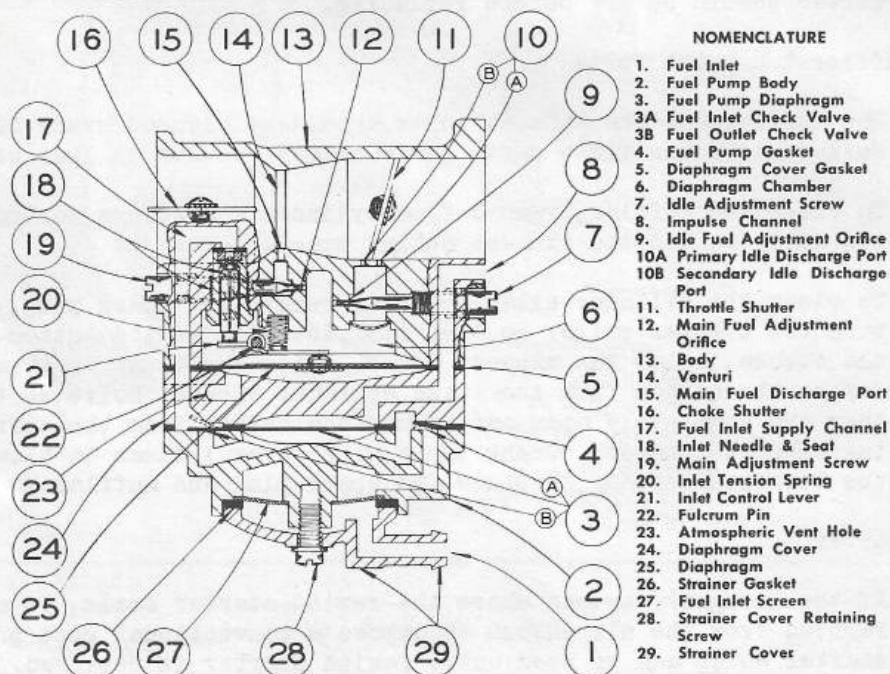
If the emergency arises where the rewind starter fails, it may be removed from the air shroud to expose a conventional rope pulley starter which can be used until rewind starter is repaired.

To repair starter, remove four screws holding starter to air shroud. Refer to exploded view of starter (Fig. 8) before disassembling. All parts of the drive mechanism may be replaced by removing the retainer ring. Take notice of the way the parts are assembled. They must be reassembled in exactly the same way for the starter to operate.

To replace cord or rewind spring, remove four screws holding mounting flange, flange and cover together. Hold rotor from turning and remove screen, mounting flange and flange. Allow rotor to turn,

about two turns, to relieve preset of rewind spring and remove rotor, being careful to disengage rotor from rewind spring so spring will remain in cover. To replace cord, take out old cord and insert new one by removing cord retainer from cord and tie knot in its place. Make two turns around rotor with cord in a counterclockwise direction when looking at outward end of rotor. Spring may be replaced if needed. Spring must be replaced with care, as it is apt to fly while taking it out or putting it in. Before reassembling, refer to Fig. 8. Also, notes under Fig. 8. Check each part individually with Fig. 8 before assembling. Assemble rotor, being sure to engage rewind spring. Rewind cord on rotor counterclockwise. Make about two turns on rotor counterclockwise to preset spring. Hold in this position and reassemble parts. When starter is assembled and cord is pulled, the sharp edges of the friction shoe plates should protrude and turn counterclockwise. Check this action before reassembling starter to engine.

HL SERIES CONSTRUCTION DATA AND CHART



CONSTRUCTION DATA

(E) Carburetor Adjustments

To properly adjust carburetor for best performance the engine must be thoroughly warm.

INITIAL ADJUSTMENTS:

To start a cold engine first carefully close, by turning clockwise, both Idle and Main Adjustment Screws (Ref. 7 & 19) - located either below air intake opening or at left side of carburetor. Now open Main Adjustment Screw (Ref. 19) counterclockwise approximately one and one-quarter turns ($1 \frac{1}{4}$). Open Idle Adjustment Screw (Ref. 7) three-quarters ($\frac{3}{4}$) turn. Back Idle Speed Regulating Screw off its contact with Throttle Stop Lever then turn it inward about one (1) full turn so as to slightly open Throttle Shutter (Ref. 11).

Open fuel shut off valve, choke carburetor, put ignition switch to "ON" position, squeeze throttle trigger and give firm quick pull on starting cord. When engine fires, decrease the choke slightly and ease off the throttle trigger. Do not race engine, gradually decrease the choke to full open position as engine warms. Then make several test cuts and if necessary, to keep engine from stalling, slightly increase opening of the Main Adjustment Screw (Ref. 19).

FINAL ADJUSTMENTS:

Now close throttle and readjust Idle Speed Regulating Screw so engine idle speed is at approximately 1800 to 2200 RPM and without chain turning or throttle trigger being depressed. Then, slowly readjust Idle Adjustment Screw (Ref. 7) to obtain smooth and even engine performance, after which enrichen the mixture slightly above this setting to provide sufficient fuel for quick acceleration. Finally, with saw functioning under a cutting load, slowly readjust Main Adjustment Screw (Ref. 19) to obtain even cutting speed. This setting will vary between one (1) to one and one-half (1 1/2) turns open.

(F) Should Engine Fail to Start

The following material is presented as an aid in the maintenance and repair of the engines. Proper maintenance of an engine will result in hundreds of hours of satisfactory operation.

Check ignition switch on air shroud.

Check for fuel in the gas tank and check to see that shut-off valve is open.

Check magneto. Hold the spark plug wire 3/16" from engine, spark should jump from the terminal to the engine when cranked. If no spark occurs, test the condenser and coil; if faulty, replace.

Check for spark; remove spark plug and with magneto wire attached hold the base of the plug against the engine, crank engine. A spark should jump across the plug points. If it doesn't, clean the plug or replace with a new one.

Check for flooding. Remove spark plug and if plug is wet or if gap is closed by liquid fuel, the plug should be dried, and with main adjustment needle closed, the engine should be cranked un-

til vapor stops coming out of spark plug hole. Re-insert plug and open adjustment screw to 1 turn open.

Check for gasket leaks and for leaks around the crankshaft seal.

(G) Should Engine Overheat

Check the flow of air over the cylinder. If restricted by dust or dirt, remove the cylinder shield and clean the cylinder fins, and if necessary, remove the air shroud and clean the flywheel fan and the air intake holes in rewind starter.

Be sure to have correct fuel mixture; 1/2 pt. of No. 30 motor oil to each gallon of gasoline. Use a separate clean container for mixing oil and gasoline.

(H) Should Engine Lack Power

Check carburetor adjustment. See instructions. (Item E in engine maintenance.)

Check magneto timing. Corresponding match marks on the stator plate and crankcase should be lined up. If the timing has been changed, loosen the stator plate lock screw. Move the stator plate to the correct timing position as indicated by the marks and tighten the screw. Proper timing is indicated by the breaker points opening when the piston is 3/16" to 1/4" before the top dead center of the stroke.

Check for carbon. If exhaust ports and muffler are restricted by carbon, scrape clean.

Check compression. Remove spark plug and place compression gauge in cylinder spark plug hole. After cranking the engine several times, the gauge should register 70 lbs. or more. If compression is faulty, replace piston rings.

Check for gasoline and oil ratio in fuel. Be sure engine has 1/2 pint of oil for each gallon of gasoline.

Check cylinder, carburetor, reed plate, and transfer port gaskets for leaks. Also check for leaks around the crankshaft seals.

(I) General Information

Magneto point setting	.020 inch
Spark Plug gap	.030 inch
Fuel Ratio	1/2 pt. No. 30 oil per gal. of gasoline
Recommended engine speed	2700 to 4000 r.p.m.

Clean muffler and exhaust ports every 50 to 75 hours.

Clean air filter twice a week.

If magneto is removed from the engine, be sure to replace cam in original position, with the beveled side out.

When replacing piston, be sure tapered side of baffle is toward muffler side of engine.

4. SAW MAINTENANCE

(A) Chain

One of the most important parts of the saw is the chain. The cutting efficiency of the unit depends on the condition of the chain. Therefore, it should be inspected daily for sharpness and damage. If the chain appears to be dull (noticed by slower cutting) or if it has struck a hard object such as a stone, etc., do not continue to cut. Use a round file with file holder to sharpen this Chipper Chain. A chain cutting wood after becoming dull will damage both chain and cutter bar as it will require forcing the saw. It will also reduce the life of the chain as it necessitates excessive filing of the radius face angles of the cutters.

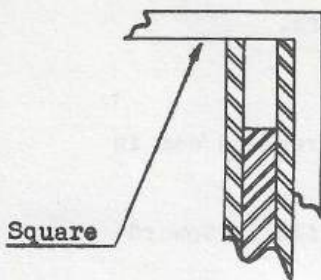
Use your chain with care and see that it has plenty of lubrication so parts will not wear and keep it sharp at all times.

If a cutter is broken or damaged beyond repair, it may be replaced from the spare parts that are shipped with all new chains. Check to be positive the correct cutter, that is, left or right, is assembled into the chain. When peening rivets, do not strike too hard, or you will bulge large diameter of rivet in center blanks; therefore, binding the chain. Light blows using the ball end of a small hammer is sufficient. Always check chain for flexibility at repaired joint.

(B) Cutter Bar

Many cutter bars are damaged by ill use, that is, lack of proper lubrication on chain and cutter bar, unnecessary forcing of saw when cutting, and twisting of cutter bar in some cuts. Always remember the lack of proper oil will cause excess wear on both chain and cutter bar: therefore, reducing the life of both items.

The top edges of slot of cutter bar, where side links of chain run, should be checked for parallelism periodically. A good method is to place a square on side of cutter bar as shown in Fig. 1.



File or stone edges parallel and remove all burrs. If one edge is lower than the other, the chain will cut crooked, and then the operator will force the saw to try and remedy this situation; therefore, resulting in considerable damage to the cutter bar.

Fig. 1

(C) Clutch

This saw is equipped with a special shoe-type, automatic clutch mounted on engine shaft, inside gear housing. It will automatically engage and release according to engine speeds, which are controlled by the throttle lever.

This clutch cannot be adjusted. If chain creeps, then the idling speed of the engine is incorrect. This is remedied by adjusting idle mixture.

When repairing saw, never run engine with clutch assembly on engine shaft unless drum is also assembled in proper position on same shaft. Because of centrifugal force the shoes may fly off and cause injury or damage.

(D) Gear Housing

The gear housing contains the gears and clutch assembly. The only attention it requires is to oil gears hourly by 3 or 4 drops of SAE #30 motor oil from an oil can. With engine shut off, rotate chain slowly by hand while oiling the gears.

5. SERVICE AND REPAIR INSTRUCTIONS

(A) Suggested Procedure for Dismantling Saw

Remove Cutter Bar and Chain.

Sprocket - Hold sprocket stationary and remove sprocket nut. Lift sprocket from spline shaft.

Cover - Gear Case: Remove eight screws.

Remove lock nut on engine shaft.

Remove clutch shield.

Remove clutch.

Remove clutch key.

Remove special washer.

Remove drum - gear assembly.

Remove bushing, sleeve and special washer from engine shaft.

Driven gear and transmission shaft assembly are removed as one unit.

Front handle bar, remove four screws.

Gear case, remove three screws.

Fuel line, disconnect and remove.

Remove throttle link between carburetor and arm.

Oil Pump - if necessary to remove oil pump from back of gear case, loosen holder, keeping in mind the threads are left hand.

Remove gas tank and rear handle bar.

(B) Suggested Procedure for Dismantling Engine

Air Filter - remove air filter cover and filter.

Carburetor and Reed Plate - remove two nuts.

Muffler - remove the screws holding muffler to the cylinder.

Rewind Starter - remove four screws holding starter to air shroud.

Air Shroud - remove screws holding the air shroud to the shroud base, and remove wire to stop switch.

Flywheel - remove nut from inside starter cup and remove starter cup. Replace nut loosely and give it a sharp rap with a rawhide hammer until flywheel is loosened from taper of crankshaft.

Magneto Stator Plate - loosen the friction screw at the base of the stator plate. Pull the stator plate off by turning back and forth.

Cam and Key - remove by tapping. Note position before removal.

Shroud Base - remove four screws holding the shroud base to the engine.

Cylinder - remove four nuts.

Crank Case - remove six screws holding the crankcase together, then tap the end of the crankshaft gently to separate the case and bearing from shaft, tap the shaft gently.

To replace ball bearing in the case, remove lock ring, washer and seal. Heat the case evenly with a blow torch or over a gas flame until the bearing drops out. At this temperature a new cold bearing can be dropped in. Make sure that the beveled side of the inner race of the bearing is up when it is dropped into the crankcase. Also, be sure when replacing the seal that the lip is toward the center of the engine.

Connecting Rod - to remove the connecting rod from shaft, remove the two screws holding the cap to the rod. When reassembling the rod and cap to the shaft, be sure that the match markers on the rod and cap are on the same side. Be sure that there are 30 rollers in assembly. Be sure that the straight side of the piston baffle is toward the tapered end of shaft.

To remove the rod from the piston pin, remove the lock ring from one side of the piston and tap the piston pin to one side.

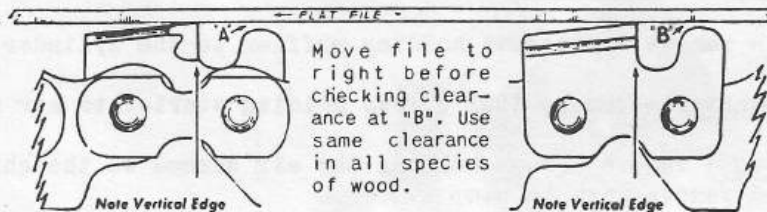
It is extremely important that all parts be thoroughly clean, and the moving parts oiled before assembly. A reassembled engine will require a run-in period of about an hour before full power will be developed.

Filing Instructions FOR CHIPPER CHAIN 1/2" PITCH, GEAR DRIVEN

"Your file held in one position does the job"

Chain Rider Clearance

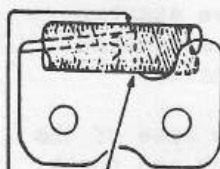
To check rider clearance place a flat file on two cutters as illustrated...Use a feeler gauge in space "A".



Move file to right before checking clearance at "B". Use same clearance in all species of wood.

Depth gauge clearance should be about .030 inch, or as set at factory.

SIDE VIEW

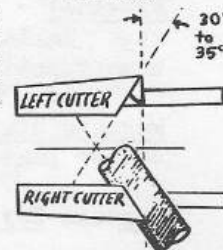


Use only a 1/4 inch round, straight (not rat-tail) file. Draw long, even strokes. Press firmly back and slightly up. Hold one position.

Always keep this edge vertical when viewed from side. Keep 1/5 of file diameter above top plate.

Keep file up. Low filing undercuts side of cutter, causing chain to grab. Never use a flat file to sharpen top plate.

TOP VIEW



Keep the same 30° to 35° angle on both left and right cutters.

END VIEW



KEEP FILE LEVEL

Warranty

We warrant each New Chain Saw manufactured by us to be free from defects in material or workmanship. Our obligation under this warranty is limited to making good at our factory any parts thereof which shall within thirty days after delivery of such chain saw to the original purchaser be returned to us with transportation charges prepaid, and which our examination shall disclose to have been thus defective. This warranty will not apply to any chain saw which shall have been repaired or altered outside our factory in any way so as, in our judgment, to affect its stability or reliability nor which has been subject to misuse, negligence or accident. This warranty is expressly in lieu of all other warranties expressed or implied and all other obligations or liabilities on our part, and we neither assume nor authorize any other person to assume for us any other liability in connection with the sale of our chain saws.

**LOMBARD GOVERNOR CORPORATION
ASHLAND, MASS.**

This guarantee shall be effective only providing Warranty card is properly filled out and returned to Lombard Governor Corp. at the time of purchase.

LOMBARD MODEL 4 D GAS SAW-PHOTO No. YS-2276 **Gas Tank & Rear Handle Bar Assembly**

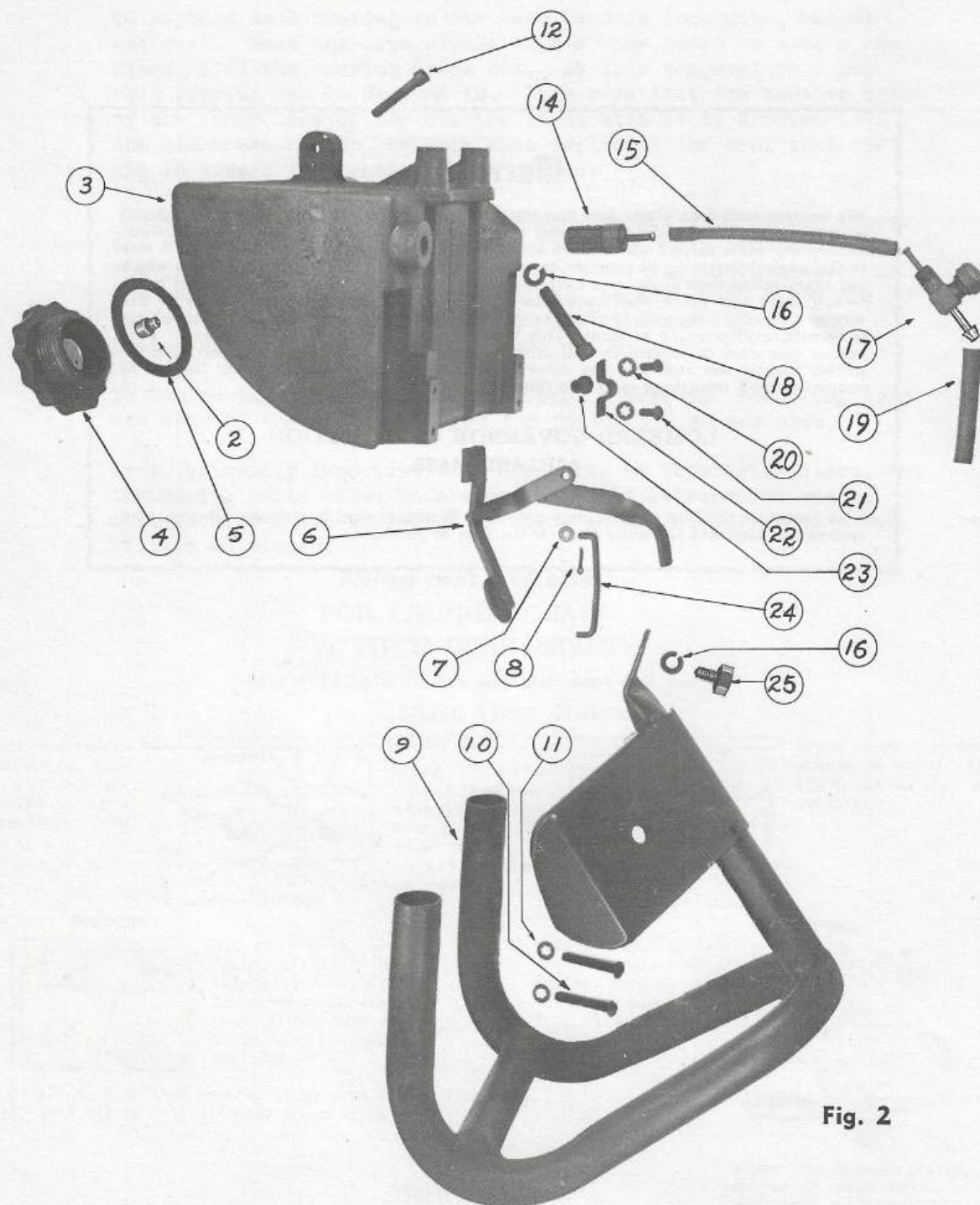


Fig. 2

LOMBARD GOVERNOR CORP., ASHLAND, MASS.

PARTS LIST YS-2276

For Gas Tank and Rear Handlebar Assembly Woodlot Wonder Model 4D

Item No.	Part No.	Part Name	Qty. Per Unit
2	PM-219	Valve	
3	YS-2272	Gas Tank	1
4	YS-2269	Cap, Gas Tank w/Valve	1
5	5-53	Gasket, Gas Tank Cap	1
6	YS-2080	Throttle	1
7	PW-107	Washer, Plain	2
8	PM-144	Cotter Pin	2
9	YS-2217	Rear Handlebar	1
10	PS-315	Screw, Round H'd. #10-24 x 1 1/4 lg.	4
11	PW-210	Lockwasher, Shakeproof #1210-00	5
12	PS-122	Screw, Socket H'd. Cap 1/4-20 x 1 1/4 lg.	1
14	5-42	Strainer & Weight	1
15	5-41	Sleeve — Gas Tank	1
16	PW-216	Split Lockwasher	3
17	YS-2317	Valve, Shut-off	1
18	PS-128	Screw, Socket Hd. 1/4-20 x 1 1/8	2
19	DD-59	Gas Line	1
20	PW-209	Lockwasher Shakeproof #1208-00	4
21	PS-308	Screw, Rd. H'd. 8-32 x 3/8 lg.	4
22	YS-2017	Clip, throttle	2
23	YS-2014	Bushing, Throttle	2
24	YS-2018	Link, Throttle	1
25	PS-408	Screw, Hex. Hd. 1/4-20 x 5/8 lg.	1

LOMBARD MODEL 4D GAS SAW — PHOTO No. YS-2224 **Gear Case & Front Handle Bar Assembly**

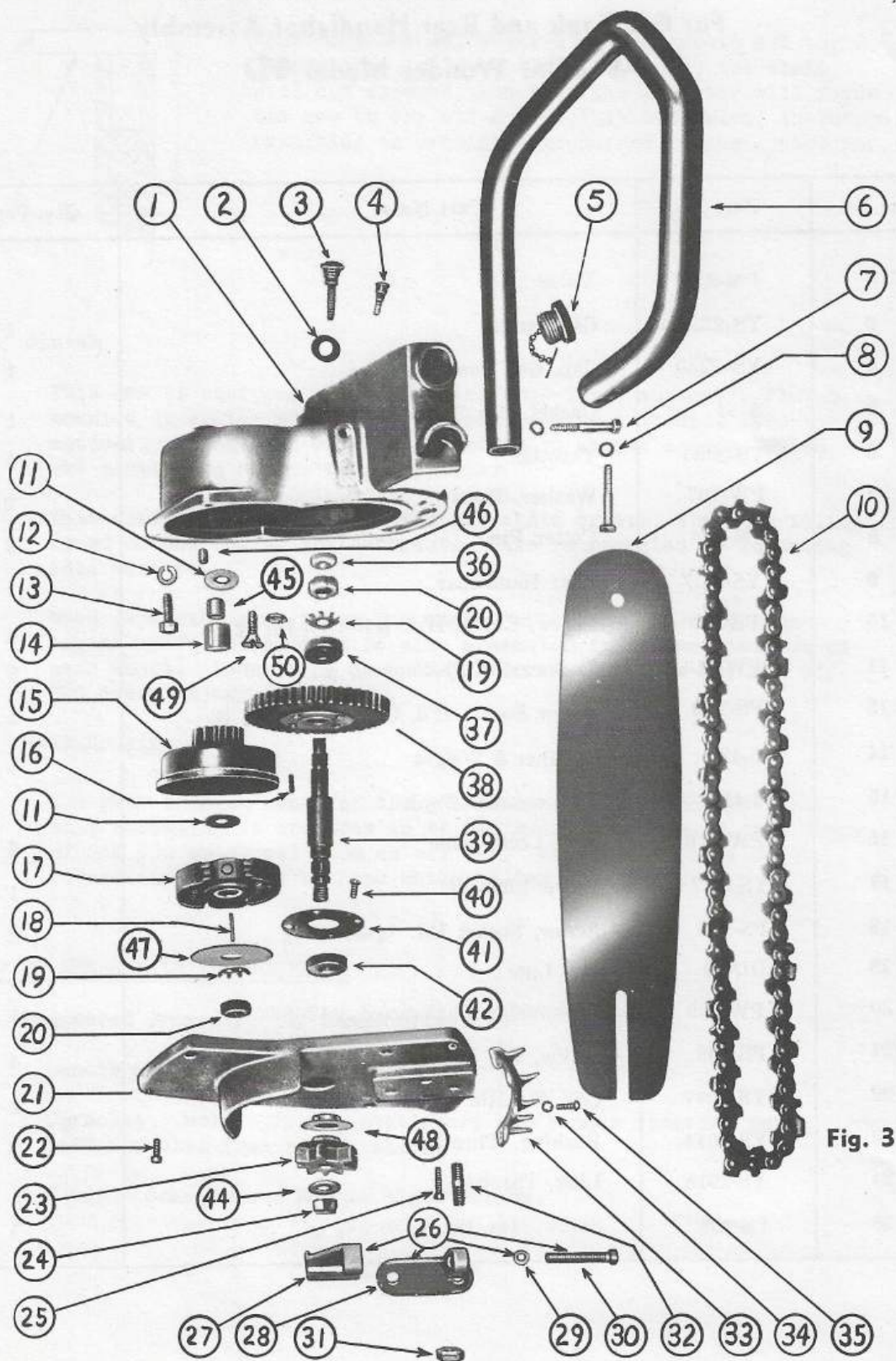


Fig. 3

LOMBARD GOVERNOR CORP., ASHLAND, MASS.

PARTS LIST YS-2224

For Gear Case Assembly

Model 4 D

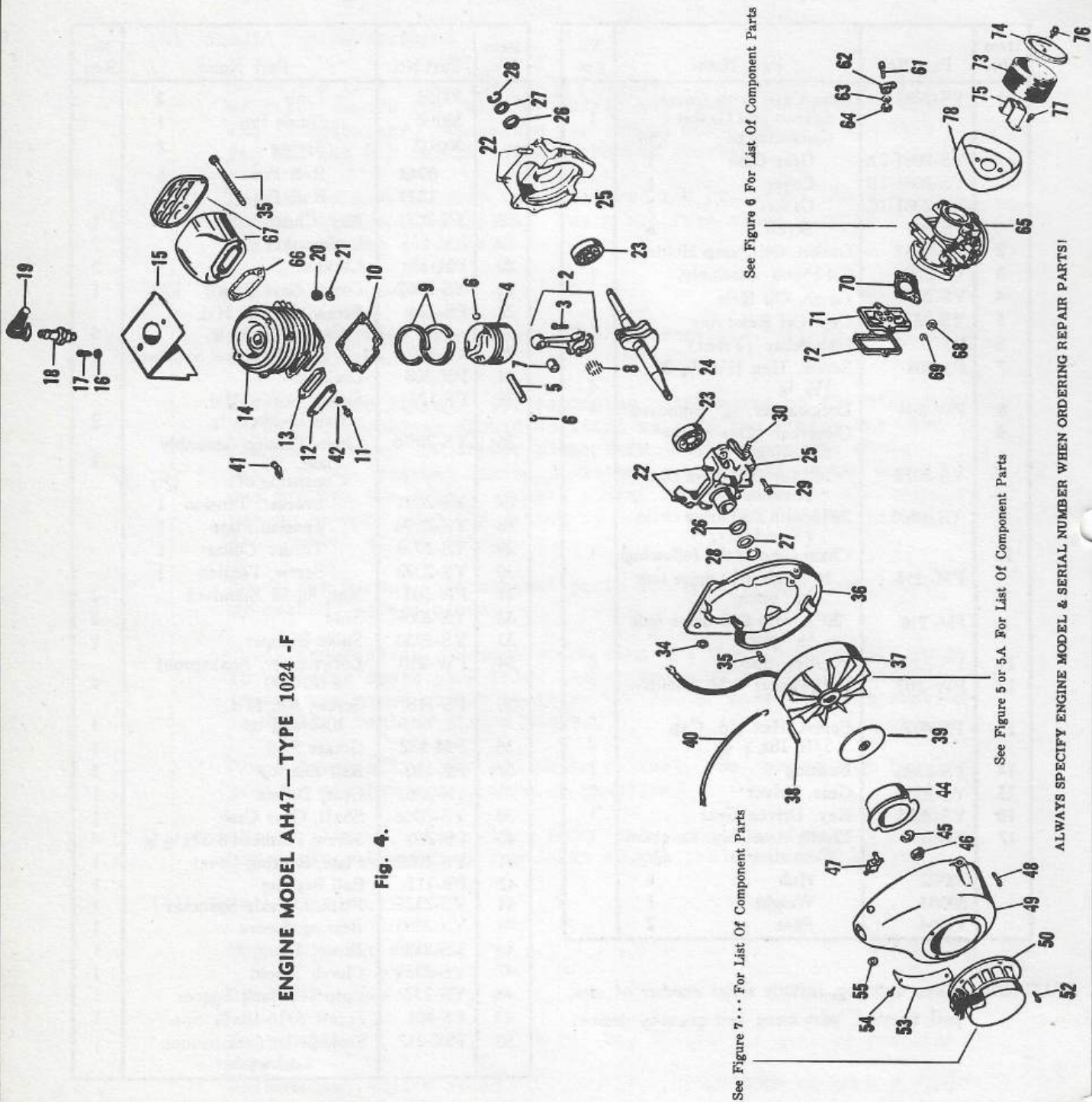
Item No.	Part No.	Part Name	No. Req.
1	YS-2081	Gear Case, with Cover, Screws and Gasket	1
		Consisting of: Qty.	
	YS-2081-2A	Gear Case	1
	YS-2081-1B	Cover	1
	YS-2081-1C	Gasket	1
	PS-701	Screw	6
2	YS-2031	Gasket, Oil Pump Holder	1
3	YS-2201	Oil Pump Assembly,	1
4	YS-2396	Cover, Oil Hole	1
5	YS-2330	Cap, Oil Reservoir	1
6	YS-2064	Handlebar (Front)	1
7	PS-405	Screw, Hex H'd. 1/4-20x 1 1/2 lg.	4
8	PW-204	Lockwasher, 1/4" Standard	4
9		Cutterbar (One of the following)	1
	YS-2072	16" for .050 drive chain (Standard),	
	YS-2363	20"A with .050 drive chain (Standard),	
10		Chain (one of the following)	1
	PM-215	16" with .050 drive link 1/2" pitch.	
	PM-216	20"A with .050 drive link 1/2" pitch.	
11	YS-2390	Washer, Special	2
12	PW-207	Lockwasher 5/16 Standard	2
13	PS-402	Screw, Hex Hd. Cap 5/16-18x 1 lg.	2
14	YS-2386	Bushing	1
15	YS-2391	Gear, Driver	1
16	YS-2025	Key, Driven Gear	1
17	30001	Clutch Assembly, Lombard	1
		Consisting of: Qty.	
	30002	Hub	1
	30003	Weight	1
	30004	Shoe	2

Item No.	Part No.	Part Name	No. Req.
	30005	Link	2
	30006	Guide Pin	1
	30007	Spring	2
	0942	Roll Pin	5
	1873	Roll Pin	2
18	YS-2071	Key, Clutch	1
19	PM-135	Lockwasher	2
20	PM-134	Locknut	2
21	YS-2062	Cover, Gear Case	1
22	PS-124	Screw, Socket H'd. Cap 10-24x 1/2 lg.	6
23	YS-2374	1/2 Pitch Sprocket Standard	1
24	PN-308	Locknut	1
25	PS-125	Screw, Socket H'd. Cap 10-24x 3/4 lg.	2
26	YS-2096	Chain Tension Assembly Plate	1
		Consisting of: Qty.	
27	YS-2091	Bracket, Tension	1
28	YS-2094	Tension Plate	1
29	YS-2093	Thrust Collar	1
30	YS-2092	Screw, Tension	1
31	PN-103	Nut, 3/8-16 Standard	2
32	YS-2065	Stud	2
33	YS-2030	Spike Bumper	1
34	PW-210	Lockwasher, Shakeproof #1210-00	4
35	PS-318	Screw, Rd. H'd. 10-24x 5/8 lg.	4
36	PM-132	Grease Seal	1
37	PB-110	Ball Bearing	1
38	YS-2365	Gear, Driven	1
39	YS-2066	Shaft, Gear Case	1
40	PS-210	Screw, Flathead 8-32x 1/2 lg.	4
41	YS-2009	Plate, Bearing Cover	1
42	PB-111	Ball Bearing	1
44	YS-2315	Plate, Outside Sprocket	1
45	YS-2395	Bearing Sleeve	1
46	YS-2389	Dowel Pin	1
47	YS-2359	Clutch Shield	1
48	YS-2371	Sprocket Back Spacer	1
49	PS-801	Screw 5/16-18x 7/8 Spc.	1
50	PW-217	Shakeproof Countersunk Lockwasher	1

CAUTION: When ordering, include serial number of saw, part number, part name and quantity desired.

ENGINE MODEL AH47—TYPE 1024 -F

Fig. 4.



ENGINE MODEL AH47 — TYPE 1024-F

PARTS LIST

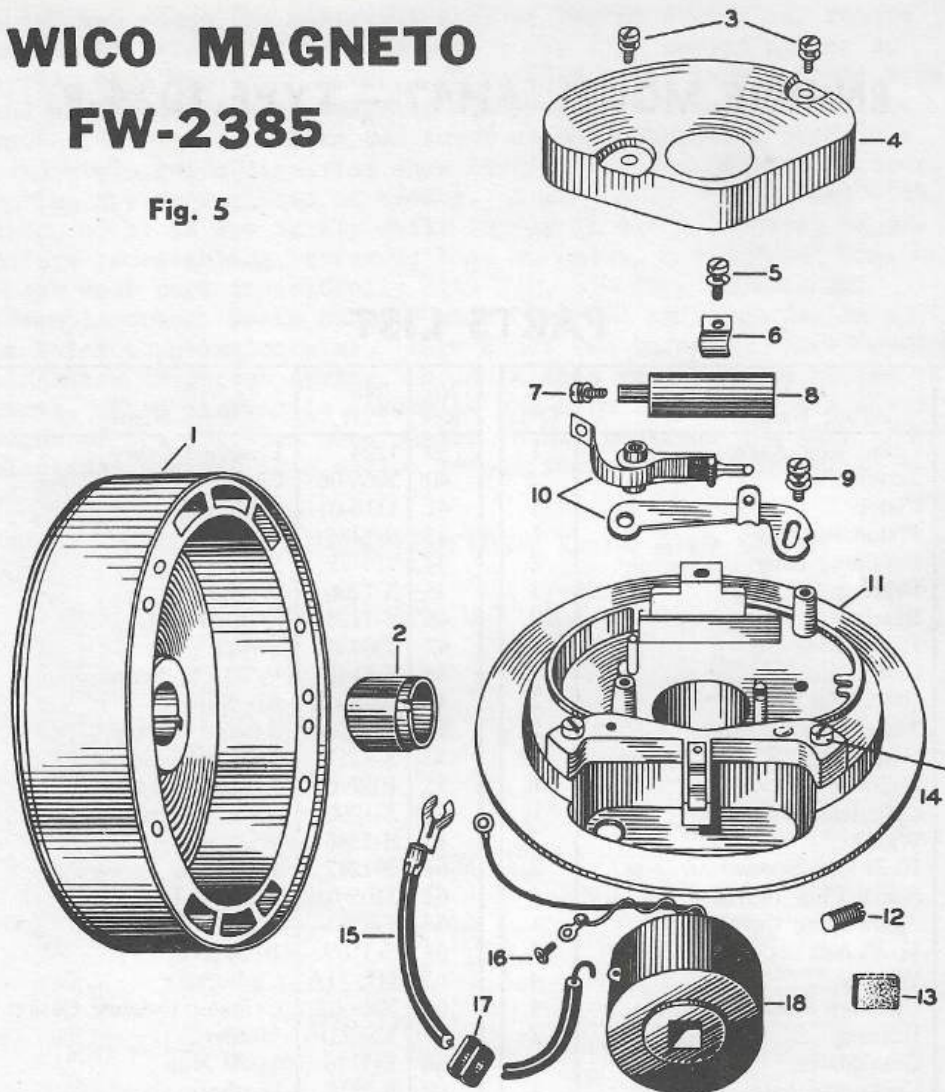
Ref No.	Part No.	Part Name	Qty.	No. Ref	No. Part	Part Name	Qty.
2	005-06	Conn. Rod Assy.	1	39	1224	Flywheel Cover	1
3	1007-02	Screw	2	40	3066-06	Cut-off Wire & Sleeve	1
4	1015-33	Piston	1	41	1118-01	Cable Clip	1
5	1016-04	Piston Ring	1	42	S-1383	Washer	
6	S-1671	Retaining Ring	2	44	114-55	Starter Cup	1
7	B-68	Bearing	1	45	S-1206	Washer	1
8	Q4212	Bearing	30	46	S-1128	7/16-20 Nut	1
9	1017-09	Piston Ring Set	1	47	3084-03	Switch	1
10	1012-04	Gasket	1	48	S-1142	1/4-20 x 3/4 Screw	4
11	S-1114	10-24 x 5/8 Screw	2	49	1018-63	Air Shroud	1
12	1064-01	Transfer Port Cover	1	50	S-2011	Rewind Starter	1
13	1065-02	Gasket	1	52	S-1357	1/4-20 x 1/2 Screw	4
14	S-1338	Cylinder	1	53	1057-17	Name Plate	1
15	1023-04	Cylinder Shroud	1	54	S-1290	#7 x 1/4 Screw	2
16	S-1383	Washer	2	55	S-1386	Washer	4
17	S-1114	10-24 x 5/8 Screw	2	61	S-1212	10-32 x 3/4 Screw	1
18	S-1106	Spark Plug 14MM	1	62	3105-02	Throttle Lever	1
19	1098	Spark Plug Cover	1	63	S-1383	Washer	1
20	S-1116	1/4-20 Nut	4	64	S-1109	10-32 Nut	1
21	S-1117	Washer	4	65	HL-11A	Carburetor	1
22	1022	Cylinder Stud	4	66	3014-02	Cylinder Exhaust Gasket	1
23	3203	Bearing	2	67	YS-2316	Muffler	1
24	S-2010	Crankshaft	1	68	S-1116	1/4-20 Nut	2
25	020-21	Crankcase Assy. w/brgs.	1	69	S-1117	Washer	2
26	1002	Crankshaft Seal	2	70	1009-04	Gasket	1
27	1003	Seal Retainer	2	71	026-08	Reed Plate Assy.	1
28	1004	Retainer Spring	2	72	1027	Gasket	1
29	S-1134	10-24 x 3/4 Screw	8	73	1029	Body	1
30	1031	Carburetor Stud	2	74	1047-01	Cover	1
34	S-1386	Washer	4	75	1077-03	Bracket	1
35	YS-2331	1/4 x 20 x 2 3/4 lg. Special Screw	2	76	S-1115	10-24 x 1/2 Screw	2
36	1019-28	Shroud Base	1	77	S-1108	10-32 x 1/2 Screw	1
37	F-2120H	Magneto	1	78	YS-2414	Air Filter Base	1
38	1062	Flywheel Key	1				

Magneto Timing .250 B.T.D.C.

WICO MAGNETO

FW-2385

Fig. 5



Ref. No.	Part No.	Part Name	Qty. Per Unit	Ref. No.	Part No.	Part Name	Qty. Per Unit
1	Y8873B	Rotor	1	12	X8859	Friction Shoe Group	1
2	8852	Breaker Cam	1	13	6318	Cam Wiper Felt	1
3	5411	Breaker Cover Clamp Screws and Washers	2	14	5428	Core Screw	2
4	8855	Breaker Cover	1	15	X7782	Lead Wire Group	1
5	5411	Condenser Clamp Screw	1	16	8732	Primary Lead Wire Clip Screw	1
6	8854	Condenser Clamp	1	17	5486	Lead Wire Grommet	1
7	5431	Condenser Connection Screw and Washer	1	18	X8877	Coil Group	1
8	X8959	Condenser Group	1		X9470	Stator Plate Unit (Includes Stator Plate, Core, Coil, Condenser, Breaker Mechanism, and Lead Wire Group)	
9	5900	Fixed Contact Clamp Screw and Washer	1				
10	X8920	Breaker Contact Set	1				
11	X9471	Stator Plate Repl. Assembly (Includes Stator Plate and Coil Core)	1				

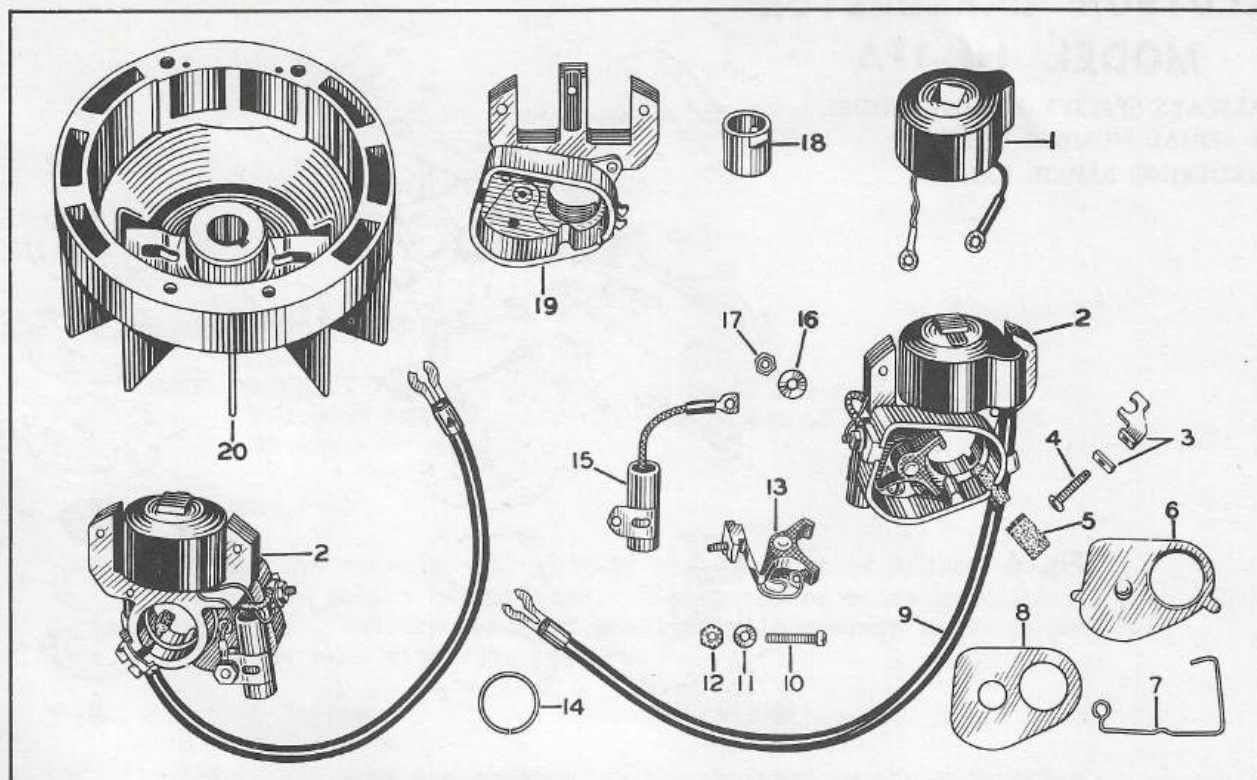


Fig. 5-A

REPLACEMENT PARTS LIST

F-2120-H Magneto Power Products

Ref. No.	F-2120-H Part No.	Part Name	Qty. Per Unit
1	FG-2180	Coil	1
2	FG-2465-B	Complete Stator Assembly	1
3	F-2601-06	Core Clamp (2 pcs)	1
4	F-2226	Screw	1
5	F-1078	Felt	1
6	F-2457	Dust Cover	1
7	F-2455	Cover Spring	1
8	F-2453	Cover Gasket	1
9	FG-2198	Lead Wire	1
10	F-1938	Screw	1
11	F-247	Washer	1
12	F-2609	Nut	1
	F-147-C	Lockwasher	1
13	FG-2400	Breaker Assembly	1
14	F-2192	Spacing Ring	1
15	FG-2176	Condenser	1
16	F-2387	Washer	1
17	F-2187	Nut	1
18	F-2545	Cam	1
19	FG-2466	Core & Box	1
20	FG-2173-B	Flywheel	1

TILLOTSON CARBURETOR MODEL HL-11A

ALWAYS SPECIFY ENGINE MODEL
& SERIAL NUMBER WHEN
ORDERING REPAIR PARTS!

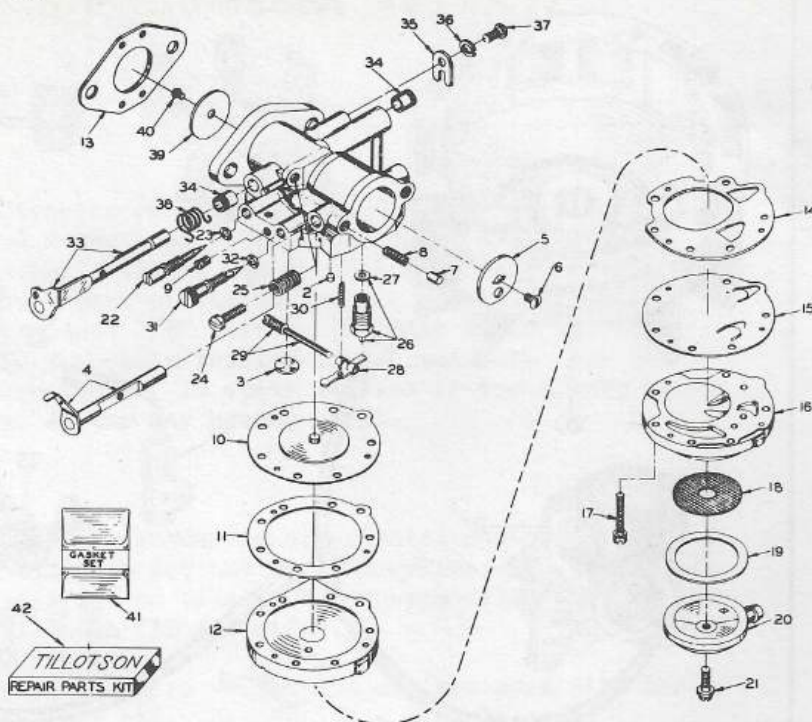


Fig. 6

SERVICE PARTS LIST MODEL HL-11A CARBURETOR

Ref. No.	HL-11A Part No.	Part Name	Qty.	Ref. No.	HL-11A Part No.	Part Name	Qty.
2	010588	*Body Channel Cup Plug	1	23	010589	Idle Adj. Screw Seal Ring	1
3	02531	*Body Channel Welch Plug	1	24	05095	*Idle Speed Reg. Screw	1
4	010831	Choke Shaft & Lever	1	25	0788	*Idle Speed Reg. Screw Spring	1
5	09626	Choke Shutter	1	26	010580	*Inlet Needle, Seat & Gasket	1
6	08942	Choke Shutter Screw	1	27	010165	Inlet Seat Gasket	1
7	05454	Choke Friction Pin	1	28	010513	*Inlet Control Lever	1
8	08805	Choke Friction Spring	1	29	010581	*Inlet Control Lever Pinion	1
9	02232	Diaphragm Chamber Drain Screw	1			Screw	1
10	010579	*Diaphragm	1	30	010578	*Inlet Tension Spring	1
11	010542	Diaphragm Cover Gasket	1	31	010791	*Main Adj. Screw (Incl. Ref. 32)	1
12	010526	Diaphragm Cover	1	32	010589	Main Adj. Screw Seal Ring	1
13	010730	Flange Gasket	1	33	010779	Throttle Shaft & Lever	1
14	010880	Fuel Pump Gasket	1	34	09780	Throttle Shaft Bushings	2
15	010531	*Fuel Pump Diaphragm	1	35	09678	Throttle Shaft Clip	1
16	010525	Fuel Pump Body	1	36	0992	Throttle Shaft Clip	1
17	010098	Fuel Pump Body Screw & Lockwasher	6			Lockwasher	1
18	010530	*Fuel Strainer Screen	1	37	01974	Throttle Shaft Clip Ret. Screw	1
19	010529	Fuel Strainer Cover Gasket	1	38	010775	*Throttle Shaft Return Spring	1
20	010527	Fuel Strainer Cover	1	39	08646	Throttle Shutter	1
21	010571	*Fuel Strainer Cover Ret. Screw	1	40	08942	*Throttle Shutter Screw	1
22	010798	*Idle Adj. Screw (Incl. Ref. 23)	1	41	GS-122	*Gasket & Repair Set	1
				42	RK-317	Repair Parts Kit	1

(*) Indicates contents of Repair Parts Kit.

STARTER ASSEMBLY No. S-2011

Parts Illustrated With Reference Numbers
For Identification Only. Please Specify
Correct Part Number and Name as Listed.

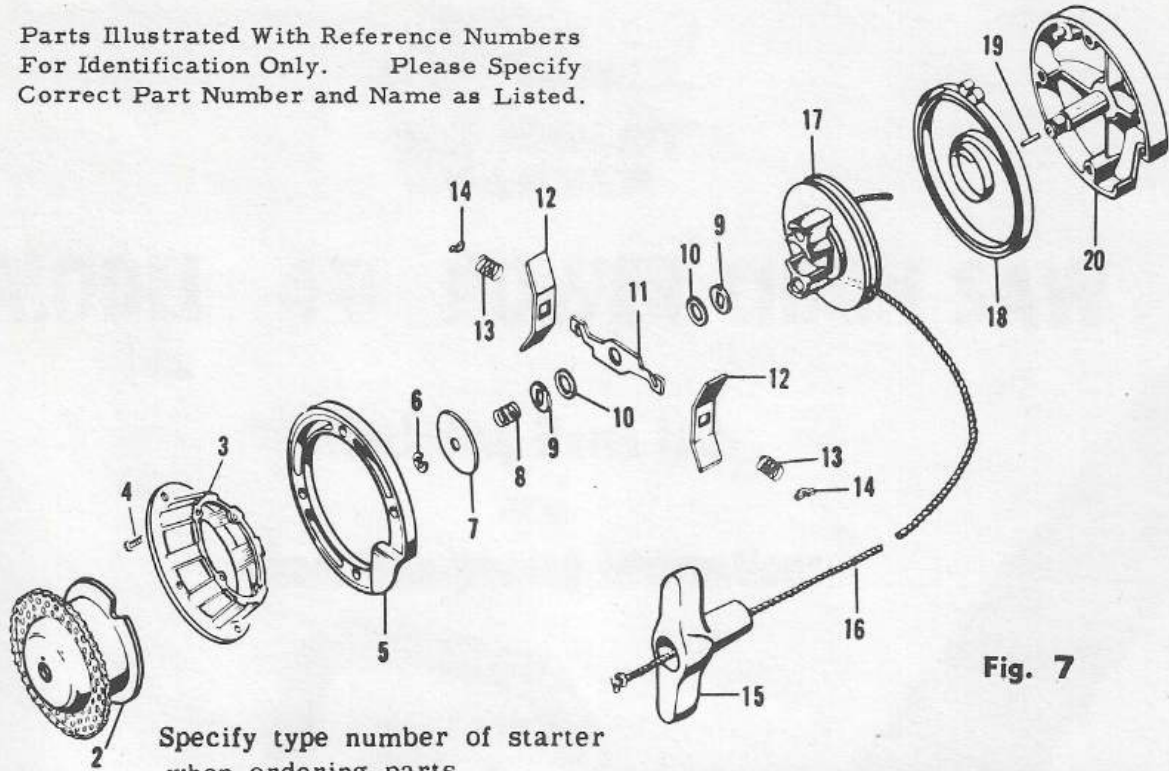


Fig. 7

Specify type number of starter
when ordering parts.

TYPE NUMBER IS LOCATED ON ITEM #7

Ref. No.	Part No.	Part Name	No. Req'd.
2	114-55	Cup and Screen Assembly	1
3	1193-01	Bracket	1
4	23-5	Screw	4
5	38-4	Flange	1
6	29-3	Retainer Ring	1
7	27-8	Brake Retainer Washer	1
8	20-3	Brake Spring	1
9	27-3	Brake Washer	2
10	27-2	Fibre Washer	2
—	111-71	Friction Shoe Assembly	1
11	16-4	Brake Lever	1
12	11-71	Friction Shoe Plate	2
13	20-2	Friction Shoe Spring	2
14	11-19	Spring Retainer Plate	2
15	144-2	Handle Assembly	1
16	40-2	Cord	1
17	13-10	Rotor	1
18	20-1	Rewind Spring	1
19	25-9	Centering Pin	1
20	151-31	Cover	1