Instruction Manual

NO. 101

LOMBARD DIRECT DRIVE POWER CHAIN SAWS MODELS

DD2-F DD2-D

(FLOAT AND DIAPHRAGM CARBURETORS)

Including Parts List and Chain Sharpening Instructions

LOMBARD GOVERNOR CORPORATION

CHAIN SAW DIVISION

ASHLAND, MASSACHUSETTS

IMPORTANT OPERATING INSTRUCTIONS

AND GENERAL INFORMATION ON

LOMBARD DIRECT DRIVE SAWS

(Float & Diaphragm Carburetor Models)

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 choke lever to choke position. Note choke lever is located on the end of the carburetor near the air filter and the choke position is back toward the air filter. Check to see that the high speed adjustment (numbered dial or knurled knob on side of carburetor) is open approximately one turn or to No. 7 on the dial.

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 an adjustable automatic oiling device activated by pressure from the crankcase of the engine. There is an oil adjusting screw (knurled head on back of oil reservoir) to control the flow of oil. With this screw turned in snug against the seat a maximum flow of oil is received. The oil flow cannot be completely shut off. NOTE: This adjustment is a pressure bleeder therefore works the opposite from what would be expected.

In addition to the automatic oiler there is a hand pump located on the back of the oil reservoir. This may be used for extra oil at any time. The hand oiler exerts a greater amount of pressure through the oil lines therefore can be used to flush out the oiling system. The oiling system should be kept clean at all times.

The check valve elbow may be removed for cleaning. Remove valve spring and ball and clean thoroughly before reassembling. A small partical of sawdust or dirt can prevent the valve from operating properly.

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.

(C) Positions of Cutting

Remember this saw is direct drive, therefore, do not force when cutting. The weight of the saw itself will apply enough pressure.

This diaphragm carburetor saw will cut in any position. When starting a cut be sure engine is up to speed before entering chain into wood.

Float carburetor saw will cut in any position from vertical to 90° on the right side. The cutter bar side of saw should be held toward the ground when making a felling cut. When cutting, 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 gap 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 at least 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. 10) 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 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 clockwise 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. 10. Also, notes under Fig. 10. Check each part individually with Fig. 10 before assembling. Assemble rotor, being sure to engage rewind spring. Rewind cord on rotor clockwise. Make about two turns on rotor clockwise 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 clockwise. Check this action before reassembling starter to engine.

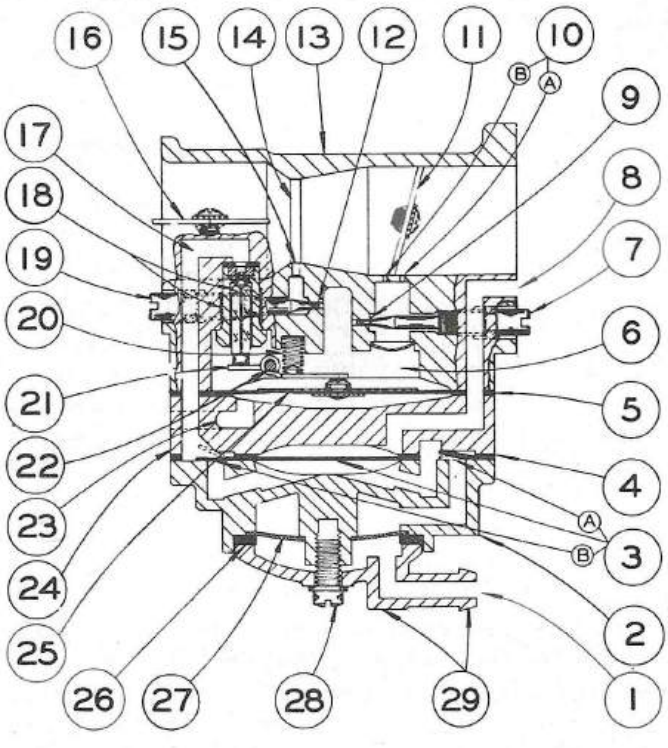
(E-1) Carburetor Adjustments - Diaphragm

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 1/4). Open Idle Adjustment Screw (Ref. 7) three-quarters (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).

HL SERIES CONSTRUCTION DATA AND CHART



NOMENCLATURE

1. Fuel Inlet
2. Fuel Pump Body
3. Fuel Pump Diaphragm
3A Fuel Inlet Check Valve
3B Fuel Outlet Check Valve
4. Fuel Pump Gasket
5. Diaphragm Cover Gasket
6. Diaphragm Chamber
7. Idle Adjustment Screw
8. Impulse Channel
9. Idle Fuel Adjustment Orifice
10A Primary Idle Discharge Port
10B Secondary Idle Discharge Port
11. Throttle Shutter
12. Main Fuel Adjustment Orifice
13. Body
14. Venturi
15. Main Fuel Discharge Port
16. Choke Shutter
17. Fuel Inlet Supply Channel
18. Inlet Needle & Seat
19. Main Adjustment Screw
20. Inlet Tension Spring
21. Inlet Control Lever
22. Fulcrum Pin
23. Atmospheric Vent Hole
24. Diaphragm Cover
25. Diaphragm
26. Strainer Gasket
27. Fuel Inlet Screen
28. Strainer Cover Retaining Screw
29. Strainer Cover

CONSTRUCTION DATA

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.

Before any work is done on carburetor it is imperative that the outside be cleaned of all dirt and sawdust.

Clean the inlet strainer screen at least once a week. To do so, remove one screw in center of nylon strainer cover thus removing cover, gasket, and screen. Caution: While cleaning NEVER blow air pressure into small hole in mounting flange of carburetor. This is the pressure hole and any pressure in excess of five or six pounds could damage the diaphragm.

To clean, adjust, or replace the inlet needle and seat or the control lever remove the pump body, cover and two diaphragms. Note just how the diaphragms are assembled to insure replacing them correctly. Inlet control lever must be free on fulcrum pin. Set lever flush with floor of chamber.

With diaphragms disassembled, air can be blown through the various passages for cleaning.

(E-2) Carburetor Adjustments - Float

There are two adjustments on the carburetor, the full load adjustment and the idling adjustment. The full load adjustment is the numbered dial located at the back of the carburetor below the air filter. The idling adjustment is located on top of the carburetor. The normal setting of full load adjustment is at No. 7, and the idling adjustment is about 3/4 turn open.

Should it be necessary to check the adjustments, the engine should first be run at full load until it is warmed up. The full load adjustment may then be checked by turning it (clockwise) until motor slows down or coughs and the position noted. The adjustment should then be turned open (counterclockwise) until the engine after speeding up again slows down and runs unevenly; this position should be noted. Correct adjustment will be half way between these two points. At this position, the engine should deliver maximum power.

Make sure that the numbered dial is tight on the carburetor shaft. If it should become loose, remove it from the adjustment shaft. Turn the adjustment shaft in until it seats in the carburetor. Do not turn in too tight, as this may damage the seat. Then back out 1/8 turn; place the dial on the needle valve, push all the way in and rotate clockwise until the stop on the back of the dial strikes the left side of the projection on the filter cover. Tighten set screw.

To check the idling adjustment, the carburetor throttle must be held in the closed position and the idling adjustment screw on top of carburetor turned in or out until the engine runs smoothly.

If after this adjustment the engine keeps stalling, it can be adjusted with the idling adjusting screw on the throttle shaft.

Two-cycle engines when running under light loads may appear to miss. This in no way affects the operation of the engine.

(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 until vapor stops coming out of spark plug hole. Re-insert plug and open adjustment dial to No. 7 or 3/4 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. (Items E-1 and E-2 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. . . . . 4200 to 5000 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 the proper dia. 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.

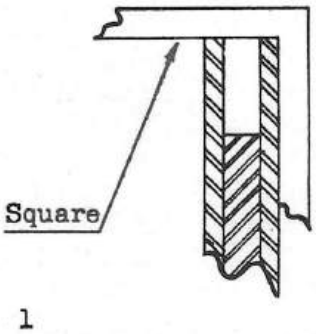
Use your chain with care and see that it has plenty of lubrication so parts will not wear and keep it sharp at all times.

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. Clean sawdust, etc., from bottom of slot.

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. The cutter bar on the Direct Drive saw is armoured tipped.

Fig. 1

(C) Clutch

This saw is equipped with a special shoe-type, automatic clutch mounted on engine shaft. 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 Speed Regulating Screw.

5. SERVICE AND REPAIR INSTRUCTIONS

(A) Suggested Procedure for Dismantling Saw

Remove Cutter Bar and Chain

Remove Sprocket Nut. To remove sprocket nut - insert holding rod #DD-60 under fins, on carburetor side of cylinder, and into one of the drilled holes on the back side of the magneto rotor. This will hold the crankshaft from turning while loosening the nut. NOTE: The sprocket nut has a left hand thread.

Remove sprocket washer.

Remove sprocket drum and bearing.

Remove bearing sleeve.

Remove special washer.

Remove clutch.

Remove clutch key.

Remove dust shield and special washer

Front handle bar, remove four screws.

Remove pressure line.

Remove mounting plate (remove three screws).

Fuel line, disconnect and remove.

Remove throttle link between carburetor and arm.

Remove gas tank shroud.

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 button.

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 Assembly - loosen the core clamping or friction screw at the base of the stator assembly. Pull the stator assembly 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, remove the lock ring from one side of the piston and slide 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.

IMPORTANT INFORMATION ON OPERATING SAW - PLEASE READ CAREFULLY

This is a direct-drive saw with no gears. For best results, follow the following rules:

1. Don't bear down on saw.
2. Keep your chain sharp.
3. Keep oil reservoir filled.
4. Always let the chain feed into the log by itself - don't bear down.

Remember also - with a direct-drive saw, you must sharpen chain more frequently. To prolong life of bar and chain, keep oil reservoir filled. Always fill when you fill gas tank. Chain and bar must have plenty of oil for successful operation.

IMPORTANT INFORMATION ON CUTTER BARS - PLEASE READ CAREFULLY

This bar is a specially designed and specially hardened for use on a Direct Drive Saw. It will give you satisfactory service if kept properly oiled, and not abused.

Lombard Governor Corporation warrants the bars only with respect to material and workmanship, and does not warrant against bar wear or bar burning. Lombard will replace on the basis of unused life or repair any cutter bar that is returned prepaid and proven to have been defective in material and workmanship as originally manufactured.

LOMBARD DIRECT DRIVE SAWS

Handlebar and Gas Tank Assembly

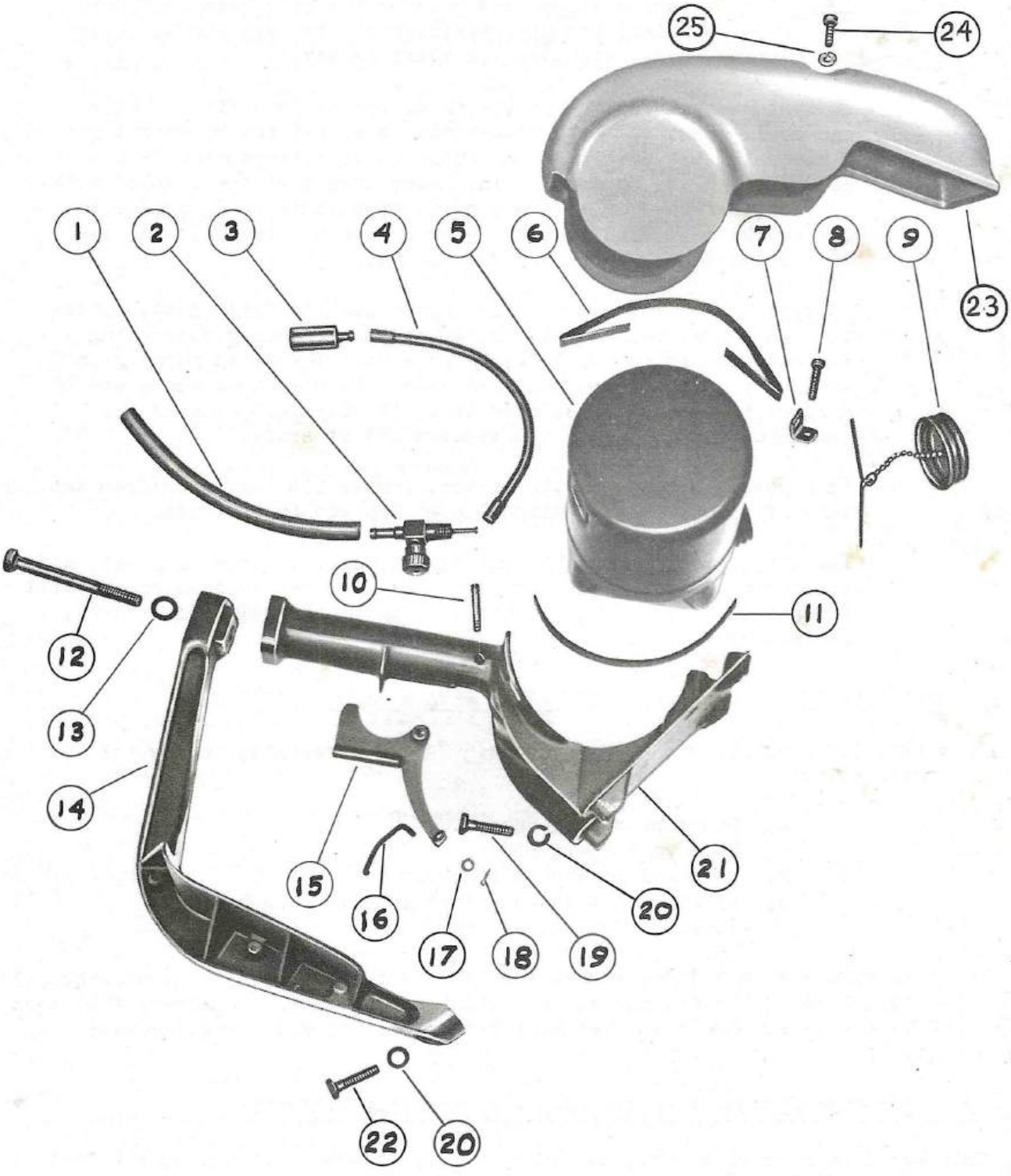


Fig. 2

LOMBARD GOVERNOR CORP., ASHLAND, MASS.

LOMBARD DIRECT DRIVE SAWS

Handlebar and Gas Tank Assembly

For Both Float and Diaphragm Carburetor Saws Unless Otherwise Noted.

Item No.	Part No.	Part Name	Qty. Per Unit
1	YS-2320	Gas Line — DIAPHRAGM ONLY	1
1	YS-2336	Gas Line — FLOAT ONLY	1
2	YS-2323	Shut-off-valve — FLOAT ONLY	1
	YS-2430	Shut-off valve — DIAPHRAGM ONLY	
3	5-42 -2	Weight and strainer — DIAPHRAGM ONLY	1
4	5-41	Sleeve — DIAPHRAGM ONLY	1
5	DD-38	Gas tank	1
6	YS-2304	Strap, gas tank	2
7	YS-2303	Clip, gas tank strap	2
8	PS-613	Screw — Fil. Hd. 10-23 X ¾ lg.	2
9	YS-2340	Cap, gas tank — FLOAT ONLY	1
	YS-2321-1	Cap, gas tank — DIAPHRAGM ONLY	
10	YS-2308	Pivot pin	1
11	YS-2306	Spacer, gas tank straps	2
12	PS-417	Screw — Hex Hd. 5/16-18 X 2¾ lg.	1
13	PW-207	Lockwasher — 5/16 std.	1
14	YS-2313-1B	Rear Handlebar (bottom)	1
15	YS-2307	Trigger — FLOAT ONLY	1
	YS-2403	Trigger — DIAPHRAGM ONLY	
16	YS-2305	Link, throttle — FLOAT ONLY	1
	YS-2404	Link, throttle — DIAPHRAGM ONLY	
17	PW-107	Washer, plain	2
18	PM-144	Cotter pin	2
19	PS-404	Screw — Hex Hd. ¼-20 X 1 lg.	2
20	PW-204	Lockwasher, ¼ standard	3
21	DD-39-A	Rear handlebar (top)	1
22	PS-419	Screw — Hex Hd. ¼-20 X ⅞ lg.	1
23	YS-2400	Gas tank Shroud	1
24	PS-318	Screw 10-24 X ⅝ Rd. Hd.	2
25	PW-203	Lockwasher — #10 std.	2

LOMBARD DIRECT DRIVE SAWS

Front Handlebar, Reservoir and Drive Assembly

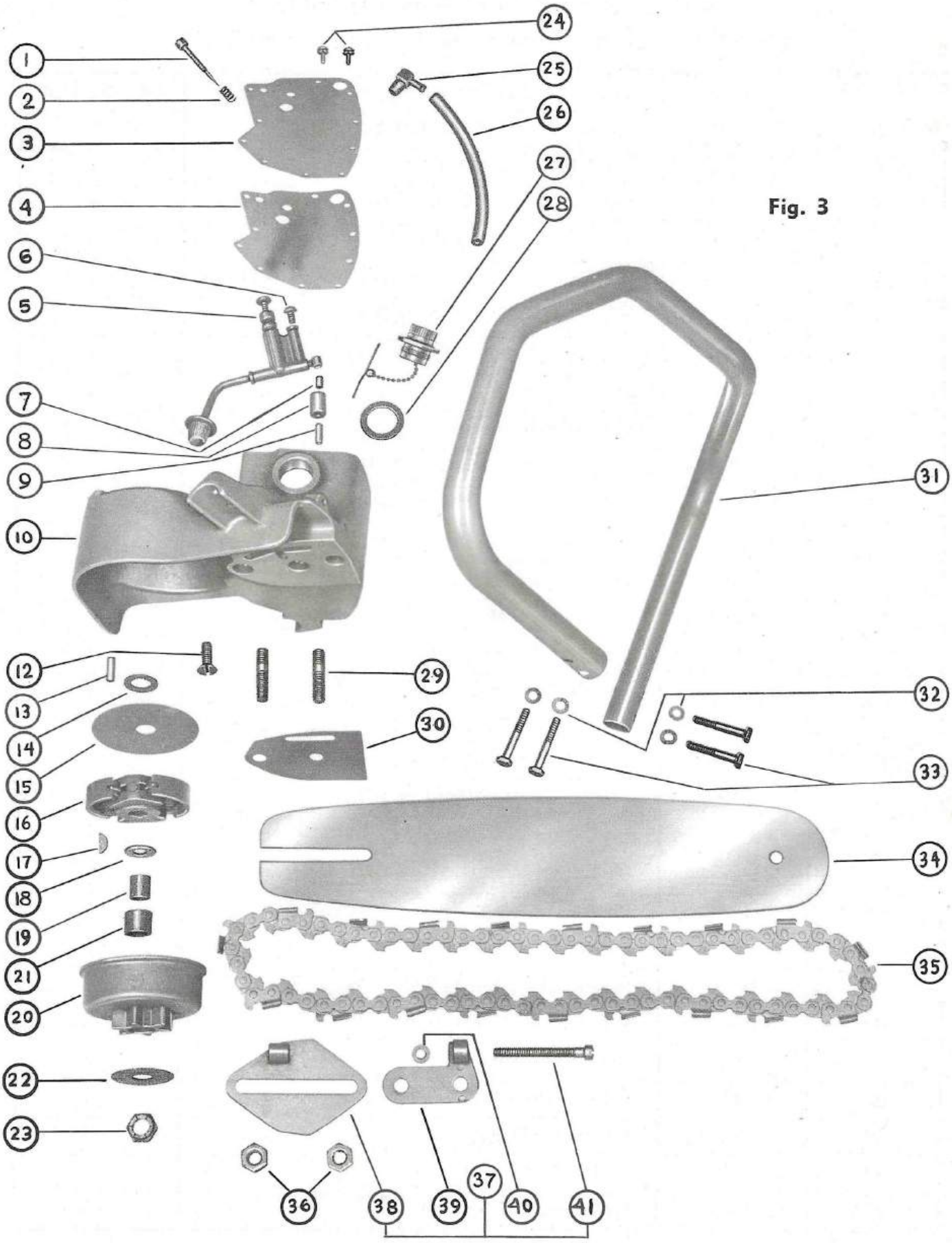


Fig. 3

LOMBARD DIRECT DRIVE SAWS

Front Handlebar, Reservoir and Drive Assembly

For Both Float and Diaphragm Carburetor Saws Unless Otherwise Noted.

Ref. No.	Part No.	Part Name	Qty.
1	DD-62	Screw — Oil Valve	1
2	DD-58	Spring — Oil Valve Screw	1
3	DD-74	Cover Oil Reservoir	1
4	DD-27	Gasket Oil Reservoir	1
5	DD-95	Oil Pump Assembly	1
		Consisting of:	
	DD-94	Plunger Assembly	1
	DD-93	Plunger	1
	DD-92	Plunger Spring	1
	DD-91	Elbow Adaptor	1
	DD-85	Small Valve Spring	2
	DD-88	5/32 Brass Ball	2
	DD-89	Pump Casting	1
	DD-90	Pick up tube w/strainer	1
6	PS-324	Screw 1/4-28 X 3/8 Rd. Hd. (Oil Pump)	1
7	DD-73	Short Nipple	1
8	DD-83	Sleeve	1
9	DD-77	Long Nipple	1
10	DD-114	Mounting Plate w/inserts	1
11	PW-217	Lockwasher, Shakeproof 5/16 cone	3
12	PS-217-N	Screw, 5/16-18 X 7/8 flat head, Nylok	3
13	YS-2389	Dowel Pin 1/4 D. X 1" lg.	1
14	YS-2032	Washer, Thrust	1
15	DD-40	Dust Shield	1
16	30001-1	Clutch Assembly	1
		Consisting of:	
	30004	Shoe	2
	30003	Weight	1
	30002-1	Hub	1
	30007-25	Spring	2
	30006	Guide Pin	1
	30005	Link	2
	RP-094-8	Rollpin	2
	RP-094-12	Rollpin	2
	RP-187-12	Rollpin	2
17	PM-202	Key, Clutch	1
18	DD-96	Washer, Thrust	1
19	DD-106	Bearing Sleeve	1

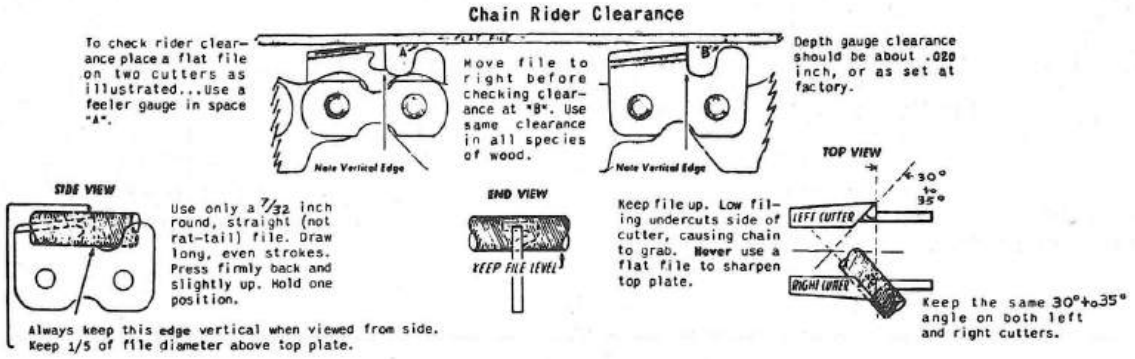
Ref. No.	Part No.	Part Name	Qty.
20	DD-113	Sprocket drum w/bearing	1
	DD-108	Sprocket drum	1
21	PB-120	Bearing	1
22	YS-2315	Washer, Outside sprocket	1
23	PN-311	Nut	1
24	PS-701	Screw 8-32 X 1/2" lg. Truss Hd. Sems	10
25	DD-98	Valve Elbow	1
26	DD-49	Pressure line	1
27	DD-33	Cap, Oil Reservoir Ass'y. (includes safety chain)	1
	YS-2341	Safety chain	1
	YS-2347	Safety Catch	1
	RP-062-14	Rollpin	1
28	DD-34	Gasket, Oil Reservoir Cap	1
29	YS-2065	Stud	2
30	DD-112	Plate (cutterbar pad)	1
31	DD-26	Handlebar (Front)	1
32	PW-204	Lockwasher 1/4 Std.	4
33	PS-405	Screw, Hex Hd. 1/4-20 X 1 1/2" lg.	4
34	DD-109	Cutterbar 12"	USE ONE
	DD-47	Cutterbar 16"	
	DD-48	Cutterbar 20"	
	DD-56	Cutterbar 24"	
35	DD-110	Chain 12"	USE ONE
	DD-104	Chain 16"	
	DD-105	Chain 20"	
	DD-115	Chain 24"	
36	PN-103	Nut 3/8-16	2
37	520-023	Chain Tension Assembly	1
		Consisting of:	
38	520-020	Tension Bracket	1
39	520-022	Tension Plate	1
40	500-106	Thrust Collar	1
41	500-111	Tension Screw	1

Filing Instructions

-62 - C 2

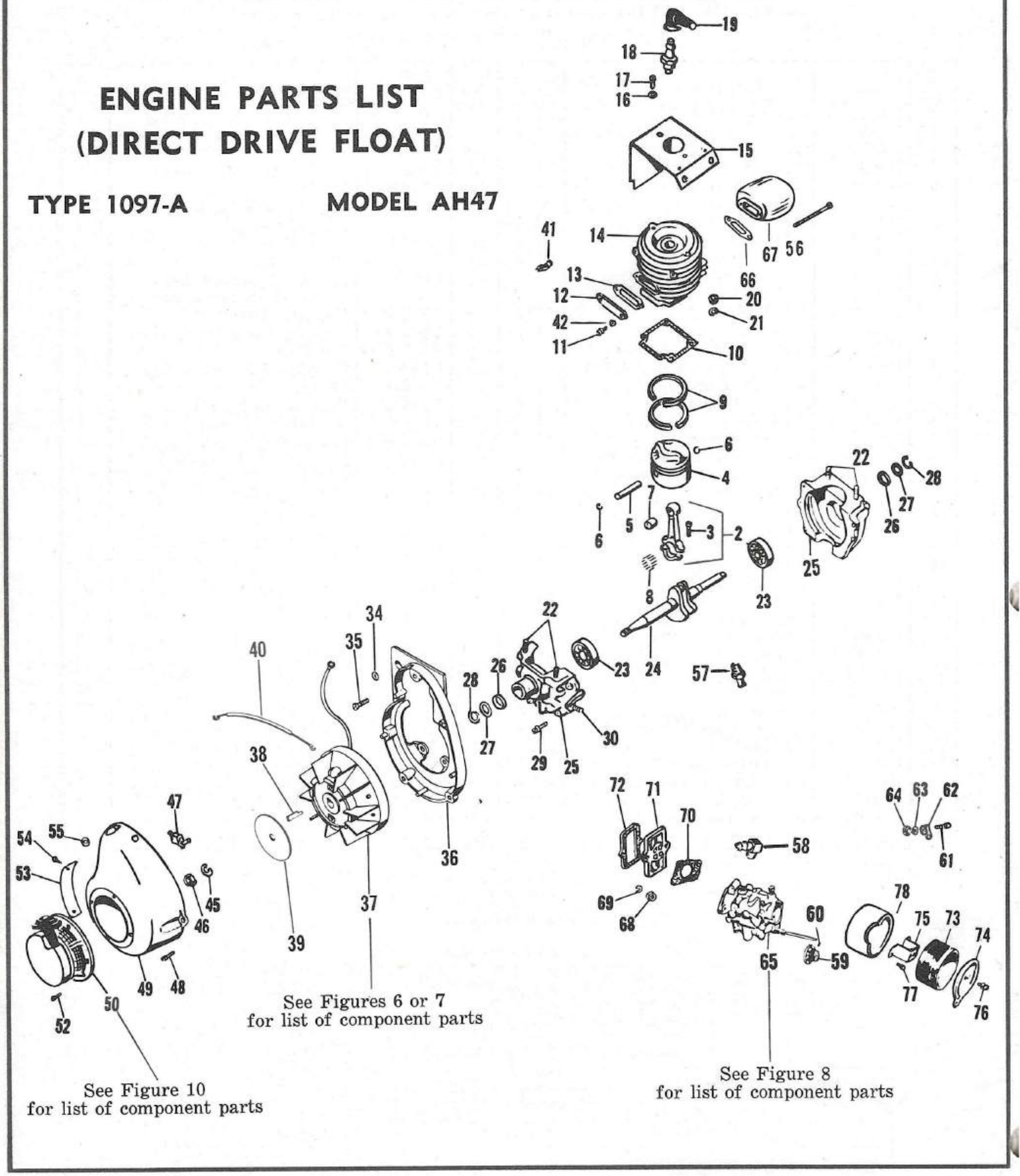
CHIPPER CHAIN

Chain Rider Clearance



ENGINE PARTS LIST
(DIRECT DRIVE FLOAT)

TYPE 1097-A **MODEL AH47**



See Figures 6 or 7
for list of component parts

See Figure 10
for list of component parts

See Figure 8
for list of component parts

ENGINE PARTS LIST (DIRECT DRIVE FLOAT)

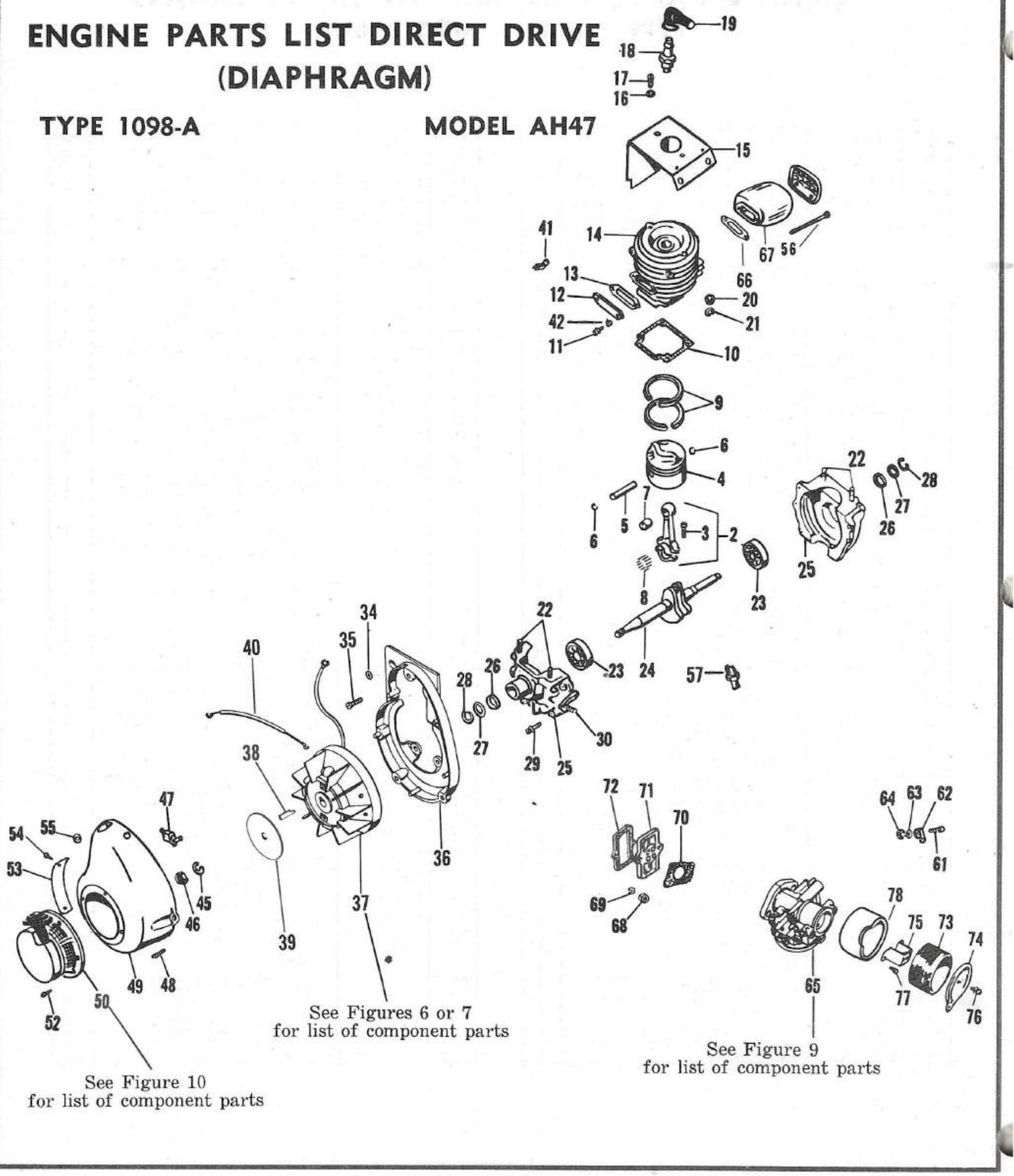
TYPE 1097-A MODEL AH47

Ref. No.	Part No.	Part Name	No. Req
2	005-06	Connecting Rod Assembly	1
3	1007-02	10-32 X 9/16 Allen Cap Screw	2
4	S-1670	Piston (Same as 1015-33)	1
5	1016-04	Piston Pin	1
6	S-1671	Retaining Ring	2
7	B-68	Bearing	1
8	Q4212	Bearing	30
9	1017-09	Piston Ring	2
10	1012-04	Cylinder Gasket	1
11	S-1114	10-24 X 5/8 Fil. Hd. Sems Screw	2
12	1064-01	Transfer Port Cover	1
13	1065-02	Port Cover Gasket	1
14	S-1338	Cylinder	1
15	YS-2221	Cylinder Shroud	1
16	PW-108	#10 Flat Washer	2
17	S-1114	10-24 X 5/8 Fil. Hd. Sems Screw	2
18	JT6J	Spark Plug	1
19	227	Spark Plug Cover	1
20	S-1116	1/4-20 Nut	4
21	PW-204	Lockwasher 1/4 std.	4
22	1022	Cylinder Stud	4
23	3203	Bearing	2
24	S-2023	Crankshaft	1
25	020-21	Crankcase Assembly with bearings	1
26	1002	Crankshaft Seal	2
27	1003	Seal Retainer	2
28	1004	Retainer Spring	2
29	S-1134	10-24 X 3/4 Fil. Hd. Sems Screw	8
30	1031	Carburetor Stud	2
34	S-1155	1/4 Flat Washer	4
35	S-1142	1/4-20 X 3/4 Fil. Hd. Sems Screw	4
36	1019-31	Shroud Base	1
37	F-2120-G	Magneto	1
38	1062	Flywheel Key	1
39	1224	Flywheel Cover	1
40	3066-08	Cut-off Wire & Sleeve	1
41	1118-01	Cable Clip	1

Ref. No.	Part No.	Part Name	No. Req.
42	PW-108	#10 Flat Washer	2
45	S-1371	7/16 Lockwasher	1
46	S-1370	7/16-20 Nut	1
47	3084-02	Switch	1
48	S-1142	1/4-20 X 3/4 Fil. Hd. Sems Screw	3
49	1018-57	Air Shroud	1
50	S-1574	Rewind Starter	1
52	S-1357	1/4-20 X 1/2 Pan Hd. Sems Screw	4
53	1057-03	Name Plate	1
54	S-1290	Self-Tapping Screw	2
55	S-1155	1/4 Flat Washer	1
56	YS-2331	1/4-20 X 2 3/4 Screw	2
57	1042-06	Fuel Line Connector	1
58	1042-07	Fuel Line Elbow	1
59	08612	Carburetor Dial Knob	1
60	06969	Dial Knob Set Screw 8-32 X 1/4 Allen Set	1
61	S-1212	10-32 X 3/4 Fil. Hd. Sems Screw	1
62	3105-02	Throttle Lever	1
63	PW-108	#10 Flat Washer	1
64	PN-101	10-32 Nut	1
65	MD-77A	Carburetor	1
66	3014-02	Cylinder Exhaust Gasket	1
67	YS-2316	Muffler	1
68	S-1116	1/4-20 Jam Nut	2
69	PW-204	1/4 Std. Lockwasher	2
70	1009	Carburetor Gasket	1
71	S-1439	Reed Plate Assembly	1
72	1027	Reed Plate Gasket	1
73	1029	Element Air Filter	1
74	1047-07	Cover, Air Filter	1
75	1077-03	Bracket	1
76	S-1115	10-24 X 1/2 Fil. Hd. Sems Screw	1
77	S-1125	8-32 X 1/2 Fil. Hd. Sems Screw	2
78	YS-2414	Air Filter Protector	1
Magneto Timing 1/4" B.T.D.C.			

ENGINE PARTS LIST DIRECT DRIVE (DIAPHRAGM)

TYPE 1098-A **MODEL AH47**



See Figures 6 or 7
for list of component parts

See Figure 10
for list of component parts

See Figure 9
for list of component parts

ENGINE PARTS LIST DIRECT DRIVE (DIAPHRAGM)
MODEL AH47 TYPE 1098-A

Ref. No.	Part No.	Part Name	No. Req.
2	005-06	Conn. Rod Ass'y.	1
3	1007-02	Screw 10-32 X 9/16 Allen cap.	2
4	S-1670	Piston (Same as 1015-33)	1
5	1016-04	Piston Pin	1
6	S-1671	Retaining Ring	2
7	B-68	Bearing	1
8	Q4212	Bearing	30
9	1017-09	Piston Ring	2
10	1012-04	Cylinder Gasket	1
11	S-1114	10-24 X 5/8 Screw Fil. Hd. Sems	2
12	1064-01	Transfer Port Cover	1
13	1065-02	Port Cover Gasket	1
14	S-1338	Cylinder	1
15	YS-2221	Cylinder Shroud	1
16	PW-108	Washer #10 Flat	2
17	S-1114	10-24 X 5/8 Screw Fil. Hd. Sems	2
18	JT6J	Spark Plug	1
19	227	Spark Plug Cover	1
20	S-1116	1/4-20 Nut	4
21	PW-204	Lockwasher 1/4 std.	4
22	1022	Cylinder Stud	4
23	3203	Bearing	2
24	S-2023	Crankshaft	1
25	020-21	Crankcase Assembly with bearings	1
26	1002	Crankshaft Seal	2
27	1003	Seal Retainer	2
28	1004	Retainer Spring	2
29	S-1134	10-24 X 3/4 Fil. Hd. Sems Screw	8
30	1031	Carburetor Stud	2
34	S-1155	1/4 Flat Washer	4
35	S-1142	1/4-20 X 3/4 Fil. Hd. Sems Screw	4
36	1019-31	Shroud Base	1
37	F-2120-G	Magneto	1
38	1062	Flywheel Key	1

No. Ref.	No. Part	Part Name	No. Req.
39	1224	Flywheel Cover	1
40	3066-08	Cut-off Wire & Sleeve	1
41	1118-01	Cable Clip	1
42	PW-108	#10 Flat Washer	2
45	S-1371	7/16 Lockwasher	1
46	S-1370	7/16-20 Nut	1
47	3084-02	Switch	1
48	S-1142	1/4-20 X 3/4 Fil. Hd. Sems Screw	3
49	1018-57	Air Shroud	1
50	S-1574	Rewind Starter	1
52	S-1357	1/4-20 X 1/2 Pan Hd. Sems Screw	4
53	1057-03	Name Plate	1
54	S-1290	Self-Tapping Screw	2
55	S-1155	1/4 Flat Washer	1
56	YS-2331	1/4-20 X 2 3/4 Screw	2
57	1042-06	Fuel Line Connector	1
61	S-1212	10-32 X 3/4 Screw Fil. Hd. Sems	1
62	3105-02	Throttle Lever	1
63	PW-108	#10 Flat Washer	1
64	S-1109	10-32 Nut	1
65	HL-11A	Carburetor	1
66	3014-02	Cylinder Exhaust Gasket	1
67	YS-2316	Muffler	1
68	S-1116	1/4-20 Jam Nut	2
69	PW-204	1/4 Std. Lockwasher	2
70	1009-04	Carburetor Gasket	1
71	026-08	Reed Plate Assembly	1
72	1027	Reed Plate Gasket	1
73	1029	Element Air Filter	1
74	1047-01	Cover Air Filter	1
75	1077-03	Bracket Air Filter	1
76	S-1115	10-24 X 1/2 Fil. Hd. Sems Screw	1
77	S-1248	10-32 X 3/8 Screw Fil. Hd. Sems	2
78	YS-2414	Air Filter Protector	1
Magneto Timing 1/4" B.T.D.C.			

PARTS LIST FOR WICO MAGNETO FW-2364C ONLY

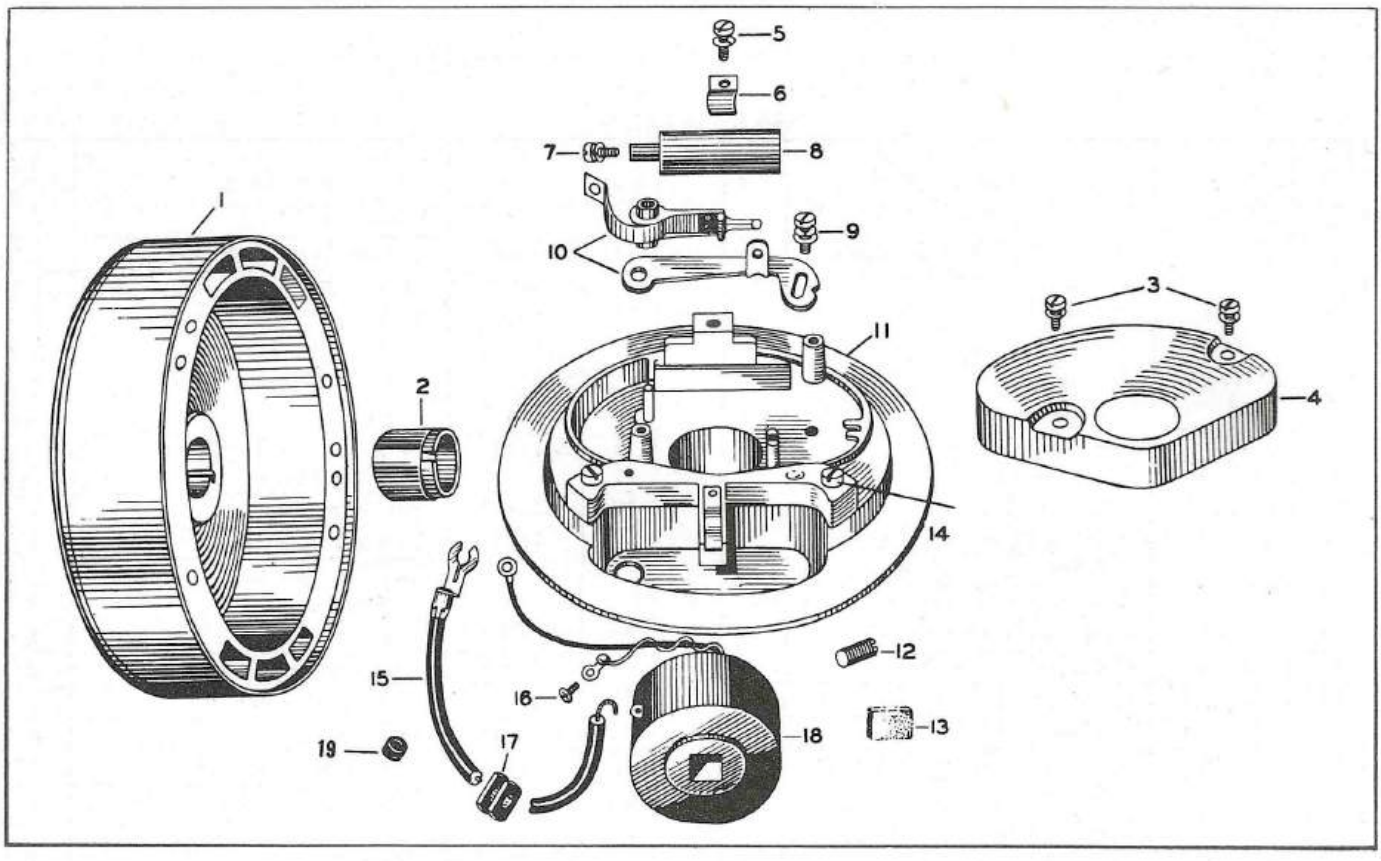


Fig. 6

Ref. No.	Part No.	Part Name	No. Req.
1	Y-9201	Rotor	1
2	9369	Breaker Cam	1
3	5411	Breaker Cover Clamp Sc.	2
4	8855	Breaker Cover	1
5	5411	Condenser Clamp Sc. (Sems)	1
6	8854	Condenser Clamp	1
7	5431	Condenser Conn. Sc. (Sems)	1
8	X8959	Condenser Group	1
9	5900	Fixed Contact Clamp Sc. (Sems)	1
10	X8920	Breaker Contact Set	1
	1063-06	Fan (Not Shown)	1

Ref. No.	Part No.	Part Name	No. Req.
11	X9471	Stator Plate Repl. Assy. (Incl. Stator Pl. & Coil Core)	1
12	X8859	Friction Shoe Group	1
13	6318	Cam Wiper Felt	1
14	5428	Core Screw	2
15	X7782	Lead Wire Group	1
16	8731	Primary Lead Wire Clip Sc.	1
17	5486	Lead Wire Grommet	1
18	X8877	Coil Group	1
	X9470	Stator Plate Unit (Incl. Stator Plate, Core Coil, Condenser, Breaker Group & Lead Wire)	1
19	6678	Ground Lead Grommet	1

PARTS LIST FOR PHELON MAGNETO F-2120G ONLY

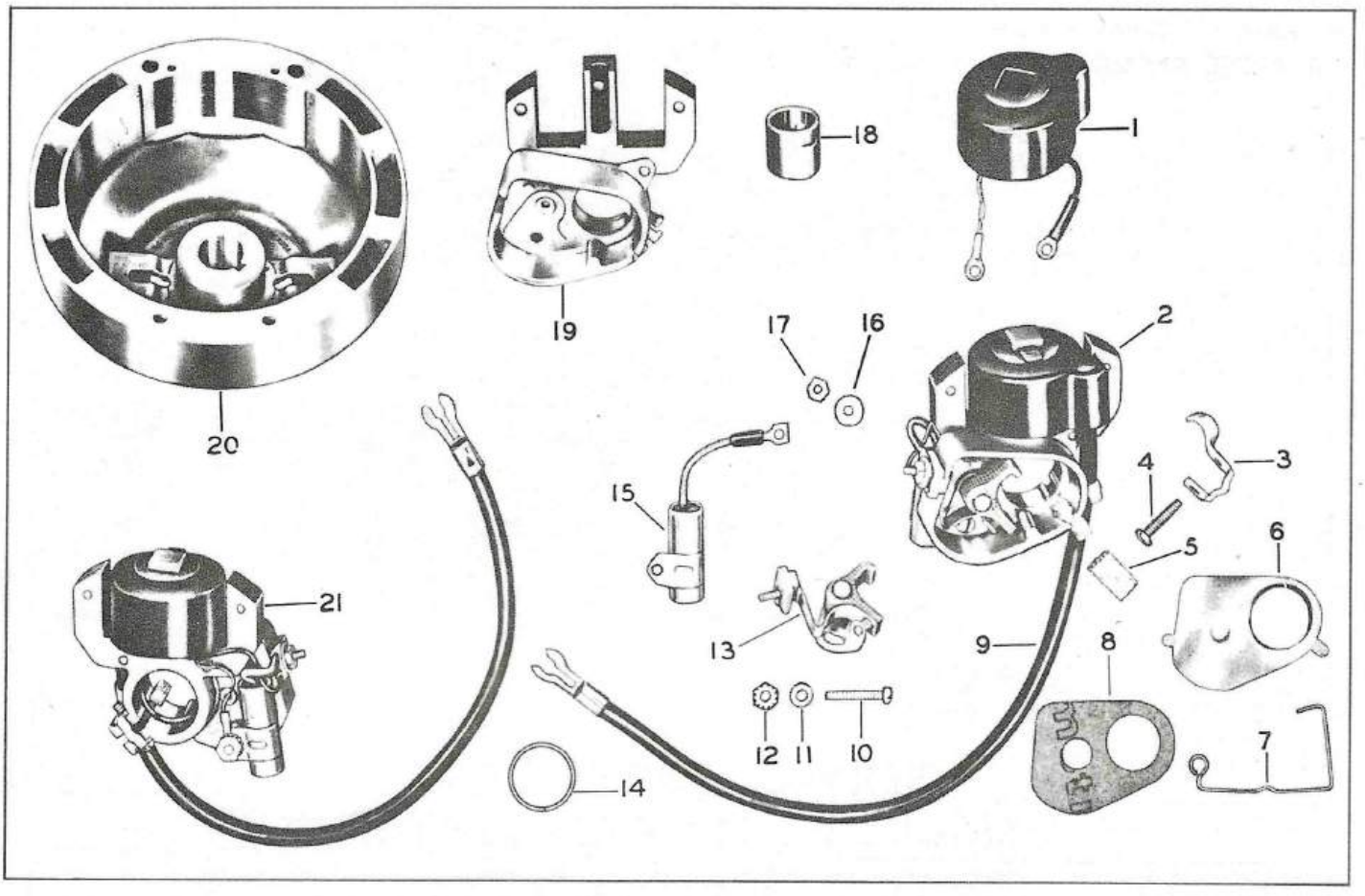


Fig. 7

Ref. No.	Part No.	Part Name	No. Req.
1	FG-2180	Coil Assembly	1
2	FG-2465-B	Complete Stator Assembly	1
3	F-2464	Core Clamp	1
4	F-2226	Core Clamping Screw	1
5	F-1078	Cam Wiper Felt	1
6	F-2457	Breaker Box Cover	1
7	F-2455	Breaker Box Cover Clamping Spring	1
8	F-2453	Breaker Box Cover Gasket	1
9	FG-2198	Lead Wire	1
10	F-1938	Breaker & Condenser Fastening Screw	1
11	F-247	Breaker Fastening Screw Washer	1

Ref. No.	Part No.	Part Name	No. Req.
12	F-2463	Breaker & Condenser Fastening Screw Nut	1
13	FG-2400	Breaker Assembly	1
14	F-2192	Spacing Ring	1
15	FG-2176	Condenser Assembly	1
16	F-2387	Terminal Washer	1
17	F-2187	Terminal Nut	1
18	F-2483	Breaker Cam	1
19	FG-2466	Breaker Box & Core Assembly	1
20	FG-2173 C	Flywheel	1
21	FG-2484	Bottom View of Complete Stator Assembly. (Reference No. 2)	

TILLOTSON CARBURETOR
MODEL HL-11A

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

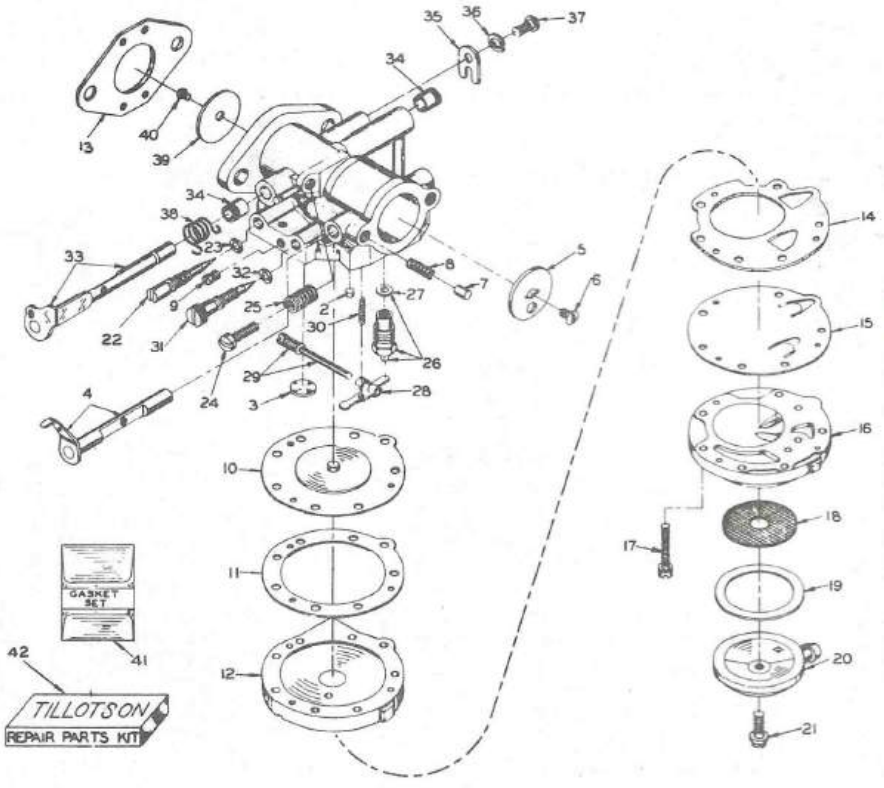


Fig. 8

SERVICE PARTS LIST
MODEL HL-11A CARBURETOR

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

(*) Indicates contents of Repair Parts Kit.

TILLOTSON CARBURETOR

MODEL MD-77A

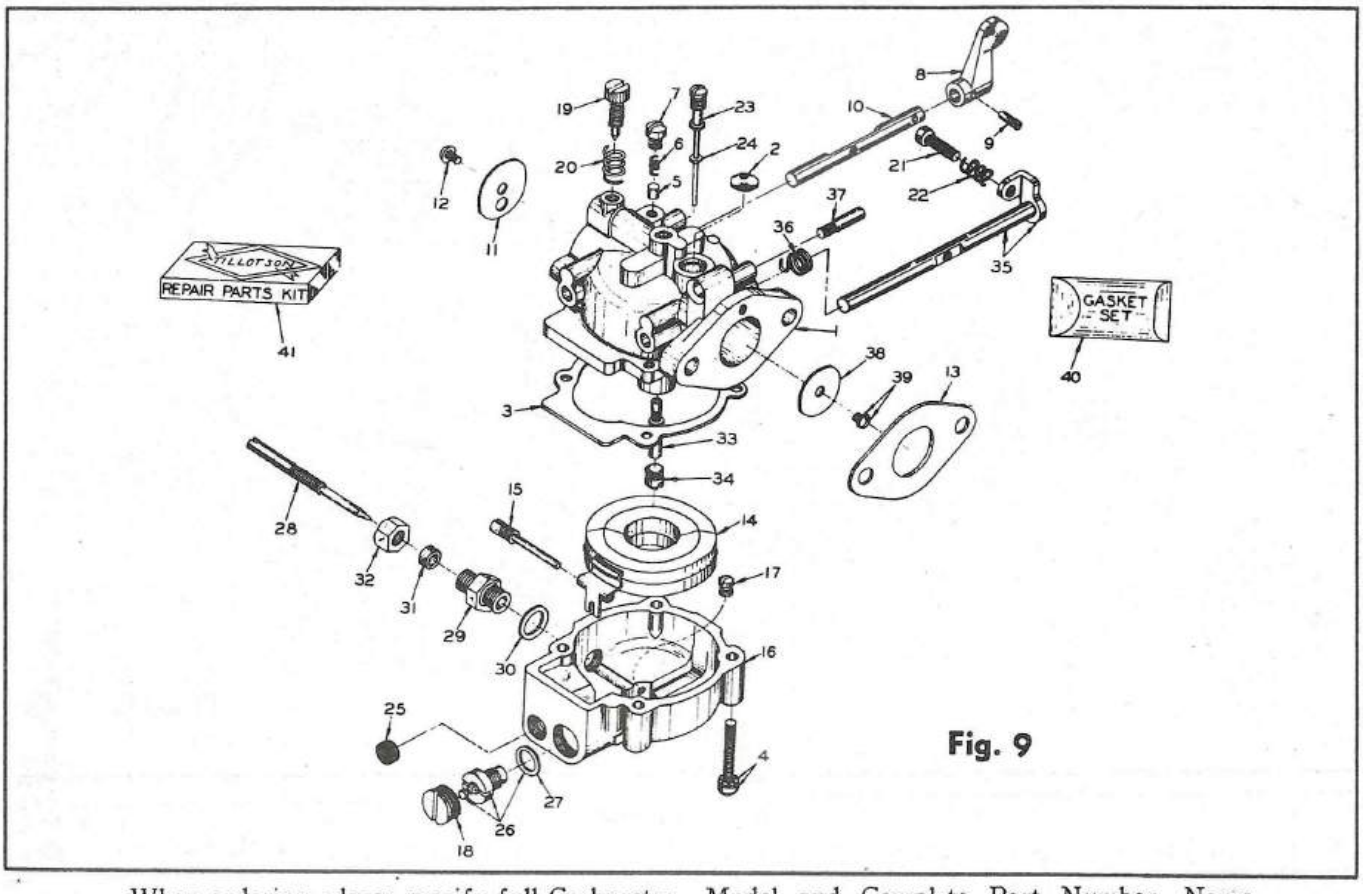


Fig. 9

When ordering, please specify full Carburetor Model and Complete Part Number, Name

Ref. No.	Part No.	Part Name	No. Req.
1	010010	Body	1
2	*02531	Body Channel Welch Plug	1
3	07903	Body Gasket	1
4	06062	Body Retaining Screw & Lockwasher	4
5	*05454	Choke Friction Pin	1
6	*03860	Choke Friction Pin Spring	1
7	*07912	Choke Friction Screw	1
8	05566	Choke Lever	1
9	03208	Choke Lever Retaining Pin	1
10	08454	Choke Shaft	1
11	08862	Choke Shutter	1
12	0120	Choke Shutter Screw	1
13	1009	Flange Gasket	1
14	07804	Float	1
15	*07901	Float Lever Pinion Screw	1
16	07929	Fuel Bowl	1
17	*03311	Fuel Bowl Drain Screw (Small)	1
18	07896	Fuel Bowl Plug Screw (Large)	1
19	*06910	Idle Adjustment Screw	1
20	*05725	Idle Adjustment Screw Spring	1
21	*05095	Idle Speed Regulating Screw	1
22	*0788	Idle Speed Regulating Screw Spring	1

Ref. No.	Part No.	Part Name	No. Req.
23	*08515	Idle Tube	1
24	07900	Idle Tube Gasket	1
25	07283	Inlet Connection Screen	1
26	*09899	Inlet Needle Seat & Gasket	1
27	02510	Inlet Seat Gasket	1
28	*08611	Main Adjustment Screw	1
29	0702	Main Adjustment Screw Gland	1
30	0676	Main Adjustment Screw Gland Gasket	1
31	09112	Main Adjustment Screw Packing	1
32	0703	Main Adjustment Screw Packing Nut	1
33	*08179	Main Nozzle	1
34	02395	Main Nozzle Channel Plug Screw	1
35	010007	Throttle Shaft & Lever	1
36	*09602	Throttle Lever Return Spring	1
37	04594	Throttle Lever Stop Pin	1
38	08646	Throttle Shutter	1
39	08942	Throttle Shutter Screw & Lockwasher	1
40	*08025	GASKET & PACKING SET	
41	RK-120	REPAIR PARTS KIT	

(*) Indicates contents of Repair Parts Kit.

FLOAT SETTING: To check correctly, separate Fuel Bowl Assembly from Upper Body Assembly and Gasket. Now with Fuel Bowl Assembly held in upside down position, the then lowest point of float, at free end, should project 1/64th of an inch below rim of fuel bowl.

STARTER ASSEMBLY S-1574

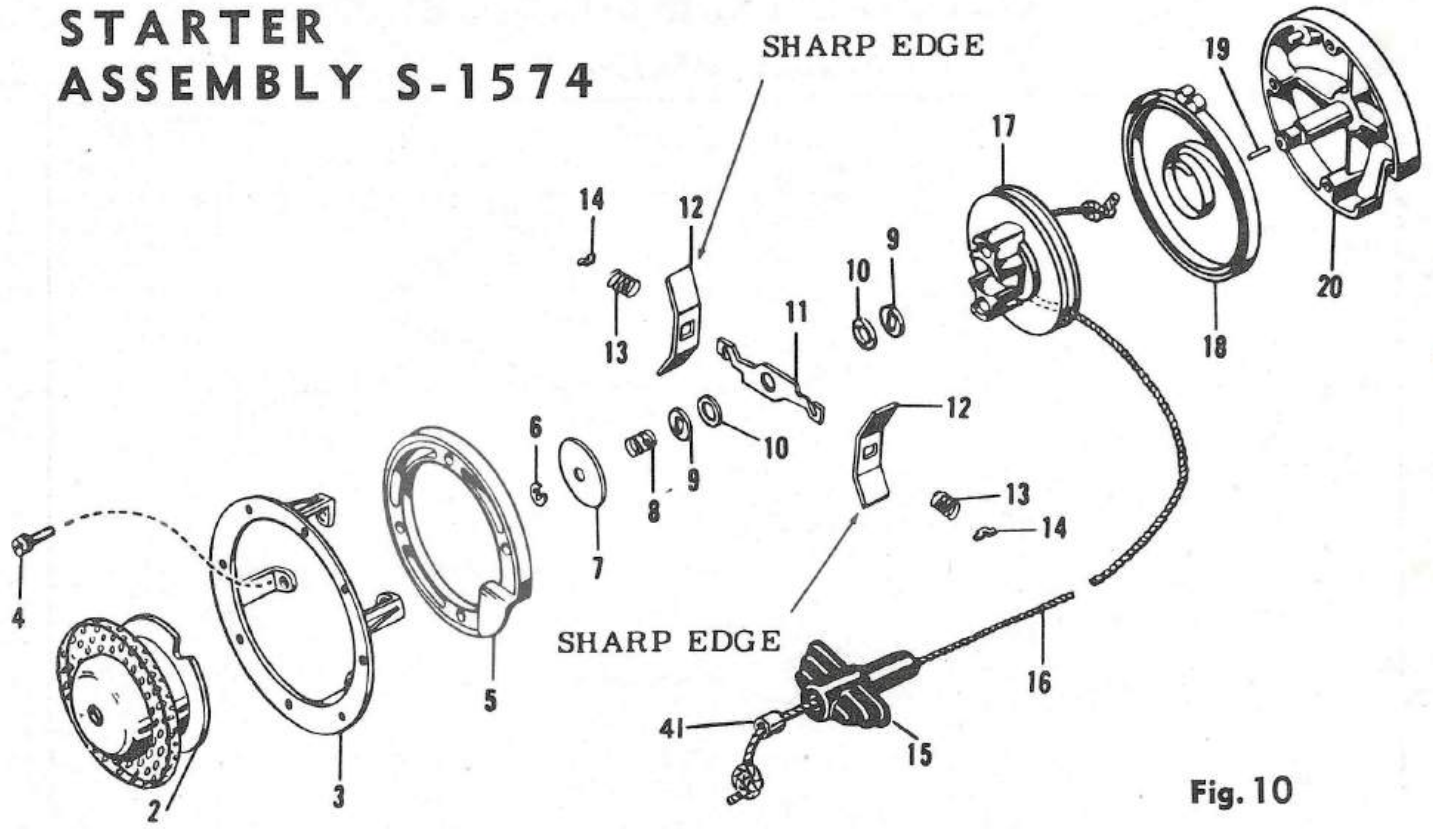


Fig. 10

Ref. No.	Part No.	Part Name	No. Req.
*2	114-55	Cup & Screen Assembly	1
3	1193	Mounting Flange	1
4	23-5	Machine Screw	4
5	38-4	Middle Flange	1
6	29-3	Retainer Ring (Truarc)	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
11	16-4	Brake Lever	1

Ref. No.	Part No.	Part Name	No. Req.
12	11-71	Friction Shoe Plate	2
13	20-2	Friction Shoe Spring	2
14	11-19	Spring Retainer Plate	2
15	144-2	T-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
41	27-17	T-Handle Washer	1

**Comprised of parts not furnished separately*

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.