

# WISCONSIN MODELS

AA - AB - ABS - ABN - AK - AKS - AKN

## INSTRUCTION & ILLUSTRATED PARTS MANUAL

Wisconsin Motors, L. L. C.

# IMPORTANT

## READ THESE INSTRUCTIONS CAREFULLY

### SERVICE FACILITIES

WIS-CON TOTAL POWER Distributors and Service Centers, located throughout the U.S. and foreign countries, have been carefully selected to insure complete and efficient repair and inspection service to owners of WIS-CON TOTAL POWER Engines. These service centers, equipped and staffed for complete engine repair, also stock engine parts to facilitate immediate delivery for the complete line of WIS-CON TOTAL POWER Engines.

### STARTING AND OPERATING OF NEW ENGINES

Careful breaking in of a new engine will greatly increase its life and result in trouble-free operation. A factory test is not sufficient to establish the polished bearing surfaces, which are so necessary to the proper performance and long life of an engine. Neither is there a quick way to force the establishment of good bearing surfaces. These can only be obtained by running a new engine carefully and under reduced speeds and loads for a short time, as follows:

First, be sure the engine is filled to the proper level with a good quality of engine oil, see "Grade of Oil" chart.

Before a new engine is put to its regular work, the engine should be operated at low idle speed (1000 to 1200 R.P.M.) for one half hour, without load. The R. P. M. should then be increased to engine operating speed, still without load, for an additional two hours.

If at all possible, operate the engine at light loads, for a period totaling about eight hours, before maximum load is applied. This will greatly increase engine life.

The various bearing surfaces in a new engine have not been glazed, as they will be with continued operation, and it is in this period of "running in," that special care must be exercised, otherwise the highly desired glaze will never be obtained. A new bearing surface that has once been damaged by carelessness will be ruined forever.

Our engine warranty is printed on the inside back cover of this manual. Read it carefully.

For your own record and for ordering purposes:

**MODEL**

**SPECIFICATION**

**SERIAL NUMBER**

THE ABOVE INFORMATION, WHICH WILL BE FOUND ON THE INSTRUCTION PLATE ATTACHED TO THE AIR SHROUD OF THE ENGINE, SHOULD BE FILLED IN. YOUR PROMPT ATTENTION TO THIS MATTER WILL MAKE IT CONVENIENT FOR YOU IN THE FUTURE, AS THIS INFORMATION MUST BE GIVEN WHEN ORDERING ENGINE REPAIR PARTS.



**BOOK OF INSTRUCTION**  
**WISCONSIN**  
**SINGLE CYLINDER ENGINES**

**MODELS AA**  
**AB, ABS, ABN**  
**AK, AKS, AKN**

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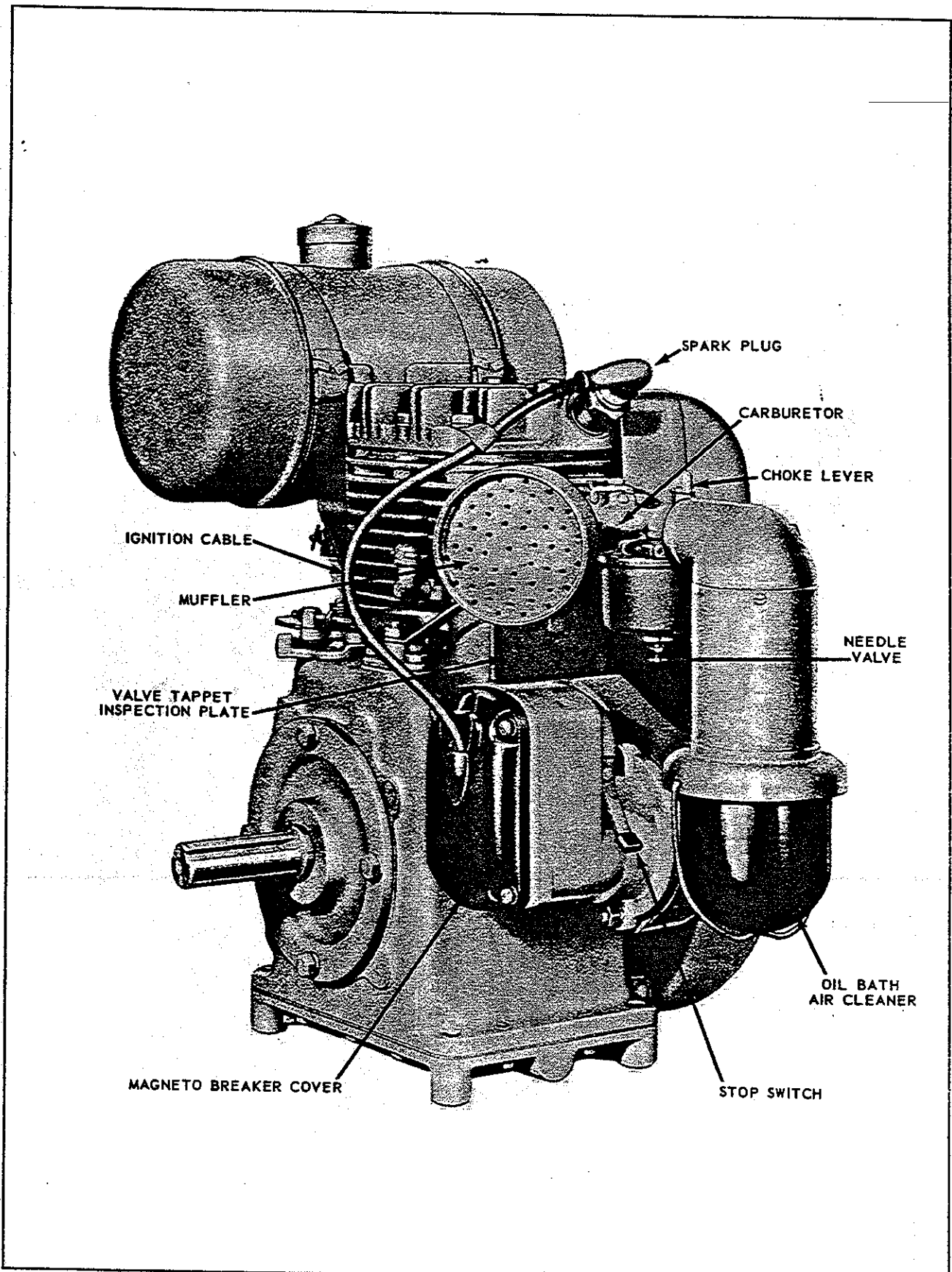


Fig. 1

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CARBURETOR and MAGNETO side of ENGINE

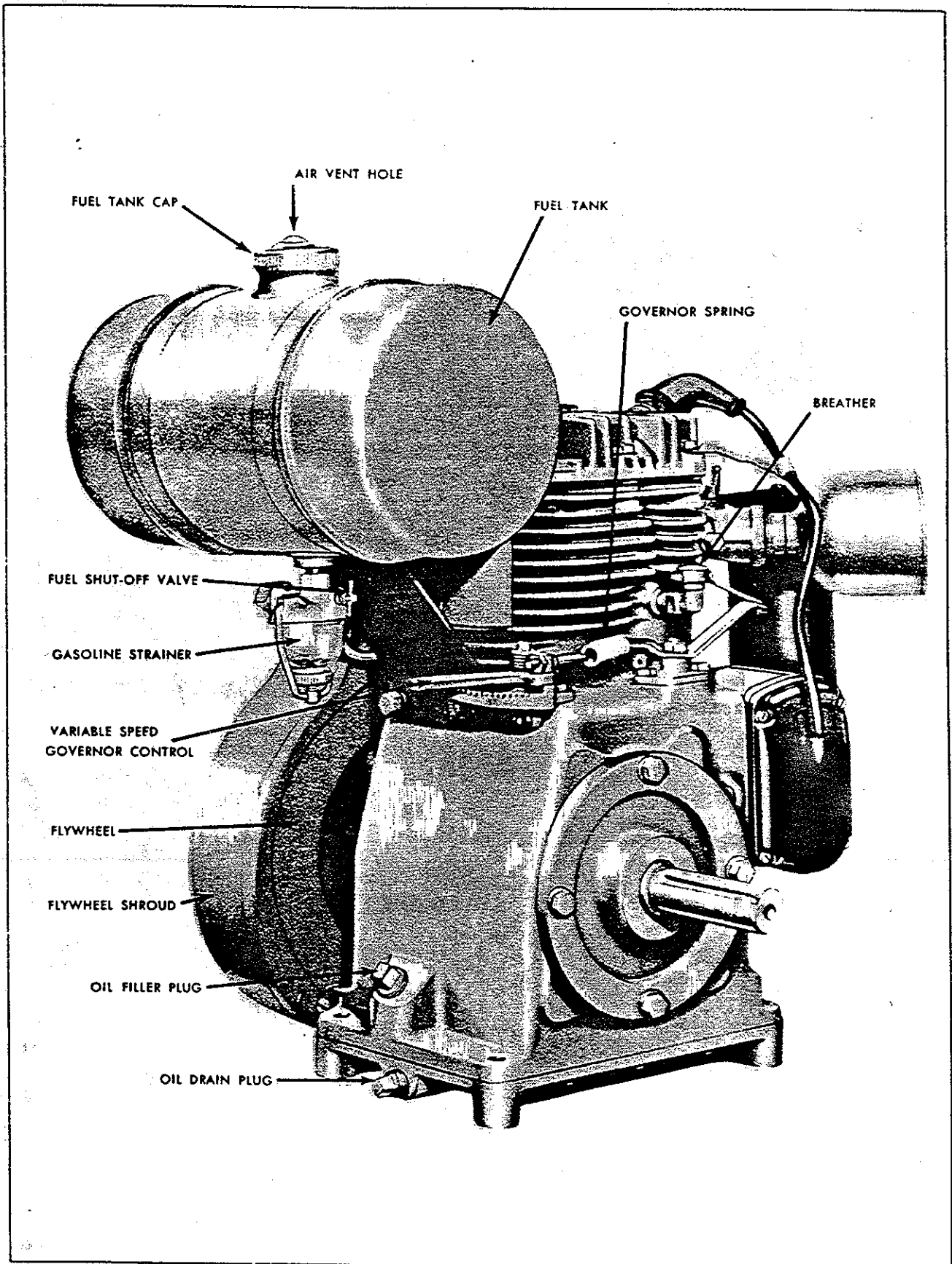


Fig. 2

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FUEL TANK and FUEL STRAINER side of ENGINE

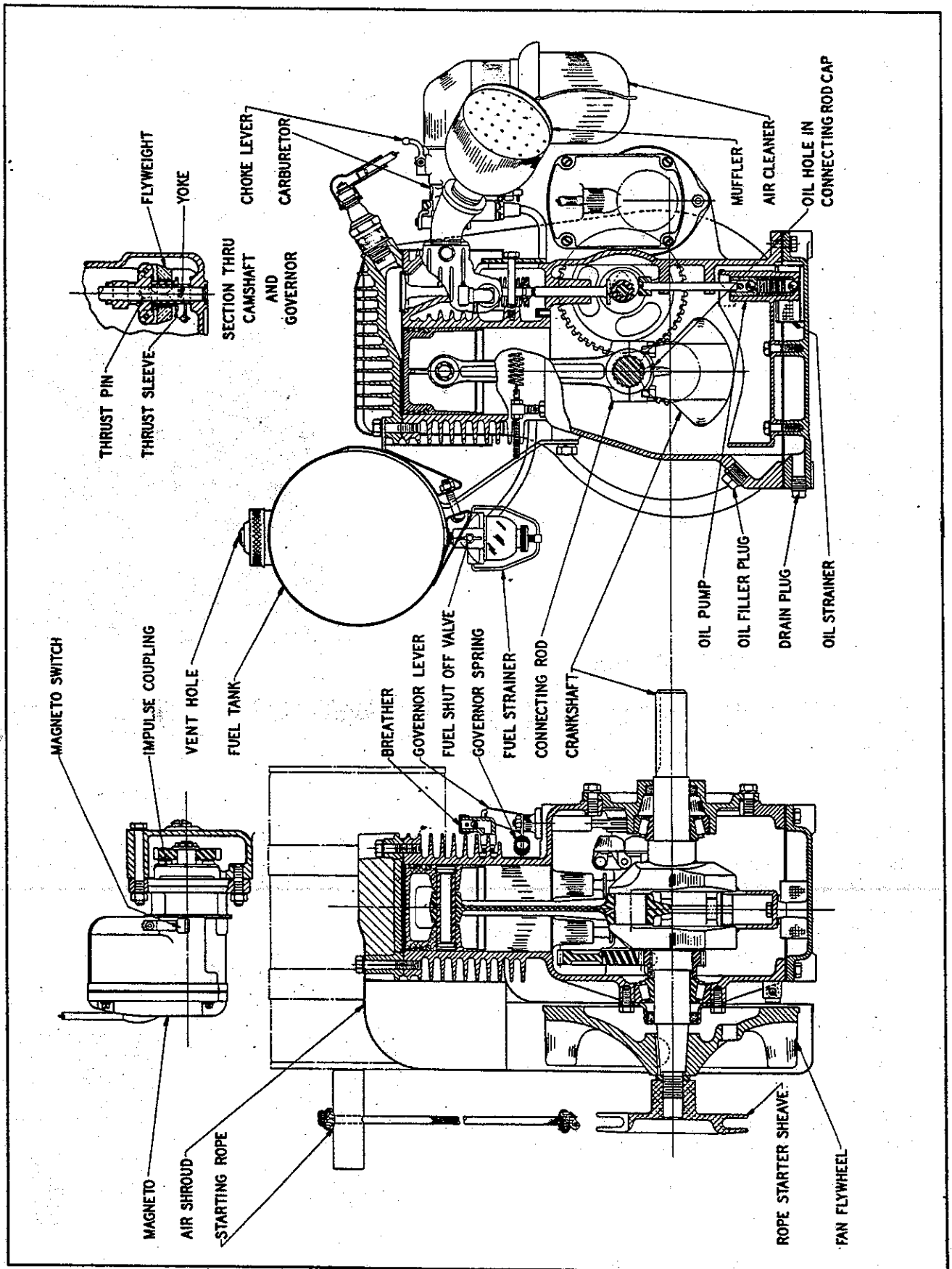


Fig. 3  
SECTIONAL VIEWS OF ENGINES

## GENERAL INFORMATION

*Wisconsin* heavy duty air cooled engines are of the most approved design and are built in a modern factory, equipped with the latest machinery available. Only the best materials, most suitable for the particular part, are used. During production every part is subjected to the most rigid inspection, as are also the completely assembled engines. After assembly, every engine is operated on its own power for several hours, on a dynamometer. All adjustments are carefully made so that each engine will be in perfect operating condition when it leaves the factory.

Back of the *Wisconsin* Motor Corporation is fifty years of engineering experience in the design of gasoline engines for every conceivable type of service. The performance of these engines is proof of the long satisfactory service you too can expect from your engine.

Like all fine machinery the engine must be given regular care and be operated in accordance with the instructions.

*Keep this book handy at all times, familiarize yourself with the operating instructions.*

## GENERAL DESIGN

*Wisconsin* engines are of the four cycle type, in which each of the four operations of suction, compression, expansion and exhaust requires a complete stroke. This gives one power stroke for each two revolutions of the crankshaft.

### COOLING

Cooling is accomplished by a flow of air, circulated over the cylinder and head of the engine, by a combination fan-flywheel encased in a sheet metal shroud. The air is divided and directed by ducts and baffle plates to insure uniform cooling of all parts.

*Never operate an engine with any part of the shrouding removed, because this will retard the air cooling.*

### CARBURETOR

The proper combustible mixture of gasoline and air is furnished by a balanced carburetor, giving correct fuel to air ratios for all speeds and loads.

### IGNITION

The spark for ignition of the fuel mixture is furnished by a high tension magneto, driven off the timing gears at crankshaft speed. The magneto is fitted with an impulse coupling, which makes possible a powerful spark for easy starting. Also, the impulse coupling automatically retards the timing of the spark for starting, thus eliminating danger of kickback.

## LUBRICATION SYSTEM

Lubrication is of the constant level splash type. A plunger pump maintains the proper oil level in a trough under the connecting rod. See Fig. 4.

## GOVERNOR

A governor of the centrifugal flyball type controls the engine speed by varying the throttle opening to suit the load imposed upon the engine.

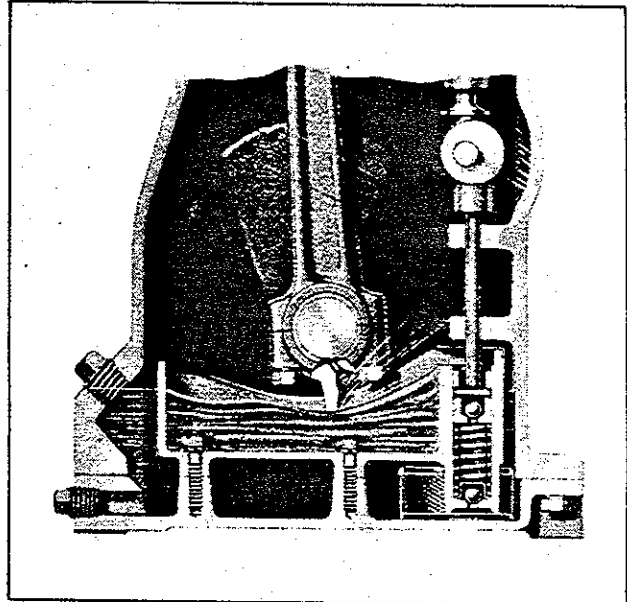


Fig. 4

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## ROTATION

The rotation of the crankshaft is clockwise when viewing the flywheel or starting end of the engine. This gives counter-clockwise rotation when viewing the power take-off end of the crankshaft.

## HORSE POWER

R.P.M.	Models						
	AA	AB	ABS	ABN	AK	AKS	AKN
1600	1.4	2.0		2.2	2.8		3.1
1800	1.6	2.3		2.5	3.2		3.6
2000	1.8	2.5		2.7	3.6		4.1
2200	1.9	2.7		3.1	3.9		4.5
2400	2.0	2.9	3.1	3.4	4.1	4.4	4.9
2600			3.3	3.7		4.6	5.3
2800			3.6	3.9		4.8	5.6
3000			3.9	4.2		5.0	5.8
3200			4.0	4.4		5.0	6.1
3400			3.9	4.5		5.0	6.2
3600			3.6	4.6		4.7	6.2

The horse power given in the above chart is for an atmospheric temperature of 60° Fahrenheit at sea level, or at a Barometric pressure of 29.92 inches of mercury.



For each inch lower the Barometric pressure drops, there will be a loss in horse-power of 3½%.

For each 10° temperature rise there will be a reduction in horsepower of 1%.

For each 1000 ft. altitude above sea level there will be a reduction in horse power of 3½%.

The friction in new engines cannot be reduced to the ultimate minimum during the regular block test, but engines are guaranteed to develop at least 85 per cent of maximum power when shipped from the factory. The power will increase, as friction is reduced, during a few days of operation. The engine will develop at least 95% of maximum horse power when friction is reduced to a minimum.

For continuous operation allow 20% of horse power shown, as a safety factor.

## INSTRUCTIONS FOR STARTING AND OPERATING

### LUBRICATION

Before starting the engine, fill the base with good gas engine oil through the filler plug opening. See Fig. 2. The oil should be filled to the level of the filler plug hole. This requires about 1¼ pints. Be sure the oil is clean, and also the funnels or measures used in filling.

Too much emphasis cannot be given to the matter of oil selection. High grade oil of the body suited to the requirements of your engine is the most important single item in the economical operation of the unit, yet it is the cheapest item of operating cost. Select your oil solely on quality and suitability—never on price—for no one thing is so sure to bring about unsatisfactory performance and unnecessary expense as incorrect lubrication.

High-grade, highly refined oils corresponding in body to the S. A. E. (Society of Automotive Engineers), Viscosity Numbers listed below will prove economical and assure long engine life.

**IMPORTANT:** S. A. E. Viscosity Numbers classify oils in terms of body only, without consideration of quality or character, therefore we list certain grades of *Mobiloil* as typical examples of lubricants possessing the qualities we believe desirable in oils for Wisconsin engines. We plainly state that these grades of *Mobiloils* are listed because of their recognized quality and world-wide distribution. *There are other high quality oils on the market that are equally satisfactory for Wisconsin engines.*

## GRADE OF OIL

SEASON OR TEMPERATURE	GRADE OF OIL	EXAMPLE
Spring, Summer, or Autumn +120°F to +40°F	SAE 30	Mobiloil A
Winter +40°F to +5°F	SAE 20-20W	Mobiloil Arctic
+5°F to -20°F	SAE 10W	Mobiloil 10W
Crank Case Capacity		1¼ Pts.

Follow summer recommendations in winter if engine is housed in warm building.

**Check oil level every 8 hours. The old oil should be drained every 50 hours of operation.**

To drain oil base, remove oil drain plug. See Fig. 2. Oil should be drained while engine is hot, as it will then flow more freely.

### AIR CLEANER

The air cleaner is an essential accessory, filtering the air entering the carburetor, and thereby prolonging the life of the engine. Remove the bowl from the air cleaner by snapping the spring wire bail from the bottom of the bowl. See Fig. 5. Fill bowl to oil level line, about ½ pint, with the same kind of oil as used in the crankcase. Detailed instructions are printed on the air cleaner.

The air cleaners must be serviced frequently, depending on the dust conditions where the engines are operated. When the oil in the bowl becomes dirty, it should be replaced with new oil. This servicing will vary from a few days of operation in comparatively clean conditions to twice a day in dusty conditions.

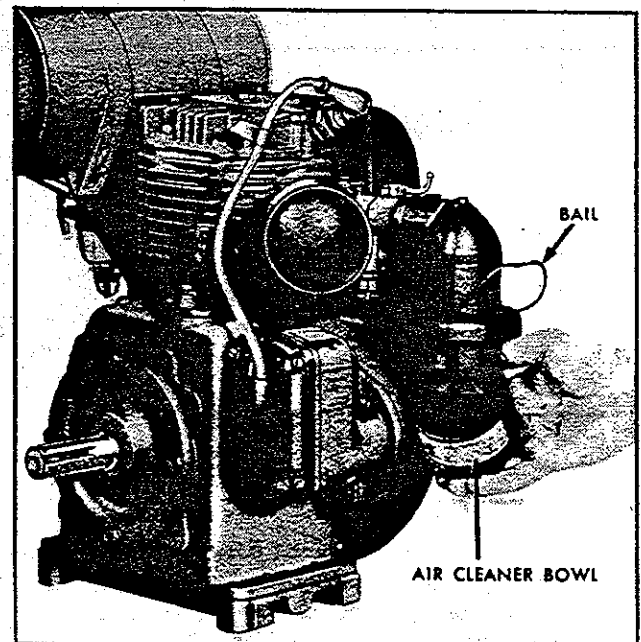


Fig. 5

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Operating the engine under dusty conditions without oil in the air cleaner, or with dirty oil, may wear out cylinders, pistons, rings and bearings in a few days time, and result in costly repairs.

Daily attention to the air cleaner is one of the most important considerations in prolonging engine life.

## FUEL

The fuel tank should be filled with a *good quality* gasoline free from dirt and water. The capacity of the tank is one gallon. Some of the poorer grades of gasoline contain gum which will deposit on valve stems, piston rings, and in the various small passages in the carburetor, causing serious trouble in operating, and in fact might prevent the engine from operating at all.

Use only reputable, well known brands of *Regular* gasoline. Fuels with the lowest possible lead content, but not below octane rating 74 (Research Method), are best. Fuel with a lower octane rating will cause detonation, and if operation is continued under this condition, severe damage will result. Cylinder and piston will be scored, head gasket blown out, bearings will be damaged, etc.

Be sure to open the gasoline shut-off valve below the fuel tank. See Fig. 2. Also be sure air vent hole in fuel tank cap is open, otherwise gas cannot flow to carburetor.

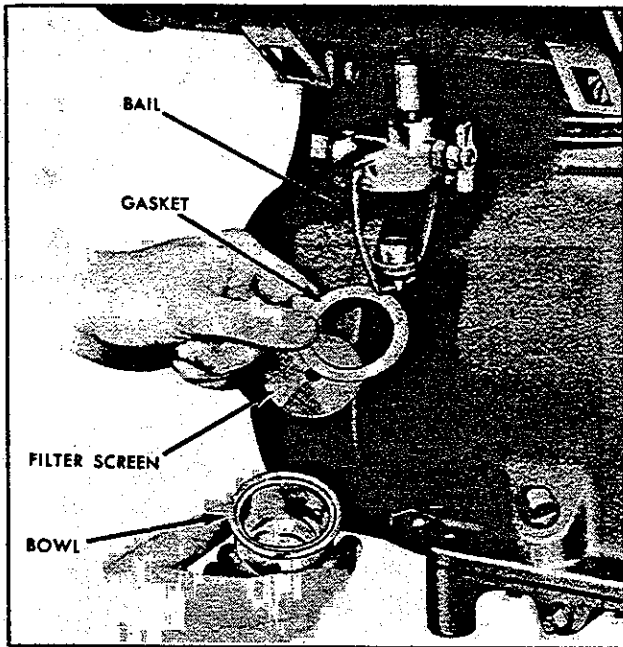


Fig. 6

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## GASOLINE STRAINER

The gasoline strainer on the bottom of the fuel tank is very necessary to prevent sediment, dirt and water from entering the carburetor and causing trouble, or even complete stoppage of the engine. The glass strainer bowl should be inspected frequently and

cleaned if dirt or water is present. To remove bowl, first shut off fuel valve, then loosen the knurled nut below the bowl and swing the wire bail to one side. After cleaning the bowl and screen, replace the parts, being sure that the gasket is in good condition; if not, use a new gasket. See Fig. 6.

## CHOKE

Before starting a cold engine close the choke on the carburetor air inlet horn by turning the choke lever counter-clockwise. See Fig. 7. The choke will remain closed until the engine starts, at which time it will open automatically. If the choke should accidentally snap open before the engine starts, close it again. Less choking is necessary in warmer weather or when the engine is warm than when it is cold.

If after several unsuccessful attempts to start engine, gasoline begins to drip from carburetor, the choke should be opened, otherwise the fuel mixture may become too rich to burn. The regular starting procedure should then continue as in paragraph on *Rope Starter*, Page 11, but with the choke open.

## CARBURETOR - ADJUSTMENT

These engines are equipped with either a Zenith, Marvel-Schebler or Stromberg carburetor.

The high speed needle valve on these carburetors should be opened approximately  $\frac{3}{4}$  to  $1\frac{1}{4}$  turns. See Fig. 7.

After the engine is started and warmed up for several minutes, and running at normal operating speed, this needle valve should be readjusted for best operation. This adjustment need only be made the first time the engine is started. After that, the needle should be left in that position. In cold weather, starting may be facilitated by opening the needle valve slightly more, then, readjusting to normal running position after engine is started. The idle needle should be adjusted for best low speed operation, while carburetor throttle is closed by hand.

For further information on carburetor, see the Zenith, Marvel-Schebler or Stromberg instructions in back of this manual.

## OVERSPEEDING

When starting a gasoline engine for its days work, the engine should be allowed to warm up to operating temperature, before the load is applied. This requires only a few minutes of running of the engine at moderate speed.

Racing an engine or gunning it, to hurry the warm-up period, is very destructive to the polished wearing surfaces on pistons, rings, cylinders, bearings, etc., as the proper oil film on these various surfaces cannot be established until the oil has warmed up and become sufficiently fluid. This is especially important on new engines and in cool weather.

Racing an engine by disconnecting the governor, or by

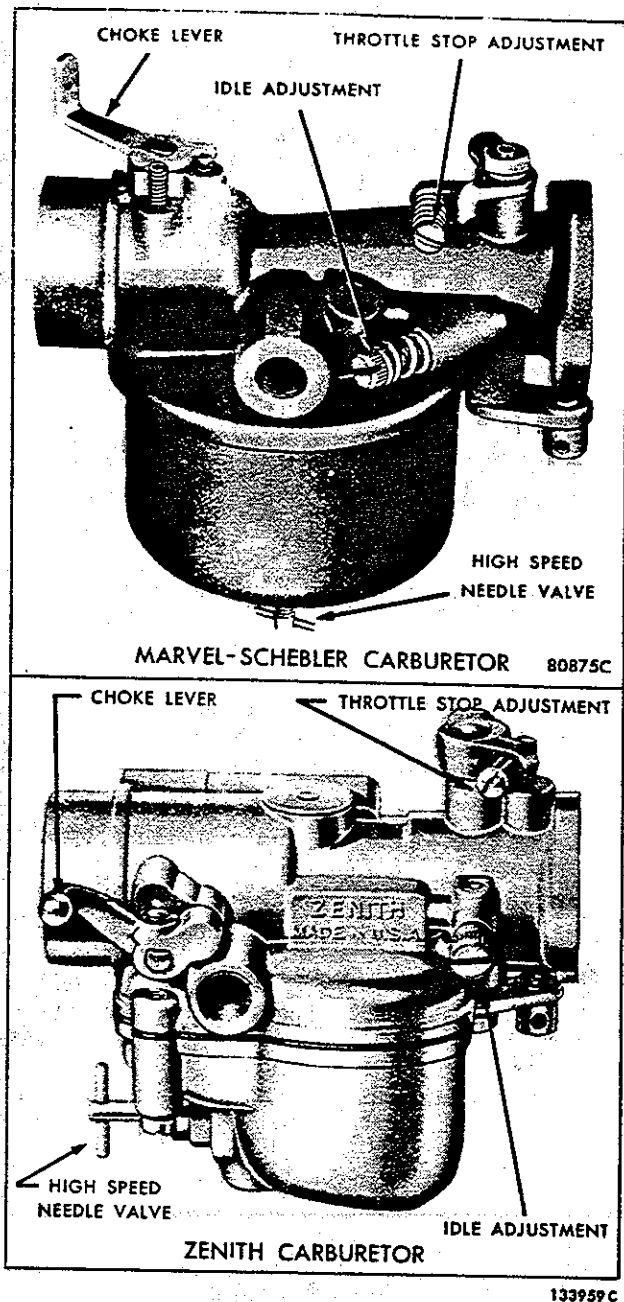


Fig. 7

doing anything to interfere with the governor control of the speed of the engine, is extremely dangerous. Quite naturally the operator of the engine desires to get all possible power out of an engine, and the engine manufacturer does his best to supply this want, but if all of this power is used merely to speed up the engine, without any load being imposed upon it, dangerously high speeds will result.

The governor is provided as a means for controlling the engine speed to suit the load applied, and also as a safety measure to guard against excessive speeds, which not only overstrain all working parts, but which might cause wrecking of the engine, and possible injury to bystanders.

All parts of the engine are designed to safely withstand any speeds which might normally be required,

but it must be remembered that the stresses set up in rotating parts, increase with the square of the speed. That means that if the speed is doubled the stresses will be quadrupled, and if the speeds are trebled the stresses will be nine times as great.

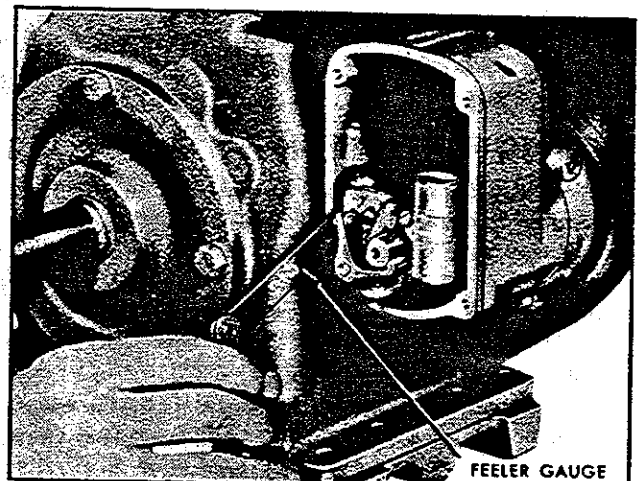
Therefore strict adherence to the above instructions cannot be too strongly urged, and greatly increased engine life will result as a reward for these easily applied recommendations.

### IGNITION SWITCH

Magneto ignition is standard on these engines. A grounding switch is located on the side of the magneto which is always in the *on* or running position, except when depressed by hand for stopping. See Fig. 1.

### MAGNETO

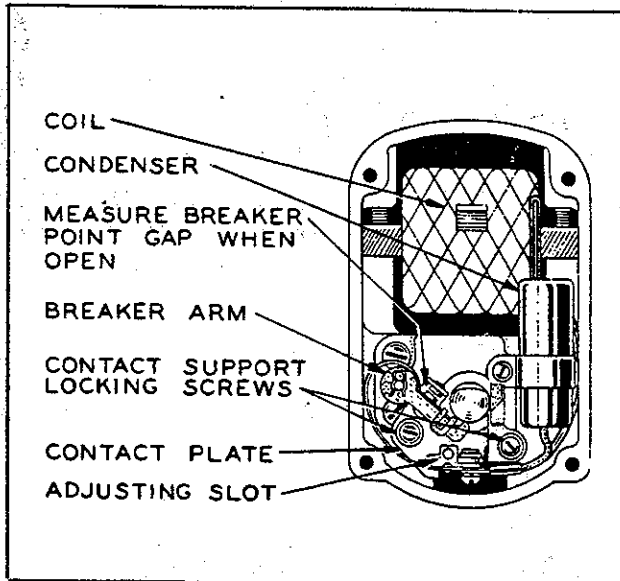
Magnetos are properly adjusted and timed before leaving the factory. The breaker points of the Fairbanks-Morse and Wico Magnetos should have an opening of .015" at full separation and those of the Eisemann magneto should be .020". If the spark becomes weak after continued operation, it may be necessary to readjust these points. To do this first remove the end cover on the magneto. See Fig. 8, which shows the end cover removed and the breaker points of the Fairbanks-Morse magneto exposed. The following in-



FAIRBANKS-MORSE MAGNETO

Fig. 8

structions are for the Fairbanks-Morse magneto, but can be applied to the various other magnetos used on this model of engine. For further information, see service instructions for the Eisemann, Fairbanks-Morse and Wico magnetos in the back of this manual. The crankshaft should be rotated by turning the starting rope sheave by hand, (this also rotates the magneto), until the breaker points are wide open. The opening or gap should then be measured with a feeler gauge and if necessary reset as shown in Fig. 9. To readjust points, first loosen the locking screws on the contact plate enough so that the plate can be moved. Insert the end of a small screw driver into



END VIEW of FAIRBANKS-MORSE MAGNETO

Fig. 9

the adjusting slot at the bottom of the contact plate and open or close the contacts by moving the plate until the proper opening is obtained. See Fig. 9. After tightening the locking screws, recheck breaker point gap to make sure it has not changed. If it is found that the breaker points have become rough, they should be resurfaced with a breaker point file before the above adjustments are made. Replace magneto end cover carefully so that it will seal properly. Do not force cover screws too tightly on the magneto as the cover may crack.

### MAGNETO IGNITION SPARK

If difficulty is experienced in starting the engine or if engine misses firing, the strength of the ignition spark may be tested by removing the ignition cable from the spark plug and holding the terminal 1/8 inch away from the cylinder head, as shown in Fig. 10. Turn the engine over slowly with starting rope sheave as shown.

When the impulse coupling on the magneto snaps, there should be a good spark at the ignition cable terminal. If there is a weak spark, or none at all, first check breaker point opening as mentioned in preceding paragraph under 'Magneto'. If this does not remedy the trouble, it may be necessary to install a new condenser. See Eisemann, Fairbanks-Morse or Wico maintenance manual at the back of this book.

### MAGNETO TIMING

If it is necessary to remove magneto for cleaning or repairs, first remove timing gear inspection screw shown in Fig. 10. Then turn crankshaft over by hand until timing marks on both camshaft and magneto gears show through inspection hole. See Fig. 25. The crankshaft can be turned over more easily if spark plug is removed. Then leave crankshaft in that position. By removing the upper capscrew and nut and the lower nut from the stud, the magneto can be removed from the pad on the crankcase. When replac-

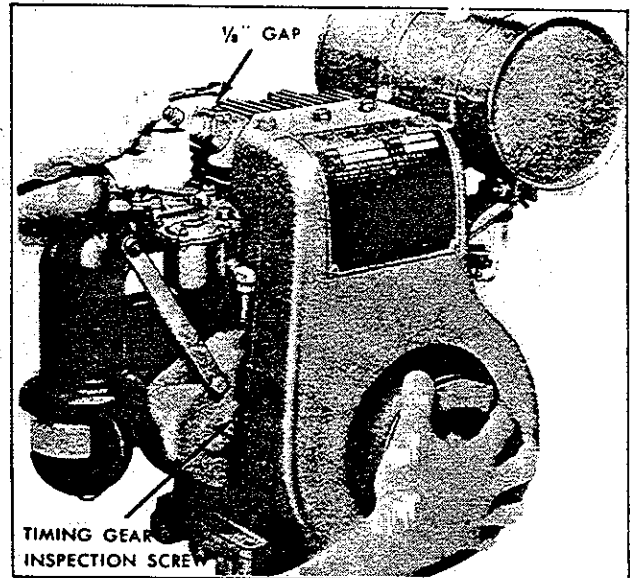


Fig. 10

71590C

ing magneto be sure timing marks again coincide as in Fig. 25, otherwise ignition spark will not occur at proper time, and engine either will not operate properly or may not run at all.

When magneto is properly timed, the impulse coupling will snap when keyway in crankshaft is up. This can be checked by turning crankshaft over slowly by hand. This check can only be made on installations where keyway is not covered by other parts of equipment.

The proper spark advance is 28°. The magneto rotation is clockwise when viewed from driving gear end of magneto.

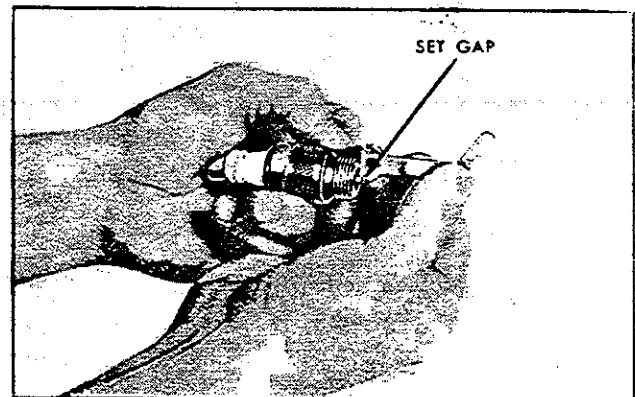


Fig. 11

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### SPARK PLUG

The spark plug gap should be thirty thousandths (.030) of an inch, and plugs should be kept clean both inside and out. See Fig. 11. If the porcelain insulator is cracked, replace with a new plug of correct heat range, like Champion No. D-16, AC No. C86 Commercial, or equal. The spark plug thread is 18 millimeter. Be sure to use a good gasket under the spark plug. Tighten spark plugs, 25 to 30 foot pounds torque.

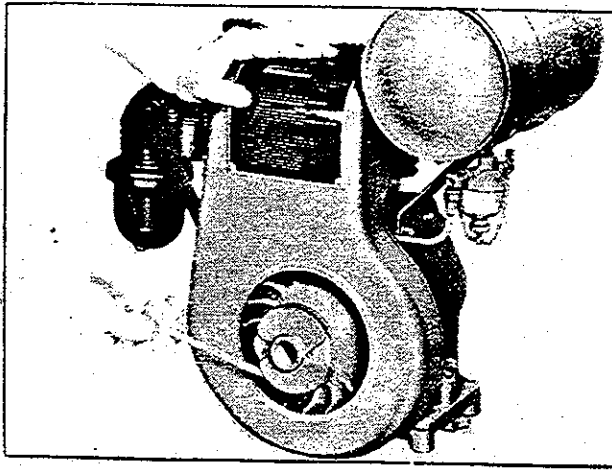


Fig. 12

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### STARTING - ROPE STARTER

The engines are equipped with rope starters. These have an advantage over starting cranks in that a pull on the rope will give two full revolutions of the crankshaft, with the resultant, easier starting especially if direct connected loads are coupled to the engine, such as generator, compressors, or belted equipment, and when no clutch is used.

The rope should be wound on the starting sheave in a clockwise direction, after the knot in the end of the rope has been inserted in the notch in the sheave. See Fig. 12. Pull gently on the rope until increased resistance is felt on compression stroke. Now turn the sheave back one-half turn. Rewind the rope fully and pull briskly to turn the crankshaft over rapidly. If all conditions are right, engine will start promptly after one or two applications of the rope. After engine starts, allow it to warm up a few minutes before applying load.

### RESTORING COMPRESSION

On a new engine or one which has been out of operation for some time, the oil may have drained off the cylinder so that compression will be weak. This may cause difficulty in starting. To remedy this condition, remove the spark plug and pour about a fluid ounce of crankcase oil through the spark plug hole. Turn the engine over several times with the rope starter to distribute the oil over the cylinder wall. Then, replace the spark plug and compression should be satisfactory. When compression is proper, considerably more resistance will be felt in cranking on one stroke of the piston, the compression stroke, than on the other three strokes.

### TO STOP ENGINE

To stop engine, depress switch lever on magneto and hold down until engine stops. See Fig. 1.

### SAFETY PRECAUTIONS

Never fill fuel tank while engine is in operation. Gasoline spilled on a hot engine will explode.

Never operate engine in a closed building unless the exhaust is piped outside. Exhaust from an engine contains carbon monoxide, a poisonous, odorless and invisible gas, which if breathed into the lungs would cause serious illness and possible death.

Never make adjustments on any kind of machinery while it is connected to the engine without first removing the ignition cable from the spark plug. Turning over the machinery by hand during adjusting or cleaning might start the engine and the machinery with it, causing serious injury to the operator.

*Always keep all parts of the engine clean. This will prolong engine life, and give more satisfactory operation.*

Every 4 to 8 hours, depending on dust conditions, check air cleaner and change oil. See Page 7.

Every 8 hours check crankcase oil level. Keep filled to level of oil filler hole. See Page 7.

Every 50 hours drain crankcase and refill with fresh oil. See Page 7.

## TROUBLES CAUSES AND REMEDIES

Three prime requisites are essential to starting and maintaining satisfactory operation of gasoline engines. They are:

1. *A proper fuel mixture* in the cylinder.
2. *Good compression* in the cylinder.
3. *Good spark, properly timed*, to ignite the mixture.

If all three of these conditions do not exist, the engine cannot be started. There are other factors which will contribute to hard starting, such as, too heavy a load for the engine to turn over at a low starting speed, a long exhaust pipe with high back pressure, etc. These conditions may affect the starting, but do not necessarily mean that the engine is improperly adjusted.

As a guide to locating any difficulties which might arise, the following causes are listed under the three headings: *Fuel Mixture, Compression, and Ignition*. In each case the causes of trouble are given in the order in which they are most apt to occur. In many cases the remedy is apparent, and in such cases no further remedies are suggested.

## STARTING DIFFICULTIES

### FUEL MIXTURE

No fuel in tank or fuel shut-off valve closed.

Carburetor not choked sufficiently, especially if engine is cold. See 'Choke', Page 8.

Water, dirt, or gum in gasoline, interfering with free flow of fuel to carburetor.

Poor grade or stale gasoline that will not vaporize sufficiently to form the proper fuel mixture.

Needle valve on carburetor insufficiently opened.

Carburetor flooded, caused by too much choking, especially if engine is hot. See *'Choke'*, Page 8.

Dirt or gum will hold float needle valve in carburetor open. This condition would be indicated if fuel continues to drip from carburetor while engine is idle. Often tapping the float chamber of the carburetor lightly with the wood handle of a screwdriver or similar instrument will remedy this trouble. Do not strike with any metal tools, it may be damaged. Also if the mixture in the cylinder, due to flooding, is not too rich to start the engine, starting should be continued, as this will usually correct the trouble. In this case the choke should be left open.

If, due to flooding, too much fuel should have entered the cylinder in attempting to start the engine, the mixture will most likely be too rich to burn. In that case the spark plug should be removed from the cylinder and the engine then turned over several times with the starting rope, so the rich mixture will be blown out through the spark plug hole. The choke on the carburetor should of course be left open during this procedure. The plug should then be replaced and starting tried again.

To test for clogged fuel line, loosen fuel line nut at carburetor slightly. If line is open, fuel should drip out at loosened nut.

## COMPRESSION

If the engine has proper compression, considerably more resistance will be encountered in the pull on the starting rope on one stroke of the piston, as compared with the other three strokes. If this resistance is not encountered, compression is faulty. Following are some reasons for poor compression:

Cylinder dry due to engine having been out of use for some time. See *'Restoring Compression'*, Page 11.

Loose or broken spark plug. In this case a hissing noise will be heard in cranking engine, due to escaping gas mixture on compression stroke.

Damaged cylinderhead gasket or loose cylinder head. This will likewise cause hissing noise on compression stroke.

Valve stuck open due to carbon or gum on valve stem. Remove tappet inspection plate and note if valves are moving up and down as engine is turned over by hand. A stuck valve will not follow down. To clean valve stems, see *'Valves'*, Page 14.

Valve tappets adjusted with insufficient clearance under valve stems. See *'Valve Tappet Adjustment'*, Page 15.

Piston rings stuck in piston due to carbon accumulation. If rings are stuck very tight, this will necessitate removing piston and connecting rod assembly and cleaning parts. See *'Piston and Connecting Rod'*,

Page 15.

Scored cylinder. This will require reboring of the cylinder and fitting with new piston and rings. If scored too severely, an entire new cylinder and crankcase may be necessary.

## IGNITION

See *'Magneto Ignition Spark'*, Page 10. No spark may also be attributed to the following:

Ignition cable disconnected from magneto or spark plug.

Broken ignition cable, causing short circuits.

Ignition cable wet or oil soaked.

Spark plug insulator broken.

Spark plug wet or dirty.

Spark plug point gap wrong. See Page 10.

Condensation on spark plug electrodes.

Magneto breaker point pitted or burned.

Magneto breaker arm sticking.

Magneto condenser leaking or grounded.

Spark timing wrong. See *'Magneto Timing'*, Page 10.

## ENGINE MISSES

Spark plug gap incorrect. See Page 10.

Worn and leaking ignition cable.

Weak spark. See *'Magneto Ignition Spark'*, Page 10.

Loose connections at ignition cable.

Magneto breaker points pitted or worn.

Water in gasoline.

Poor compression. See *'Compression'*, Page 12.

Carburetor incorrectly adjusted.

## ENGINE SURGES OR GALLOPS

Carburetor adjustment too rich.

Carburetor flooding.

Governor spring hooked into wrong hole in lever. See *'Governor'*, Page 17.

Governor rod incorrectly adjusted. See *'Governor'*, Page 17.

## ENGINE STOPS

Fuel tank empty.

Water, dirt or gum in gasoline.

Gasoline vaporized in fuel lines due to excessive heat around engine. (Vapor Lock). Vapor lock in fuel line or carburetor due to using winter gas (too volatile) in hot weather.

Air vent hole in fuel tank cap plugged.

Engine scored or stuck, due to lack of oil.

Ignition troubles. See 'Ignition', Page 12.

### ENGINE OVERHEATS

Crankcase oil supply low. Replenish immediately.

Carburetor incorrectly adjusted.

Ignition spark timed wrong. See 'Magneto Timing', Page 10.

Low grade of gasoline.

Engine overloaded.

Restricted cooling air circulation.

Part of air shroud removed from engine.

Dirt between cooling fins on cylinder or head.

Engine operated in confined space where cooling air is continually recirculated, consequently becoming too hot.

Carbon in engine.

Dirty or incorrect grade of crankcase oil.

Restricted exhaust.

Engine operated while detonating, due to low octane gasoline or heavy load at low speed.

### ENGINE KNOCKS

Poor grade of gasoline or of low octane rating. See 'Fuel', Page 8.

Engine operating under heavy load at low speed.

Carbon or lead deposits in cylinder head.

Spark advanced too far. See 'Magneto Timing', Page 10.

Loose or burnt out connecting rod bearing.

Engine overheated due to causes under previous heading.

Worn or loose piston pin.

### ENGINE BACKFIRES THROUGH CARBURETOR

Water or dirt in gasoline.

Engine cold.

Poor grade of gasoline.

Sticky inlet valve. See 'Valves', Page 14.

Overheated valve.

Spark plug too hot. See 'Spark Plug', Page 10.

Hot carbon particles in engine.

## DISASSEMBLING AND REASSEMBLING ENGINES

Engine repairs should be made only by a mechanic who has had experience in such work. When disassembling

the engine it is advisable to have several boxes available so that parts belonging to certain groups can be kept together, such as, the cylinder head screws, etc. Capscrews of various lengths are used in the engine, therefore great care must be exercised in reassembly so that right screws will be used in the various places, otherwise damage may result.

Tighten the capscrews of the cylinder head, engine base, connecting rod, main bearing plate and the spark plug to the specified torque readings indicated in the following paragraphs of reassembly.

With the disassembling operations, instructions on reassembling are also given, as often it will not be necessary to disassemble the entire engine. If it is desired to disassemble the entire engine, the reassembly instructions can be looked up later under the headings of the various parts.

While the engine is partly or fully dismantled, all of the parts should be thoroughly cleaned. Remove all accumulated dirt between the fins on cylinder and head.

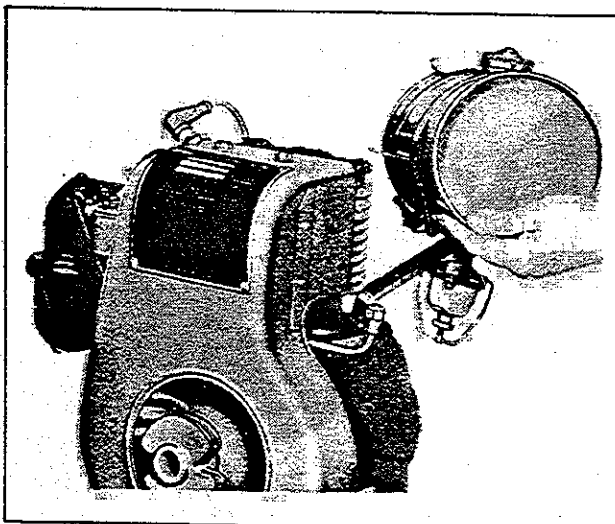
### GAS TANK AND AIR SHROUD

These parts should be removed first if it is necessary to remove the cylinder head. Keep all parts together. See Figs. 13 and 14.

### FLYWHEEL

Remove starting rope sheave from crankshaft by unscrewing sheave with a wrench applied to hexagon hub of sheave.

The flywheel is mounted on a taper on the crankshaft. With a babbitt hammer, strike end of crankshaft, and flywheel will slide off shaft. When replacing flywheel be sure Woodruff key is in position in shaft and that keyway in flywheel is lined up accurately with key. See Fig. 15.



79021C

Fig. 13



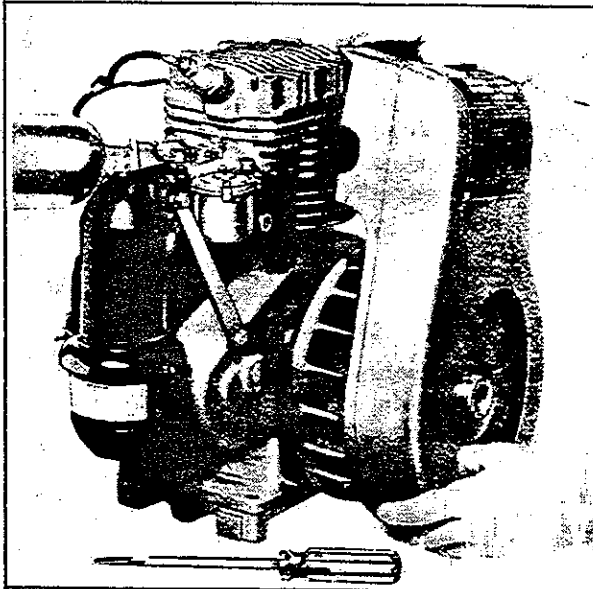


Fig. 14

71597C

### CYLINDER HEAD

The cylinder head must be removed if it is necessary to regrind valves or to do work on the piston rings or connecting rod. All of the cylinder head screws are plainly in view and can be easily removed. Screws of different lengths are used but these can be properly reassembled according to the various lengths of cylinder head bosses. Before reassembling the cylinder head, all carbon and lead deposits should be removed. It is recommended that a new cylinder head gasket be used in reassembly as the old gasket will be compressed and hard, and it may not seal properly. Tighten cylinder head screws 14 to 18 foot pounds torque.

### CARBURETOR

The carburetor with the air cleaner should be removed, both to facilitate working on the engine and to prevent damage to these parts. See Fig. 16.

### VALVES

Assuming that the cylinder head has already been



Fig. 15

79303C

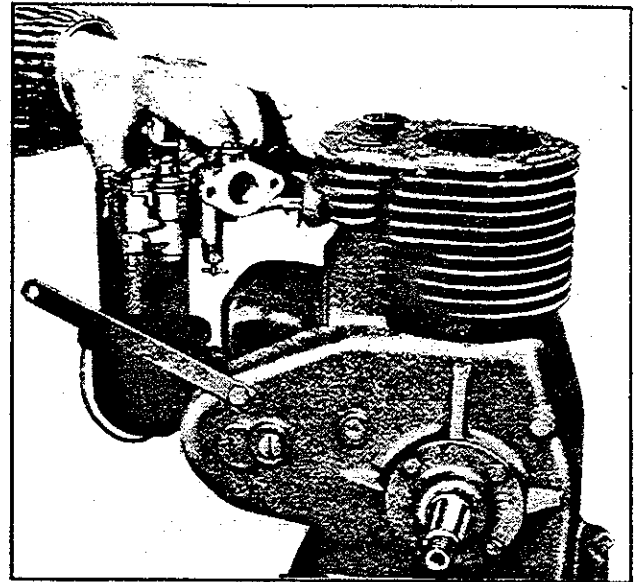


Fig. 16

79306C

dismantled, remove valve tappet inspection plate. Compress valve springs with a valve lifter. The valve spring retainer locks should then be removed from the valve stems. The valves can then be withdrawn from the top of the cylinder block. See Fig. 17. The valves should be cleaned of all carbon and gum deposits as well as the valve seats, ports, and guides in the cylinder block.

The valve seats should be reground to a good seat by spreading a small quantity of fine valve grinding compound on the valve and then rubbing the valve on its seat by a back and forth motion with a screw driver (vacuum cup tool if valves do not have a slot) or a reciprocating advancing valve grinding tool. Occasionally rotate valve to another position during the

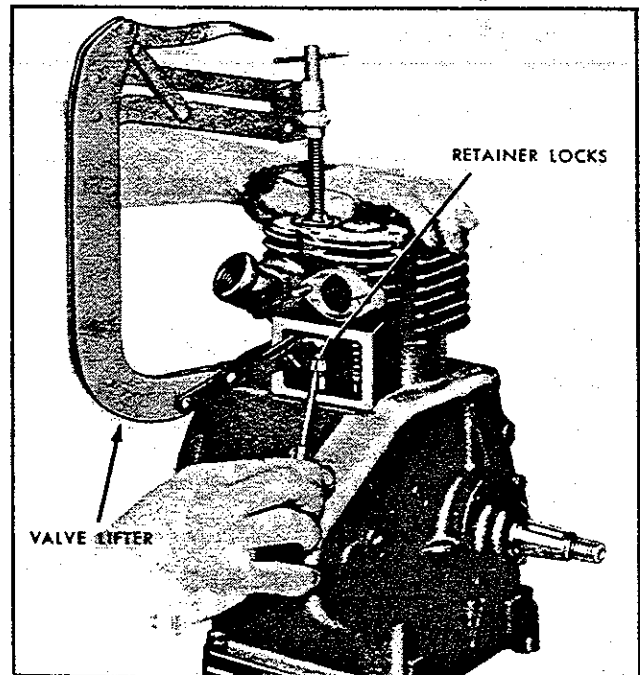


Fig. 17

79304C



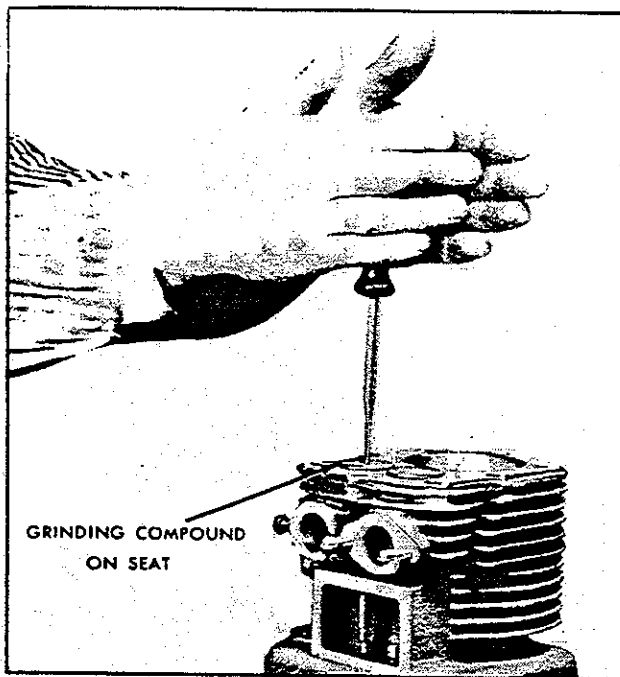


Fig. 18 71391C

grinding operation so seat will be ground true. See Fig. 18. A uniform seat about  $3/32$ " wide should show entirely around the valves. All grinding compound should be carefully washed off the valves and cylinder block with gasoline or kerosene.

The valve stems should have a clearance of  $.003$ " to  $.005$ " in the guides.

Insert the valves in their respective positions in the cylinder block, but before springs are reassembled, the clearance between the ends of the valve stems and the tappets should be checked with a feeler gauge. See Fig. 19. Be sure the tappets are in their lowest positions. The clearance, engine cold, should be  $.011$ " to  $.013$ ", including Stellite Exhaust valves.

If the clearance is less than it should be, grind the end of valve stem a very little at a time and remeasure. Be sure the stems are ground square and flat.

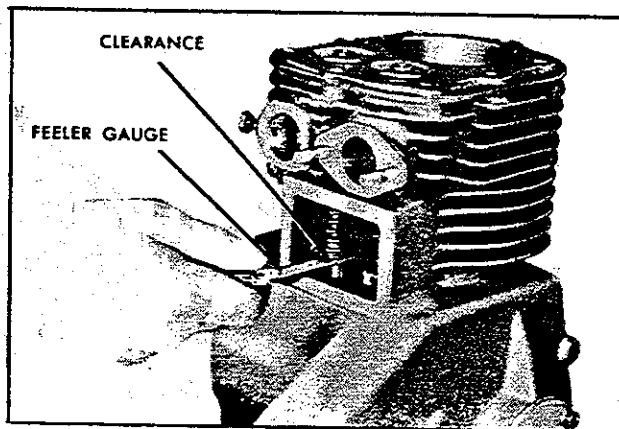


Fig. 19 71402C

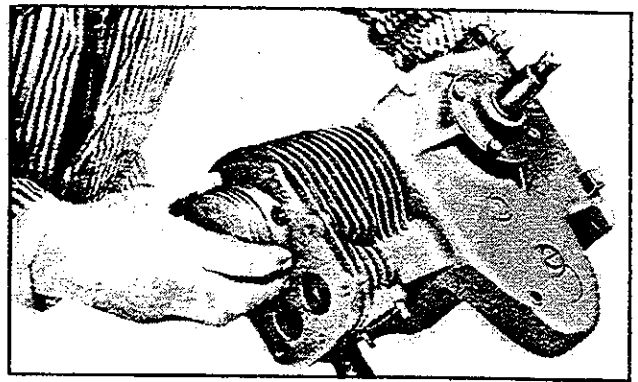


Fig. 20

Replace the valve springs. The valve tappets on the Model AKN engine were offset slightly from the valve stem, but the cylinder block has been redesigned so that the valve stems and tappets are now in line.

### PISTON AND CONNECTING ROD

Drain all oil from engine, then remove engine base. In reassembly of engine base, tighten mounting screws, 6 to 8 foot pounds torque.

The two capscrews and lockwashers can be removed from the connecting rod while the engine is lying on its side. Note that the connecting rod and cap both are stamped with an arrow on one side on the bolt boss, and the rod must be reassembled into the engine in the same way.

After the two screws are removed, the cap can also be removed. The piston and rod can then be pushed out of the top of the cylinder. See Fig. 20. Wash the parts thoroughly in kerosene after scraping off any carbon deposits.

The pistons are tapered, being smaller at the upper than at the lower end. The clearance between the lower end of the piston and the cylinder is as follows on the various models:

Models AA, AB, ABS, ABN —  $.0045$  to  $.005$  inch  
 Models AK, AKS, AKN — — —  $.0055$  to  $.006$  inch

Piston ring side clearance in grooves is  $.002$  to  $.003$  inch.

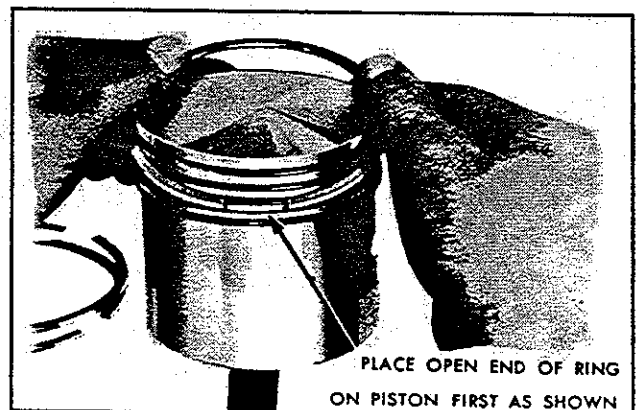


Fig. 21

71152C

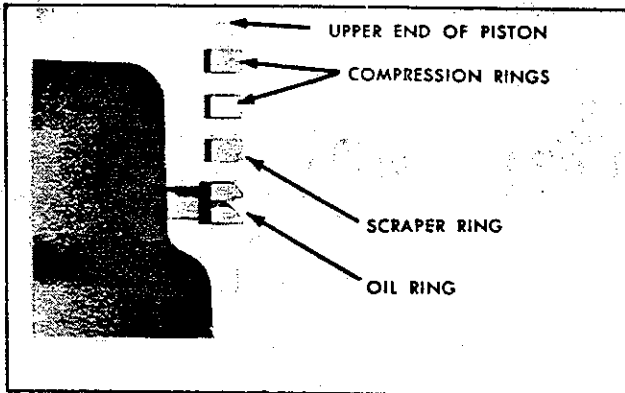


Fig. 22

92200C

Piston ring gap width is .012 to .022 inch.

Piston pin clearance in piston is .0002 to .0008 inch.

Connecting rod to crankpin clearance is .0007 to .002 inch.

Connecting rod side clearance on crankpin is .004 to .010 inch.

Rings should be reassembled to the piston as shown in Fig. 21.

The scraper and oil rings must be assembled to the piston with the scraper edges down, otherwise oil pumping will result. See Fig. 22.

Models ABS, ABN, AK, AKS, AKN engines have two plain compression rings, one in each of two upper grooves, a scraper ring in the third groove and an oil control ring in the lower groove. See Fig. 22. AA and AB engines have a three groove piston with one compression ring in upper groove, scraper ring in second groove and oil control ring in lowest groove. For the AB engine, currently a four groove piston is serviced.

When reassembling the piston into the cylinder, a ring compressor should be used to compress the rings so they will enter the cylinder. See Fig. 23.

The connecting rod should be assembled to the crankshaft so the oil hole in the cap will be toward the carburetor side of the engine, otherwise the rod bearing will not be properly lubricated.

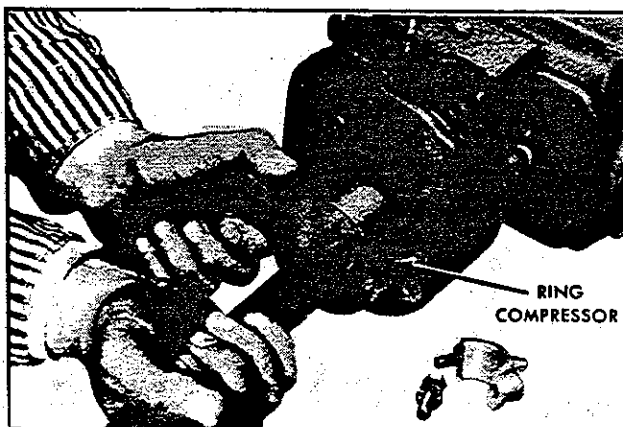


Fig. 23

71399C

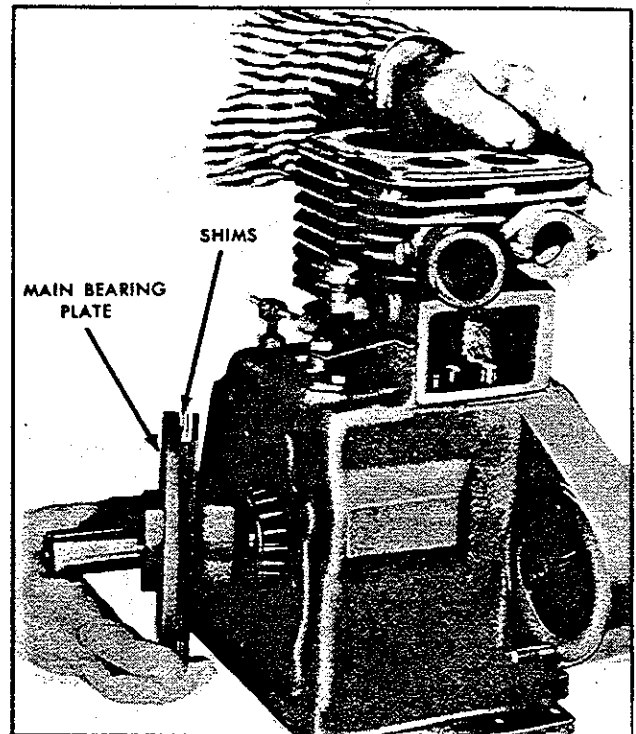


Fig. 24

71404C

Tighten connecting rod capscrews, 14 to 18 foot pounds torque.

### CYLINDER

If cylinders are worn more than .005 inch over standard size, they should be reground and fitted with oversize pistons and rings. This work should be done at an authorized service station.

### CRANKSHAFT

To remove the crankshaft, first remove the four bolts in the bearing retainer plate on end of engine opposite flywheel. This plate can then be pried off, and crankshaft removed from that end of crankcase. Be sure to keep shims in place. See Fig. 24. The shims are used to give the proper end play to the Timken main bearings on the crankshaft. This end play should

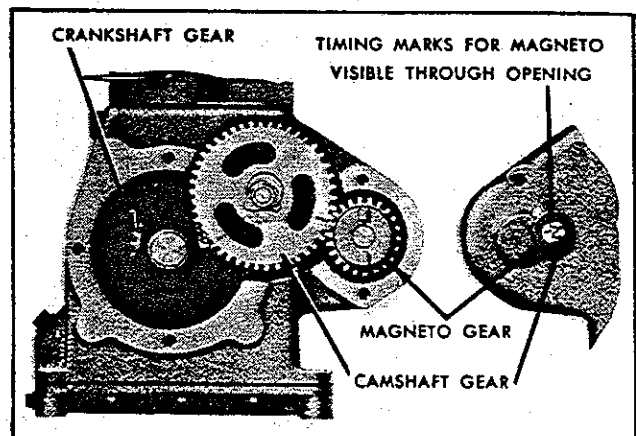


Fig. 25

92199C

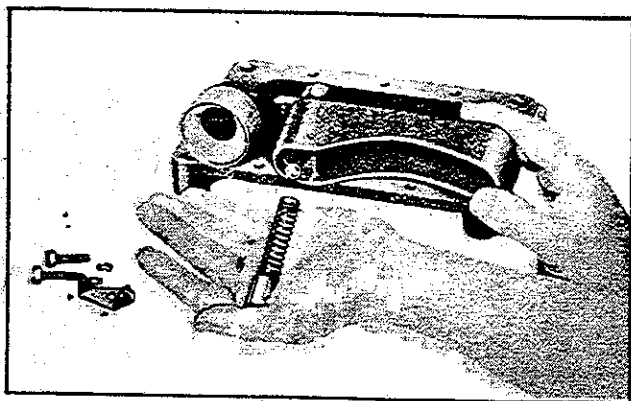


Fig. 26

79019C

be .002 to .004 inch when engine is cold. There is practically no wear in these Timken bearings so that readjustment is seldom necessary after proper assembly.

When reassembling crankshaft, the punch marks on the crankshaft gear and the camshaft gear must be matched, otherwise engine will not operate properly or if timing is off considerably, engine will not run at all. See Fig. 25.

Tighten main bearing plate capscrews, 14 to 18 foot pounds torque.

#### OIL PUMP

The oil pump is part of the oil trough under the connecting rod, and the whole assembly can be removed from the oil base by removing two capscrews. See Fig. 26. If oil pump is dismantled, be sure all ball checks and other parts are reassembled in same position as when taken apart.

After pump has been reassembled into base, fill base with crankcase oil and work pump plunger up and down with a screwdriver, to make sure pump is op-

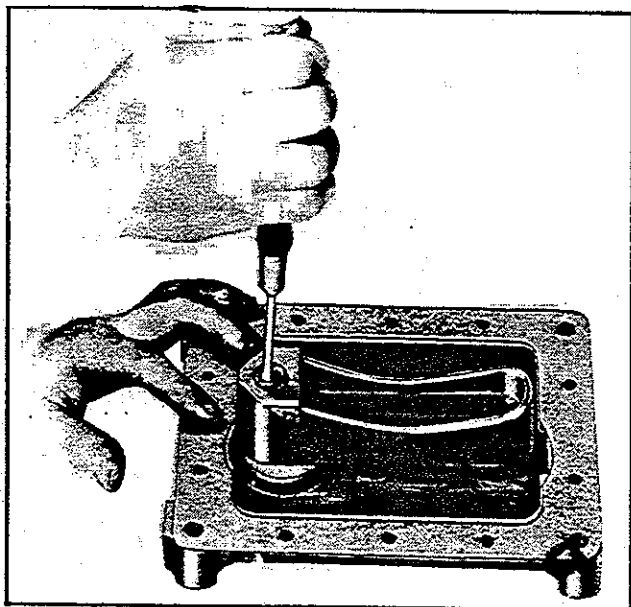


Fig. 27

79358C

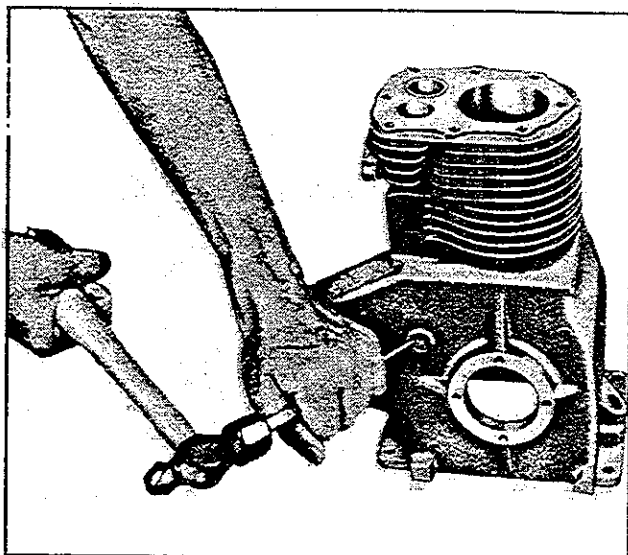


Fig. 28

71406C4

erating properly. As the plunger is worked up and down, the oil trough should fill with oil. See Fig. 27.

#### CAMSHAFT

The camshaft rotates on a pin driven into the crankcase. To remove, pry out expansion plug from crankcase. See Fig. 28. Then with a drift punch drive camshaft pin, from flywheel end of case, out through opposite end of crankcase. See Fig. 29. The expansion plug at the opposite end will thus be driven out ahead of the camshaft pin. The camshaft will then drop out. When reassembling camshaft, drive camshaft support pin in from take-off end of crankcase. Use new expansion plugs in end holes.

#### GOVERNOR

The governor is assembled on to the camshaft. All wearing parts of governor are hardened so replacement is very seldom necessary.

In reassembling, the spacer is slipped on to the camshaft first. The flyweights are then separated far enough so that the thrust sleeve can be slipped between. By then sliding the thrust sleeve back, the

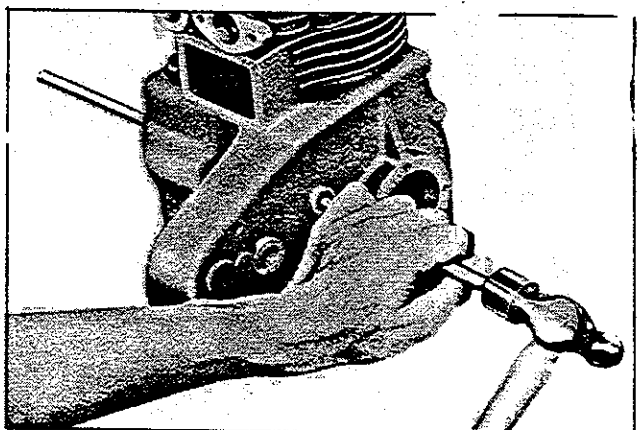


Fig. 29

71397C-1

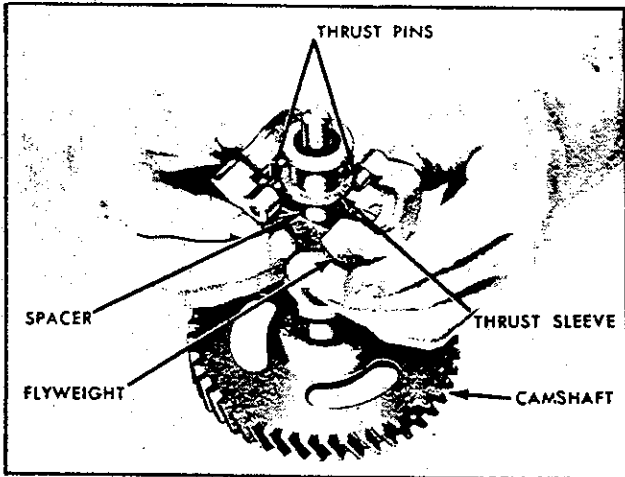


Fig. 30

79360C

flyweights will be closed down between the two flanges of the thrust sleeve. See Fig. 30.

### IMPORTANT

The governor rod connecting to the carburetor must be very carefully adjusted for length, otherwise the governor will not function properly and may cause the engine to surge badly. Referring to Fig. 31, the governor rod should be moved as far as possible toward the carburetor. This will open the carburetor throttle wide. The governor lever should then be moved as far as possible in the same direction, all of this being done with the rod disconnected from the lever as shown. Holding both parts in the above position, the rod should be screwed in or out of the swivel block on the carburetor until the bent end of the rod will exactly register with the hole in the lever. The rod

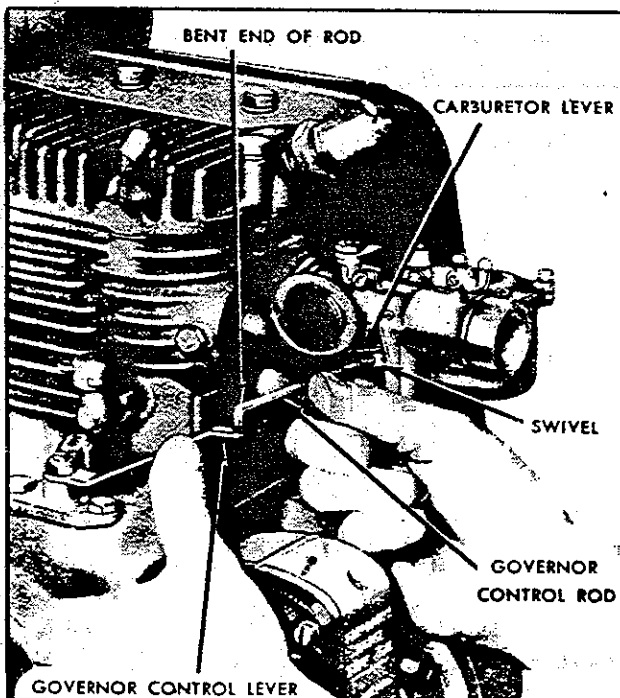


Fig. 31

78926C

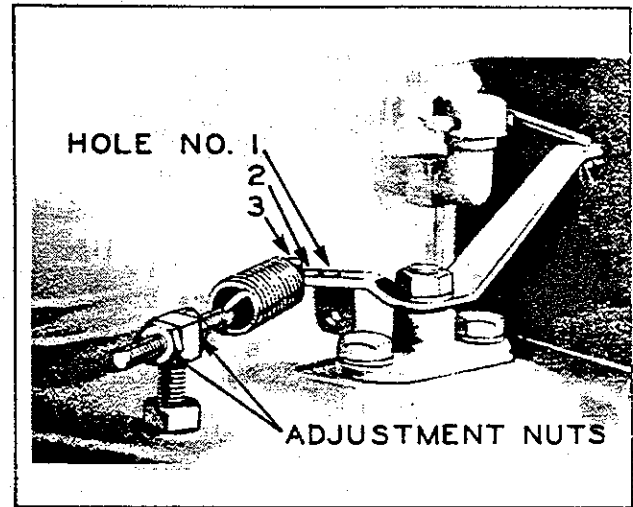


Fig. 32

72413C

should then be dropped into the lever and the cotter pin inserted to keep the rod in place.

### GOVERNOR ADJUSTMENT

The governor spring must be hooked into the proper hole in the governor lever, depending upon the speed at which the engine is to operate. See Fig. 32. For engine speeds of 1600 to 2400 R.P.M. hook spring in hole No. 1. For speeds of 2500 to 2800 R.P.M. use hole No. 2. For speeds of 2900 R.P.M. or over use hole No. 3. After the spring has been hooked into the proper hole, the spring tension must be adjusted by the adjusting nuts. More tension on the spring gives higher speeds and less tension lower speeds.

A tachometer or revolution counter should be used against the crankshaft to check speed while adjusting the governor spring tension. The engine speed without load will be about 180 revolutions per minute higher than the speed with load. For instance, if the

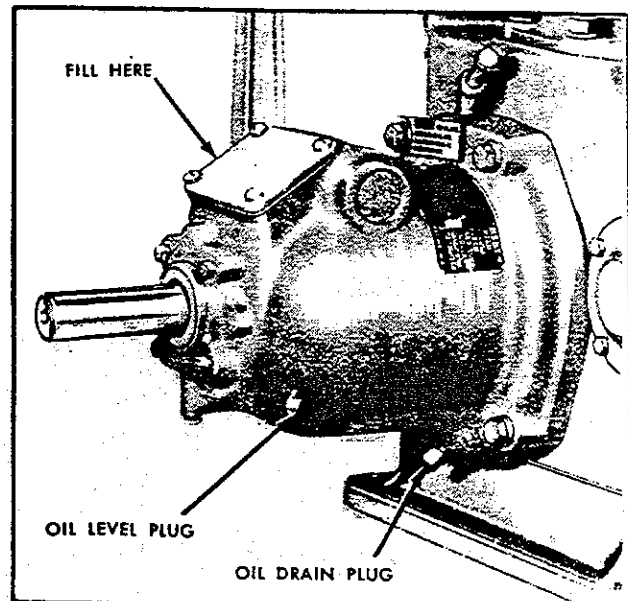


Fig. 33

72770C

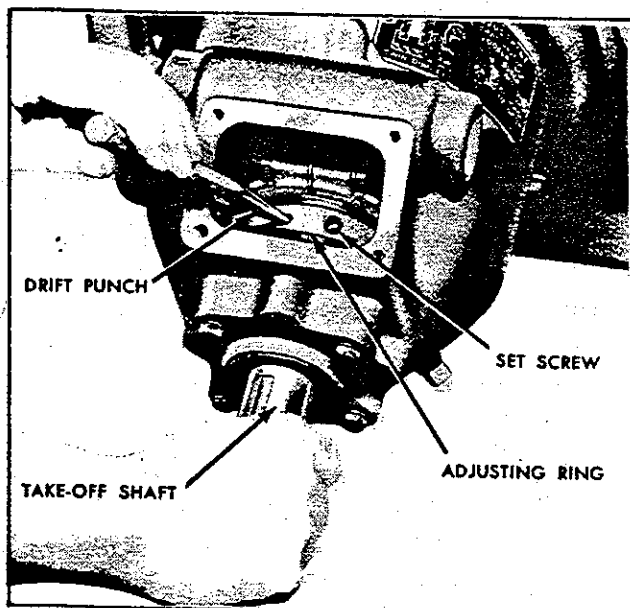


Fig. 34

72773C

engine is to operate at 2000 R.P.M. under full load, the speed with no load will be 2180 R.P.M. and this should be kept in mind when adjusting the governor.

## CLUTCH AND REDUCTION GEARS

### CLUTCH

The clutch furnished with these models of engines is of the multiple disc type running in oil. Use the same kind of oil in the clutch as is used in the crankcase of the engine. The oil should be filled to the height of the oil level plug in the clutch housing. The oil is filled through the inspection plate opening; about one half pint of oil is required. See Fig. 33.

### CLUTCH ADJUSTMENT

If the clutch begins to slip it should be readjusted, otherwise it will become overheated and damaged. First remove the inspection plate. This will expose the adjusting collar. Release the clutch lever and rotate the take-off shaft by hand until the set screw in the collar is on top. Loosen the set screw, then with a drift punch turn the collar in a clockwise direction a little at a time. The take-off shaft must be held in a stationary position. After each movement of the collar, engage the clutch with the clutch lever. When properly adjusted, the clutch will engage with a slight snap. The set screw must then be retightened and the inspection cover replaced. Be sure the gasket is not broken, otherwise oil will leak out and dust may enter the clutch. See Fig. 34.

### REDUCTION GEAR

Reduction gears are furnished with several different ratios, some with spur gears, others with chains. All are of the same general design as shown in Fig. 35.

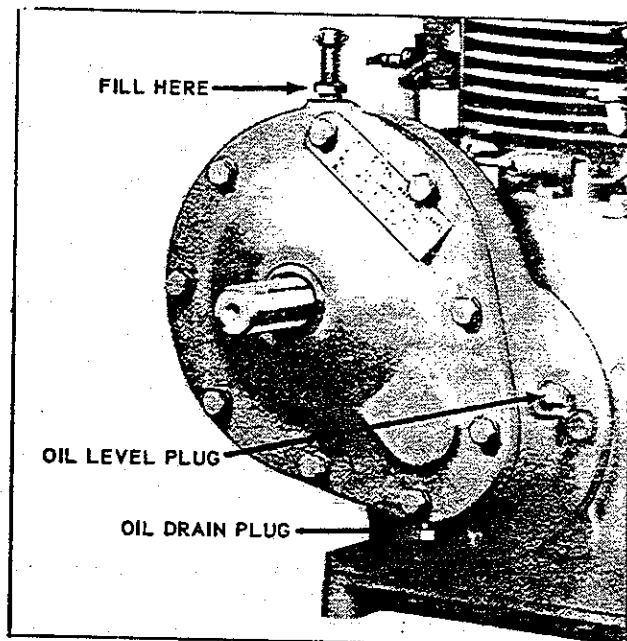


Fig. 35

76850C

These reduction gears require the same kind of oil as is used in the crankcase of the engine. For different installations these gears are assembled to the engines in various positions. Several plugs are furnished on these reduction units so that the lubrication may be properly taken care of regardless of its position. For instance, there will always be one plug on top to be used for filling oil. There will always be one plug below for draining oil, and there will be one plug on the side, slightly above the bottom, to be used as an oil level plug. See Fig. 35. Approximately one pint of oil should be used, or until the oil reaches the height of the oil level plug. The oil should always be filled when the engine is at rest. When the oil becomes dirty, it should be drained while the engine is hot and fresh oil added. The frequency at which these oil changes should be made depends entirely on the kind of service in which these gears are used, but even with light service the change should be made at least once every five hundred hours, adding sufficient oil between changes to keep the oil up to the oil level plug.

## SPECIAL INSTRUCTIONS FOR LAYING UP ENGINE FOR WINTER

When the season's work is completed, the following instructions should be carried out very carefully to protect the engine over winter.

The outside of the engine, including the cooling fins on the cylinder and head, should be thoroughly cleaned of all dirt and other deposits.

The air cleaner at the carburetor intake should be thoroughly cleaned of all oil and accumulated dust, and sediment removed from the oil cup at the bottom of the cleaner.

To protect the cylinder, piston, rings and valves and

keep them from rusting and sticking, a half and half mixture of kerosene and good gas engine oil, (the same kind of oil as used in the crankcase of the engine), should be injected into the air intake of the carburetor while the engine is warm and running at moderate speed. The air cleaner connection will of course have to be disconnected from the carburetor to do this. About an eighth of a pint is necessary, or enough so that a heavy bluish smoke will appear at the exhaust. The ignition switch should then be shut off and the engine stopped. This operation will give a coating of oil on the above mentioned parts, protecting them from the atmosphere.

All old used oil should be drained from the crankcase while the engine is warm, as the oil will then flow more freely than when cold.

Drain fuel system, including gasoline lines, carburetor, fuel pump and tank of all gasoline, to prevent lead and gum sediment interfering with future operation.

All exposed unpainted metal parts should be coated with grease or heavy oil.

Before starting the engine again the next season, the crankcase drain plug should again be removed, so

that any condensation which may have collected during the winter, may be drained before new crankcase oil is added.

A good plan, and one that is recommended, is to remove the engine base in the spring before starting the engine for the new season, and scrubbing off all sediment which may have collected there.

When replacing the engine base, a new gasket should be used.

*Be sure to fill the crankcase with a good quality of crankcase oil to the high level point, before starting the engine. Do not use any oil heavier than SAE No. 30. Also be sure to put oil to the proper level in the air cleaner.*

It is also recommended to use new spark plugs at the beginning of the next season, especially if the engine has given considerable service.

Refuel engine and follow starting instructions as shown on preceding pages of this manual.

*It is highly recommended that machines be stored inside a building through the winter. If this is not possible, the engine should be protected from snow and ice by a proper covering.*

# REPAIR PARTS LIST

## READ THESE INSTRUCTIONS BEFORE ORDERING PARTS

THE MODEL, SPEC AND SERIAL NUMBER OF YOUR ENGINE, SHOWN ON THE NAME PLATE ATTACHED TO THE AIR SHROUD, MUST BE GIVEN WHEN ORDERING PARTS

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TO INSURE PROMPT AND ACCURATE SERVICE, THE FOLLOWING INFORMATION MUST BE GIVEN.

1. State exactly quantity of each part and part number.
2. State definitely whether parts are to be shipped by express, freight or parcel post.

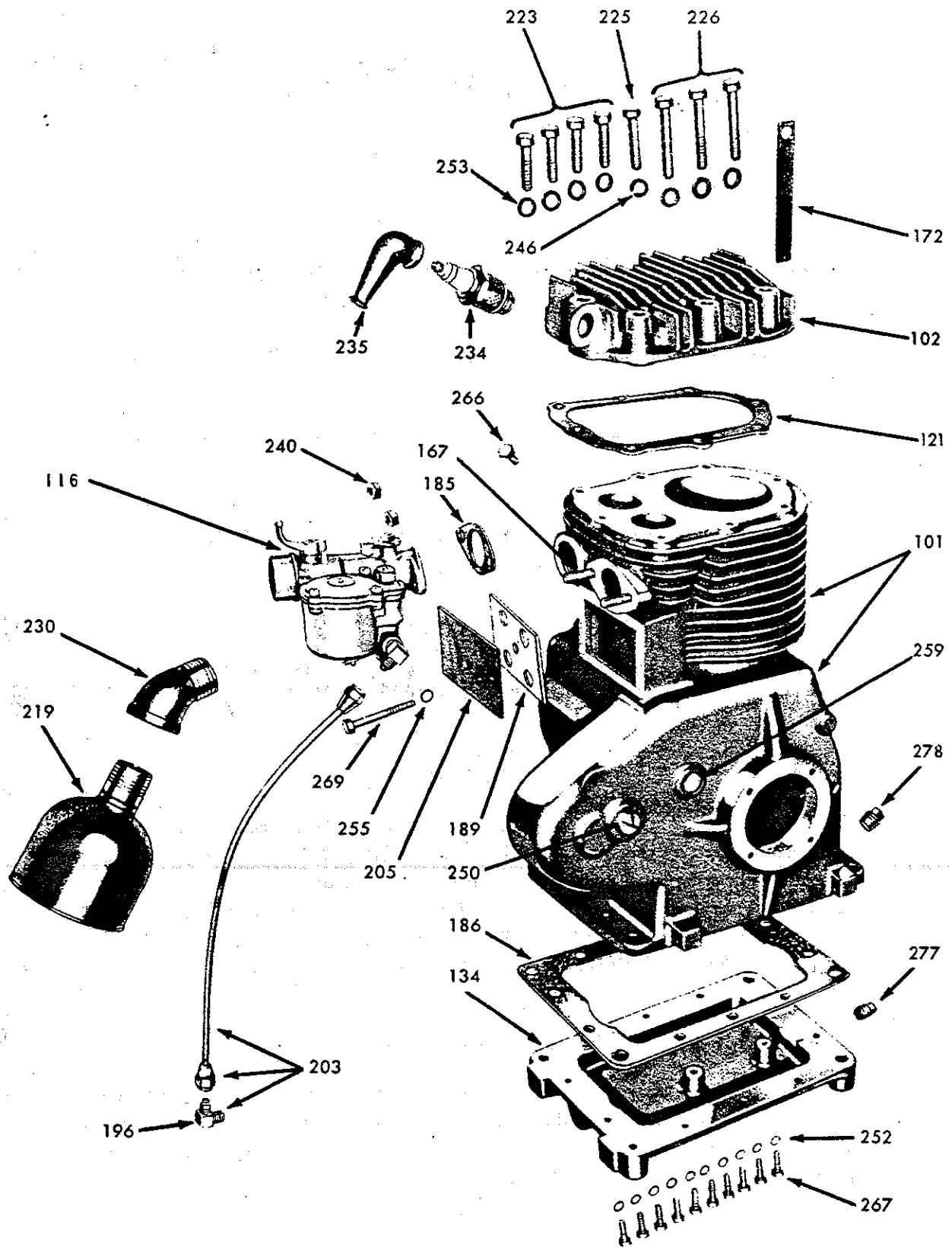
### SERVICE FACILITIES

Approved engine service stations, located throughout the U. S. and foreign countries, have been carefully selected by the **WISCONSIN MOTOR CORPORATION** in order to assure complete and efficient repair and inspection service to owners of Wisconsin Air-Cooled Engines. These service stations, equipped and trained for complete engine repair, also stock parts to facilitate immediate delivery for all Wisconsin Air-Cooled Engines.

**A DIRECTORY OF SERVICE STATIONS CAN BE FOUND IN THE BACK OF THIS MANUAL.**

### PARTS RETURNED FOR CREDIT

Before returning any parts, write a letter to the company from whom the parts were purchased, giving an exact list and description of the materials, why you wish to return them, whether for repairs, credit, or replacement, and also the model, specification and serial numbers of the engine from which the parts were taken. If authority is granted for their return, transportation charges must be prepaid and sender's name marked on the outside of the box or package.

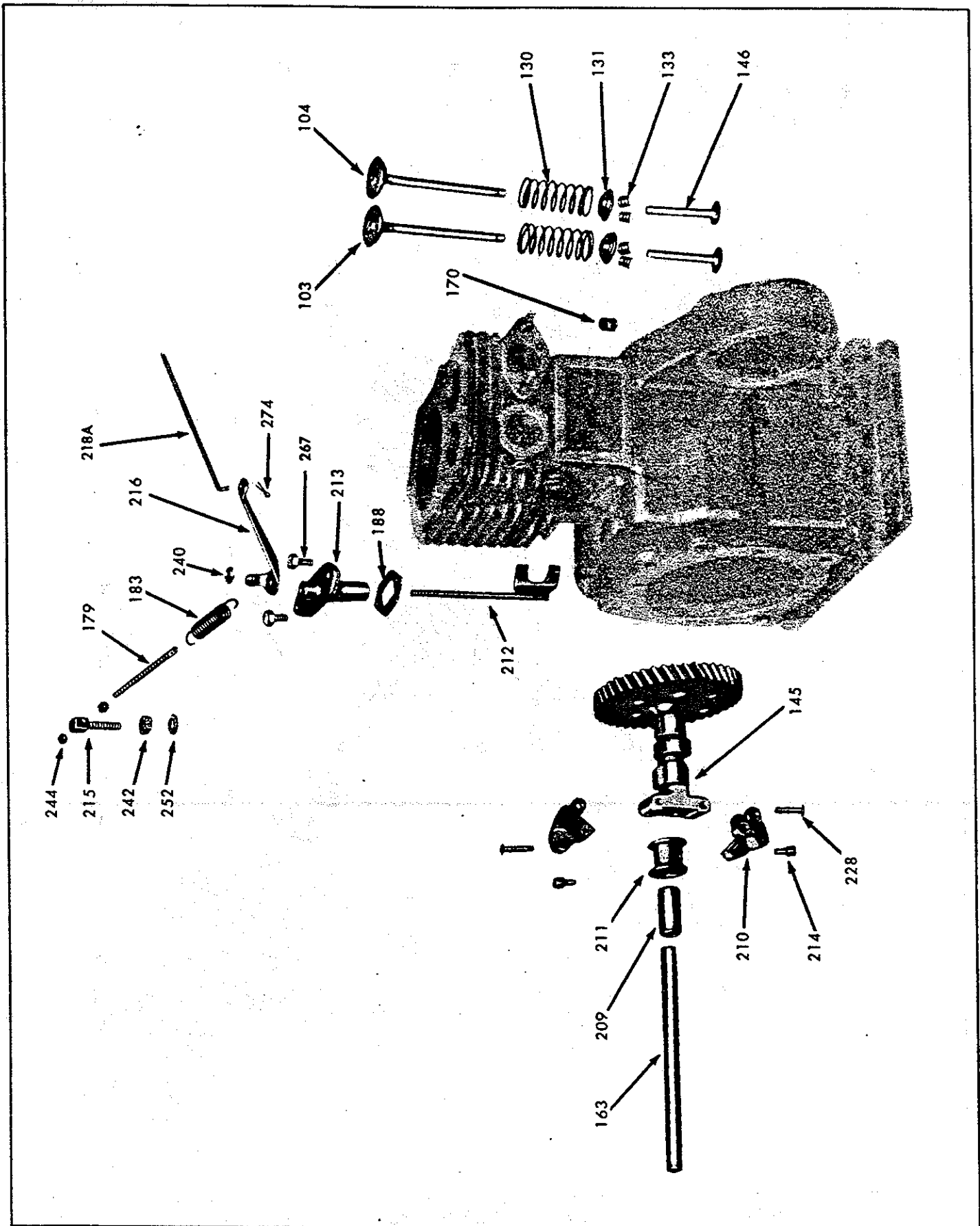


**CRANKCASE, BASE, HEAD AND CARBURETOR GROUP**  
 Parts are identified by reference number. See parts list for correct part number.

97228C

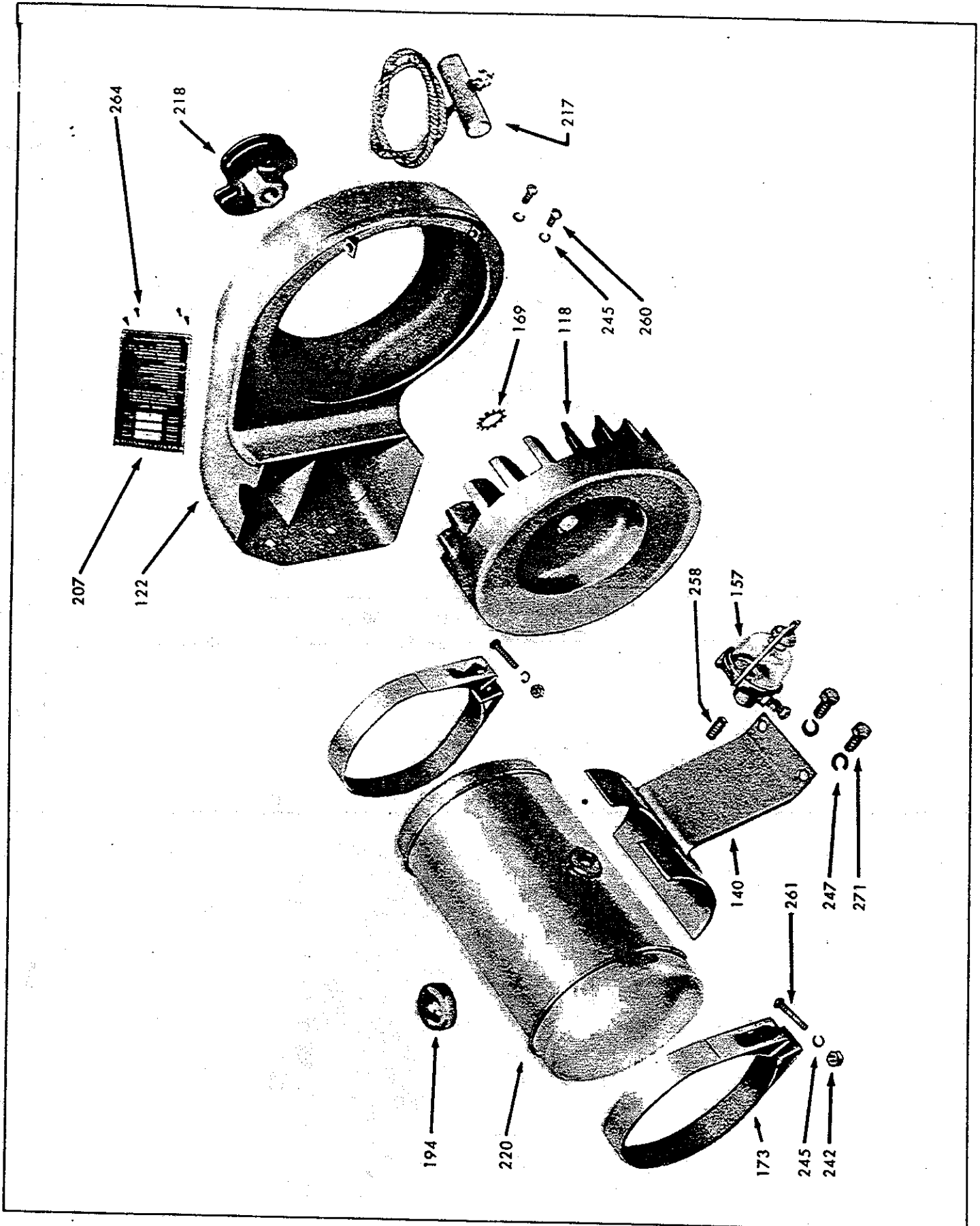






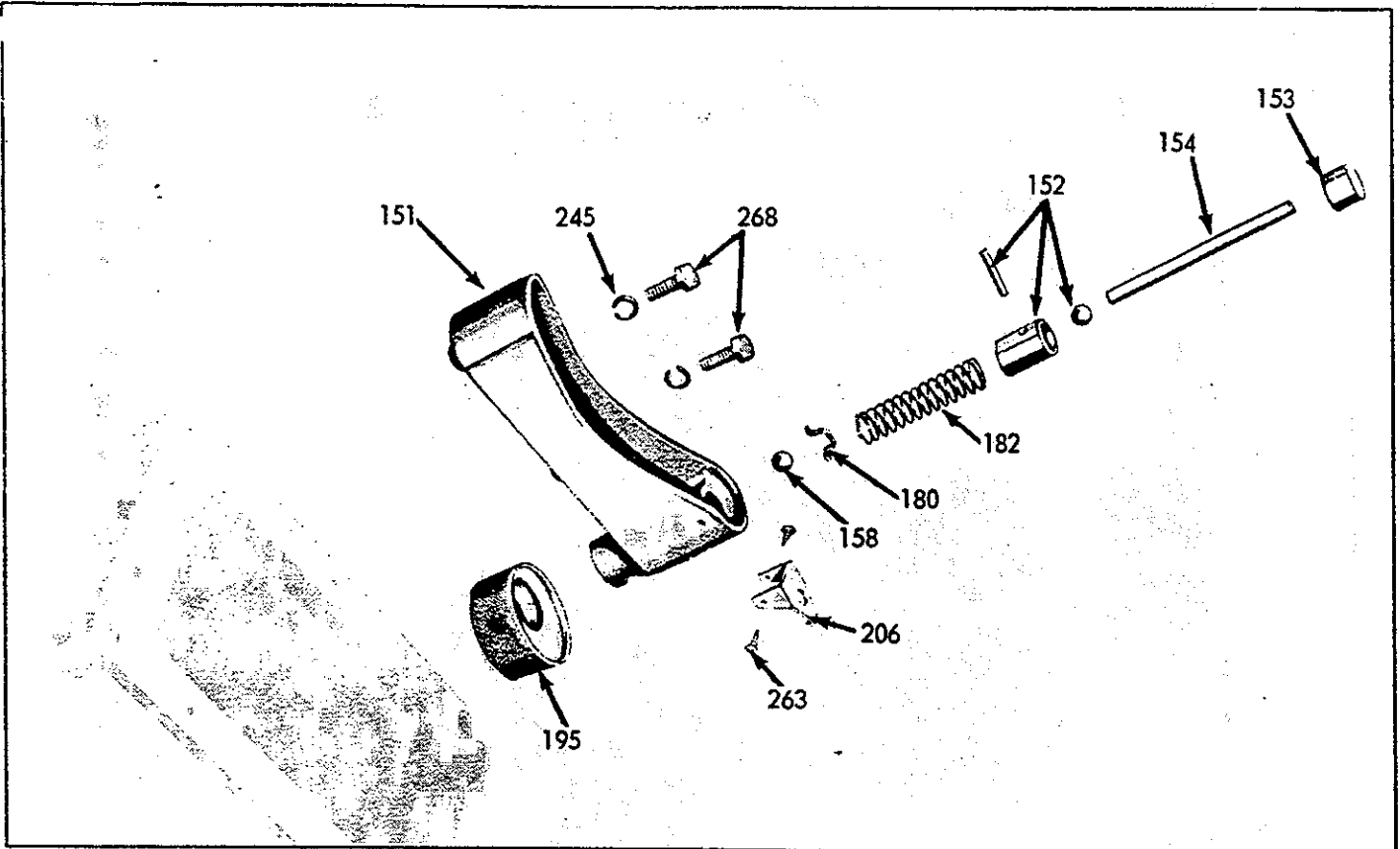
**VALVES, GOVERNOR AND CAMSHAFT GROUP**  
 Parts are identified by reference number. See parts list for correct part number.

133554C



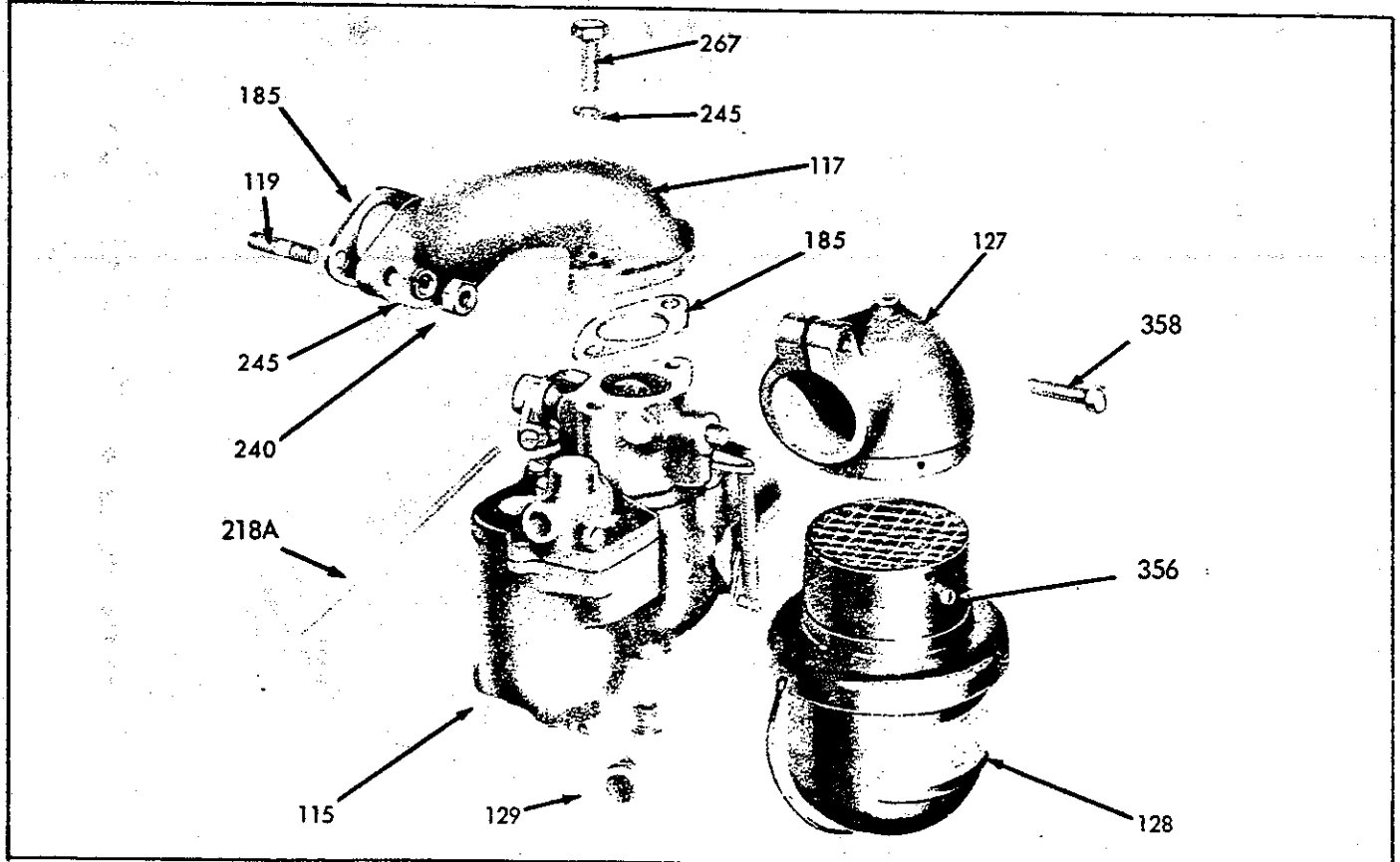
**FLYWHEEL, AIR SHROUD AND FUEL TANK GROUP**  
 Parts are identified by reference number. See parts list for correct part number.

133555C



Ref. No. 150 OIL PUMP ASSEMBLY

70572C

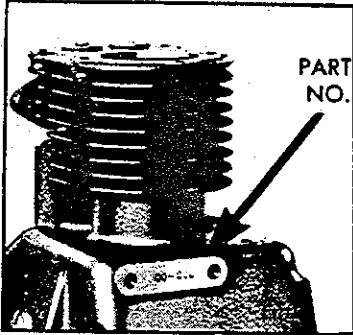


CARBURETOR AND AIR CLEANER MOUNTING FOR ABS ENGINE

85580C

Parts are identified by reference number. See parts list for correct part number.

## PARTS LIST

REF. NO.	PART NUMBERS				DESCRIPTION	NO. REQ	NET WT.	
	Model AA	Models AB, ABN	Model ABS	Models AK, AKS, AKN			Lb.	Oz.
101	See Fig. 1	See Fig. 1	See Fig. 1	See Fig. 1	<b>CYLINDER and CRANKCASE ASSEMBLY</b> ..... Complete with valves, springs, seats, locks, inserts, cover and gasket.  NOTE: On AK, AKS and AKN engines, beginning with Serial 2,020,001, the cyl-crankcase is designed so that the valve tappets are directly in line with the valve stems. (Previous to this there was a 3/32" offset.) New style cyl-crankcases are interchangeable with the old style, providing the new style Camshaft Assembly (EA-101-F-S1) is also used.	1	25	
	See Fig. 1	See Fig. 1	See Fig. 1	See Fig. 1	<b>CYLINDER and CRANKCASE</b> ..... With valve seat inserts only.  NOTE: The part number of the cylinder & crankcase is stamped on the case in the location shown in Fig. 1. ORDER BY THIS NUMBER and by giving Model Specification & Serial Numbers of the engine. Also specify whether you want a cylinder and crankcase complete with valves, springs, seats and etc. or with just the valve seat insert as shown.	1	24	
								
					Fig. 1 <span style="float: right;">90845C</span>			
102	AB-76-E	AB-76-E	AB-76-E	AB-78-J	<b>CYLINDER HEAD</b> ..... AB-78, AB-78-2, AB-78-4, AB-78-5 Cylinder heads, replaced by AB-78-J.	1	1	8
103	AE-73-C	AE-73-C	AE-73-C	AE-74-C	<b>EXHAUST VALVE, standard</b> .....	1		4
	AE-73-D	AE-73-D	AE-73-D	AE-74-D	<b>STELLITE EXHAUST VALVE</b> .....	1		4
104	AE-73-N	AE-73-N	AE-73-N	AE-74-N	<b>INLET VALVE</b> .....  NOTE: The above are new type valves which employ a split bushing for retaining. For engines to and including No. 67158, equipped with the old type valve using a pin for retaining, the new type must be ordered. Also order 1 AG-26 seat and 1 pr. AH-9 split bushings for each valve. The old type valves are no longer available. Valves are also furnished with .004" oversize valve stem.	1		4
108	DB-178-A	DB-184-A	DB-184-A	DB-186-A	<b>PISTON, standard size</b> ..... NOTE: On "AB" engine DB-177A (with 3 rings) replaced by DB-184-A. Pistons are also furnished .005", .010", .020" and .030" oversize and semi-finished.	1		8
109	DR-1	DR-3 (See Note)	DR-3	DR-4	<b>PISTON RING SET, standard size</b> ..... Consisting of:	1		4
110	DC-154 (Used)	DC-155	DC-155	DC-161	<b>COMPRESSION RING</b> .....	2		1
111	DC-154-1	DC-155-1	DC-155-1	DC-161-1	<b>SCRAPER RING</b> .....	1		1
112	DC-156	DC-157	DC-157	DC-162	<b>OIL RING</b> .....  NOTE: On "AB" engine for DB-177-A Piston with three ring grooves order DR-2 ring set. Piston rings and ring sets are also furnished .005", .010", .020" and .030" oversize.	1		1

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

## PARTS LIST

REF. NO.	PART NUMBERS				DESCRIPTION	NO. REQ	NET WT.	
	Model AA	Models AB, ABN	Model ABS	Models AK, AKS, AKN			Lb.	Oz.
113	DE-66	E-67	DE-67	DE-68	PISTON PIN, standard size ..... Piston pins are also furnished .005", .010", .020" and .030" oversize.	1		2
114	HG-156-1	HG-156-1	HG-156-1	HG-214	VALVE SEAT INSERT (Std.) exhaust only ..... For AK, AKS, AKN engines beginning with Serial No. 1550653. HG-214 (17/64" wide) replaces HG-149-1 (not interchangeable) HG-149-1 Insert (3/16" wide) for engines to and including Serial No. 1550652.	1		1
	HG-156-D	HG-156-D	HG-156-D	HG-201-D	STELLITE EXHAUST VALVE SEAT INSERT ..	1		1
115			L-16-33		STROMBERG Model UR-3/4" No. F-5749 .....	1	1	2
116	L-26-2 (A-18010)	L-26-2 (A-18010) L-52-G VH-63 L-51-F 11194 rep'l. 11027	L-52-C VH-53	L-26-A (A-18020) L-52-C VH-53 L-51-E 11193 rep'l. 11026	STROMBERG Model OH-5/8" ..... MARVEL-SCHEBLER CARBURETOR ..... ZENITH CARBURETOR .....	1 1 1	1 1 1	1 4 4
					L-26-2, L-52 Carburetors for AB, ABN, replaced by L-52-G. L-26-A, L-52-A Carburetors for ABS, AK, AKS, AKN, replaced by L-52-C. L-51-A, replaced by L-51-F for ABN, L-51-E for AKN.  NOTE: The above are standard carburetors. Refer to stamped part or model number on carburetor for replacement carburetor or parts. See carburetor bulletins in back of manual for service replacement parts list.			
117			LC-253		INLET MANIFOLD .....	1	1	
118	NC-126	NC-126	NC-126	NC-137	FLYWHEEL .....	1	8	8
119	PC-368	PC-368		PC-368	STUD - carburetor mounting .....	2		1
	NOTE: On "ABS" for LC-253 Inlet Manifold, order 2 PC-344 Studs.							
120	Q-1	Q-1	Q-1-A	Q-2	GASKET SET .....	1		6
121	QD-568-E	QD-568-E	QD-568-E	QD-604-A	GASKET for cylinder head .....	1		1
122	SE-53-B	SE-53-B	SE-53-B	SE-53A-S1	AIR SHROUD ASSEMBLY .....	1	2	10
					NOTE: Models AA, AB, ABS engines to and including engine No. 349730 order SE-53B-6-S1 (with old style fuel tank). Models AK and AKS engines to and including engine No. 343924 order SE-53A-8-S1 (with old style fuel tank).	1	2	12
127	See Page 32	See Page 32	BI-243A-S1 BI-298-S1	See Page 33	AIR CLEANER BRACKET—Stromberg carburetor AIR CLEANER BRACKET—Schebler carburetor.. BI-225B-1-S1 replaced by BI-298-S1.	1 1	2 2	
128	See Page 32	See Page 32	LO-28 LO-113	See Page 33	AIR CLEANER—United Specialties No. T030-6325 For Stromberg Carburetor. AIR CLEANER—United Specialties No. 76B1 .....	1 1	1 1	8 8
					For Schebler Carburetor. LO-28-A replaced by LO-113.			
129			LO-38		CARBURETOR DRIP ELBOW with Stromberg carburetor .....	1		2

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
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**PARTS INTERCHANGEABLE ON MODELS AA, AB, ABS, ABN, AK, AKS, AKN**

Ref. No.	Part Number	Description	No. Req.	Net Wt.		Ref. No.	Part Number	Description	No. Req.	Net Wt.	
				Lb	Oz					Lb	Oz
130	AF-43	VALVE SPRING, standard .....	2		1	146	FA-42-A	VALVE TAPPET .....	2		2
	AF-49-A	VALVE SPRING, exhaust .....	1		1	147	GA-34-A	FA-42 replaced by FA-42-A.			
		For engines with Stellite exhaust valve.				149	GD-87-B	CRANKSHAFT GEAR .....	1		14
131	AG-26	VALVE SPRING SEAT (Beginning with engine No. 67159 on earlier engines furnish AG-19).	2		1		GD-87-A	MAGNETO DRIVE GEAR .....	1		12
								For Fairbanks-Morse & Wico magnetos.			
133	AH-9	VALVE SPRING SEAT LOCK (Beginning with engine No. 67159 on earlier engines furnish PA-229 pins).	2 pr		1	150	K-98	GEAR for Eisemann magneto .....	1		10
								OIL PUMP ASSEMBLY COMPLETE ....	1	1	6
134	BB-116-B	ENGINE BASE .....	1	4	8			Consisting of:			
		On 'ABS' aluminum base replaced by BB-116-B.						1 KA-59-B Body			
135	BG-170-S1	BEARING PLATE ASSEMBLY .....	1	2	8	151	KA-59B-1-S1	1 KF-14 Plunger	1		14
		Take-off end. Consisting of:						2 ME-38 Balls			
		1 BG-170 Plate						1 PA-217 Pin			
		1 PH-254 Retainer						1 PK-50-A Retainer			
		1 PH-256 Oil seal						1 PM-56 Spring			
		On 'ABS' aluminum plate replaced by BG-170-S1.						1 SA-80 Cover			
139	BG-171-S1	BEARING PLATE .....	1		4	152	KF-14-S1	2 XA-64 Screws	1		2
		With oil seal, flywheel end.						1 RD-107 Strainer			
140	BK-71	FUEL TANK BRACKET .....	1		1	153	KF-19-A	OIL PUMP BODY .....	1		14
142	See Fig. 2	CRANKSHAFT ASSEMBLY .....	1	10		154	KF-22	With check ball seat insert.			
		Consisting of:				156	LO-31-B	OIL PUMP PLUNGER ASSEMBLY .....	1		2
		1 Crankshaft						Consisting of:			
		1 GA-34-A Gear				157	LP-43	1 KF-14 Plunger			
		2 ME-88 Bearings						1 ME-38 Ball			
		1 PL-21 Key				158	ME-38	1 PA-217 Pin			
		<b>NOTE:</b> The part number of the crankshaft will be found stamped on the cheek facing the flywheel end of shaft as illustrated in Fig. 2. <b>ORDER BY THIS NUMBER</b> and by giving the Model, Specification and Serial Numbers of the engine.				159	ME-88	CAP for oil pump plunger push rod .....	1		1
						160		OIL PUMP PUSH ROD .....	1		2
						161		BREATHER for crankcase .....	1		3
						163	PA-264	LO-31-A replaced by LO-31-B.			
						165	PB-164	FUEL STRAINER, Tillotson OW-480-T.	1		5
								<b>NOTE:</b> See illustrations in back of parts list for service replacement parts.			
						166	PC-362	CHECK BALL .....	1		1
								For oil pump, 5/16" dia. steel.			
						169	PE-57	MAIN BEARING ASSEMBLY .....	2	1	4
								Consisting of:			
						170	PF-102	1 ME-88-1 Bearing cup (Timken 15250X)			
						172	PG-206	1 ME-88-2 Bearing cone (Timken 15118)			
						173	PG-431	CAMSHAFT SUPPORT PIN .....	1		4
								SCREW, 5/16"-24 thread x 2-5/8" long ..	1		1
								For mounting Fairbanks-Morse and Wico Magneto, upper hole.			
								XD-140, 5/16"-18 thread x 2-1/4" long,	1		1
								For Eisemann Magneto.			
								STUD, 5/16" x 1-3/8" long .....	1		1
								For mounting Fairbanks-Morse and Wico Magneto, lower hole.			
								PC-188, 5/16" x 1-5/8" long .....	1		1
								For Eisemann Magneto.			
143	DA-70A-S1	CONNECTING ROD ASSEMBLY .....	1		7	179	PG-186-C	LOCKWASHER for rope starter sheave ..	1		1
		Consisting of:						BREATHER .....	1		1
		1 DA-70A Connecting rod						For valve spring compartment.			
		HG-229-A Bushing						STRAP for ignition cable support .....	1		1
		2 PE-82 Lockwashers						FUEL TANK STRAP .....	2		6
		2 XD-19A Capscrews						(On "A A" engine beginning with No. 349101, "AB, ABS" No. 349731, "AK, AKS" No. 343925. For all "ABN" and "AKN" engines.)			
		DA-55B-S1 and DA-55C-S1 replaced by DA-70A-S1.						<b>NOTE:</b> Steel Binder Strapping and Seal for mounting fuel tank, on engines sent out from the factory, are not serviceable in the field. Order PG-431 straps with XA-88 screw, PD-77 nut and PE-3 lockwasher.			
		DA-53B-2-S1 replaced by DA-70A-4-S1, for earlier engines less oil pump.						FUEL TANK STRAP (flywheel end)			
		Connecting rods are also furnished .010" .020" and .030" undersize.						AA engine to and including No. 349100. AB and ABS No. 349730.			
145	EA-101F-S1	CAMSHAFT ASSEMBLY .....	1	2	8						
		Consisting of:									
		1 EA-101G Camshaft									
		1 GB-49 Gear									
		1 PA-264 Support pin									
		1 PL-21 Key									
		EA-101A-S1 and EA-101D-S1 replaced by EA-101F-S1.									

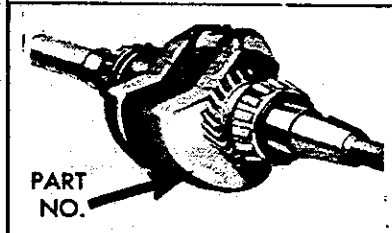


Fig. 2 90846C

*s/s BA70ES  
+ HA13BS*

Order parts from nearest **SERVICE STATION** shown in directory following parts list.

**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

## PARTS INTERCHANGEABLE ON MODELS AA, AB, ABS, ABN, AK, AKS, AKN

Ref. No.	Part Number	Description	No.			Ref. No.	Part Number	Description	No.		
			Req	Lb	Oz				Req	Lb	Oz
	PG-187-B	FUEL TANK STRAP (take-off end) AA engine to and including No. 349100, AB and ABS No. 349730.				219	WD-17-B	MUFFLER .....	1		8
	PG-268-A	FUEL TANK STRAP (flywheel end) AK, AKS to and including No. 343924.				220	WE-112-E	FUEL TANK with cap..... For AA engines beginning with No. 349101. For AB, ABS No. 349731. For AK, AKS No. 343925, and for all ABN and AKN. NOTE: Fuel tanks are mounted to the tank bracket with steel binder strapping, which is not serviceable in the field. When replacing fuel tank, be sure and order correct replacement straps.	1	2	4
	PG-269-A	FUEL TANK STRAP (take-off end) AK, AKS to and including No. 343924.									
177	PH-254	RETAINER for main bearing oil seal ....	2								
178	PH-256	SEAL for main bearing cork oil .....	2								
179	PI-121	SCREW for governor spring adjusting ....	1								
180	PK-50-A	RETAINER for oil pump check ball..... PK-50 Retainer, replaced by PK-50-A.	1				WE-112	FUEL TANK with cap for AA engine to and including No. 349100, AB & ABS No. 349730, AK and AKS No. 343924.			
181	PK-69	PISTON PIN RETAINER .....	2			223	XD-19	SCREW, 5/16"-18 thread x 1-1/4" long.. 3-for mounting cylinder head on AA, AB, ABS, ABN. 4-for mounting cylinder head on AK, AKS, AKN.	7		1
182	PM-58	SPRING for oil pump plunger .....	1								
183	PM-74	GOVERNOR SPRING .....	1								
185	QC-53	GASKET for carburetor flange .....	1								
186	QD-569-A	GASKET for engine base .....	1			224	XD-19-A	SCREW (Special hardness) 5/16"-18 thread x 1-1/4" long, for connecting rod.	2		1
187	QD-570-A	GASKET for magneto flange .....	1								
188	QD-571	GASKET for governor yoke shaft bracket	1			225	XD-22	SCREW (Special hardness) 5/16"-18 thread x 1-3/4" long .....	1		1
189	QD-572	GASKET for valve tappet inspection plate .....	1			226	XD-23	SCREW (Special hardness) 5/16"-18 thread x 2" long .....	6		1
190	QD-573	GASKET for main bearing plate, take-off end, .006" thick .....	5								
191	QD-573-A	GASKET for main bearing plate, take-off end, .003" thick .....	1			228	XJ-47	RIVET for governor flyweight toggle.....	2		1
192	QD-574	GASKET for main bearing plate, fan end	1			230	XK-66-2	STREET ELL for muffler mounting .....	1		4
194	RC-87	CAP for fuel tank .....	1			232	Y-68A-S1	WICO XH-1295C MAGNETO with gear replaces Y-57-S1 Wico XH-1295 and Y-24E Wico C-1295. These magnetos are interchangeable on engines No. 76158 and thereafter. For earlier engines, less mounting pilot, up to and including No. 76157, order Y-68B-S1 WICO XH-791B MAGNETO with gear. This magneto replaces Y-57A-S1 Wico XH and Y-24-B Wico C.	1	5	12
195	RD-107	STRAINER for oil pump .....	1								
196	RF-270	ELBOW for fuel line, for 1/4" tubing.....	2								
Not illust.	RG-22	SHUT-OFF VALVE in fuel tank (When fuel strainer is not used).									
203	RP-902	FUEL LINE, tubing with nuts and 2 RF-270 elbows .....	1								
205	SA-61	PLATE for valve tappet inspection.....	1								
206	SA-80	COVER for oil pump body .....	1				Y-73B-S1	FAIRBANKS-MORSE FMXD1B7 MAGNETO with gear replaces Y-35-S1, FMJ1B7 and is interchangeable on engines beginning with No. 76158 after mounting pilot was added.	1	5	12
207	SD-53-F	ENGINE INSTRUCTION PLATE When ordering instruction plate, give Model, Specification and Serial Numbers for correct stamping.	1								
209	TC-321	SPACER for governor .....	1				Y-38-S1	EISEMANN AM1 MAGNETO with gear....	1	5	4
210	TC-322-S1	FLYWEIGHT for governor .....	2				Y-63-S1	EDISON AJ1 MAGNETO with gear .....	1	5	4
		Consisting of: 2 TC-322 Flyweight 2 TC-328-D Pin						NOTE: These engines are equipped with either a 'Fairbanks-Morse', 'Wico', 'Eisemann' or 'Edison' magneto as shown above.  See magneto bulletins in back of manual for service replacement parts list.			
211	TC-323	SLEEVE for governor thrust.....	1								
212	TC-324-C	GOVERNOR YOKE .....	1								
213	TC-325	BRACKET .....	1			234	YD-6-S1	SPARK PLUG, 16mm, Champion #D-16 or AC No. C86 Com. ....	1		
		For governor yoke shaft support.									
214	TC-328-D	PIN for governor flyweight thrust .....	2			235	YD-12	NIPPLE for spark plug .....	1		1
215	TC-330	PIN for governor spring adjusting screw	1			236	YL-118	IGNITION WIRE .....	1		2
216	TC-332	GOVERNOR CONTROL LEVER .....	1					For Wico 'C' magneto order YL-97 ignition Wire.			
217	U-218-A	STARTING ROPE ASSEMBLY .....	1								
		U-218 replaced by U-218-A.									
218	UC-103-A	STARTER SHEAVE, die cast .....	1								
		UC-104 replaced by UC-103-A.									
218A	VE-304	GOVERNOR CONTROL ROD .....	1			240	PD-9	NUT, 1/4"-28 thread, hexagon steel .....	3		1
		VE-304-3 replaced by VE-304. For "ABS" with Stromberg carburetor order VE-327.						NOTE: The following nuts, capscrews and etc., are of a common hardware variety and can be purchased from local plumbing, hardware or accessory stores. 2-for carburetor mounting. 1-for governor control lever.			

Order parts from nearest **SERVICE STATION** shown in directory following parts list.

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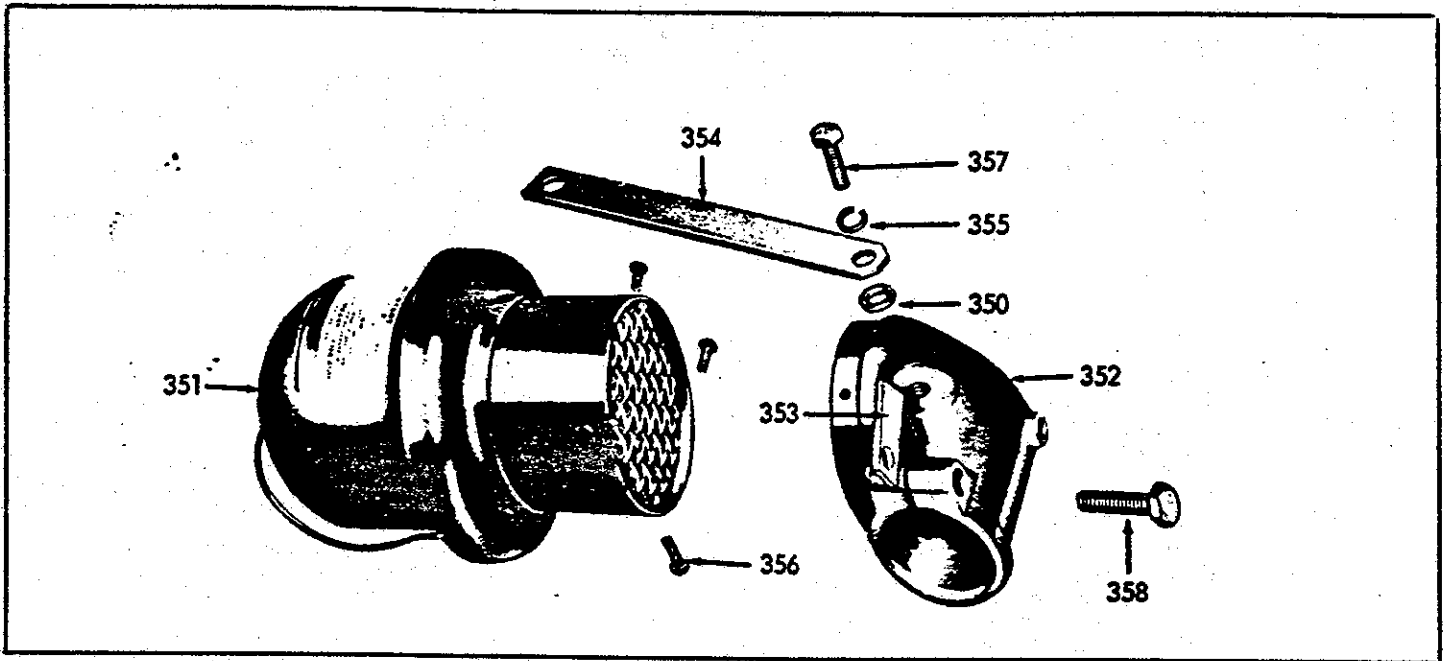


# PARTS INTERCHANGEABLE ON MODELS AA, AB, ABS, ABN, AK, AKS, AKN

Ref. No.	Part Number	Description	No.			Ref. No.	Part Number	Description	No.		
			Req	Lb	Oz				Req	Lb	Oz
241	PD-10	NUT, 5/16"-24 thread, hexagon steel.... For magneto mounting.	2		1	266	XD-4	SCREW, 1/4"-20 thread x 1/2" long, hexagon head ..... 4-for bearing plate, flywheel end. 1-for exhaust muffler elbow.	5		1
242	PD-77	NUT, 1/4"-20 thread, hexagon steel ..... 2-for fuel tank strap clamp screws. 1-for governor spring adjusting screw pin.	3		1	267	XD-6	SCREW, 1/4"-20 thread x 3/4" long, hexagon head ..... 10-for mounting engine base. 2-for governor shaft brackets. 2-for fuel tank support straps (old style mounting). 2-for carburetor mounting on "ABS" engine.	16		1
244	PD-115	NUT, No. 10-32 thread, hexagon steel.... For governor spring adjusting screw.	2		1	268	XD-7	SCREW, 1/4"-20 thread x 1" long, hexagon head..... For mounting oil trough.	2		1
245	PE-3	LOCKWASHER, 1/4" Positive ..... 2-for air shroud to crankcase. 4-for main bearing plate, flywheel end. 2-for oil trough mounting. 2-for tank strap clamp screws. 4-for mounting carburetor end manifold on ABS engine.	14		1	269	XD-11	SCREW, 1/4"-20 thread x 2" long, hexagon head ..... For valve tappet inspection plate.	1		1
246	PE-4	LOCKWASHER, 5/16" Positive ..... 2-for magneto mounting. 1-for tank bracket to cylinder head mounting.	3		1	270	XD-15	SCREW, 5/16"-18 thread x 3/4" long, hexagon head ..... For main bearing plate, take-off end.	4		1
247	PE-5	LOCKWASHER, 3/8" Positive ..... For mounting fuel tank bracket.	2		1	271	XD-25	SCREW, 3/8"-16 thread x 3/4" long, hexagon head ..... For mounting fuel tank support to crankcase.	2		1
248	PE-82	LOCKWASHER, 5/16" (special) ..... For connecting rod capcrew. PE-52 Internal Lockwasher, replaced by PE-82, interchangeable.	2		1	274	XI-32	COTTER PIN, 3/64" dia. x 3/8" long, steel ..... For governor control rod.	1		1
250	PF-25	PLUG, 3/8" slotted steel pipe..... For timing inspection hole in crankcase.	1		1	277	XK-2	PLUG, 1/4" square head pipe..... For oil drain.	1		2
251	PH-14-D	WASHER, 5/16" I.D. x 19/32" O.D. x 1/16" thick, plain steel..... For main bearing plate, take-off end.	4		1	278	XK-3	PLUG, 3/8" square head pipe ..... For oil filler.	1		2
252	PH-30-A	WASHER, 1/4" I.D. x 7/16" O.D. x 1/16" thick, plain steel ..... 10-for engine base mounting. 1-for governor spring adjusting screw pin.	11		1						
253	PH-77	WASHER, 5/16" I.D. x 5/8" O.D. x 1/16" thick, plain steel..... 5-for cylinder head mounting on AA, AB, ABS, ABN. 7-for cylinder head mounting on AK, AKS, AKN.	12		1						
255	PH-30	WASHER, 1/4" I.D. x 7/16" O.D. x 1/16" thick, plain copper ..... For valve inspection plate mounting.	1		1						
256	PL-17	WOODRUFF KEY, No. 13 ..... For flywheel mounting.	1		1						
257	PL-21	WOODRUFF KEY, No. 3 ..... For crankshaft gear mounting.	1		1						
258	RF-794	NIPPLE, 1/8", close pipe..... For fuel strainer mounting.	1		1						
259	SA-26	EXPANSION PLUG, 5/8" ..... For camshaft support pin hole.	2		1						
260	XA-34	SCREW, 1/4"-20 thread x 1/2" long, round head ..... For air shroud to case mounting.	2		1						
261	XA-88	SCREW, 1/4"-20 thread x 1-5/8" long, round head ..... For fuel tank straps.	2		1						
263	XA-64	SCREW, Parker-Kalon No. 2, Type 'Z', 3/16" long, self-tapping round head .. For oil trough cover mounting.	2		1						
264	XA-67	SCREW, Parker-Kalon No. 4, Type 'A', 1/4" long, stove head, self-tapping sheet metal ..... For instruction plate mounting.	4		1						

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## OIL BATH AIR FILTER FOR AA, AB, ABS AND ABN ENGINES

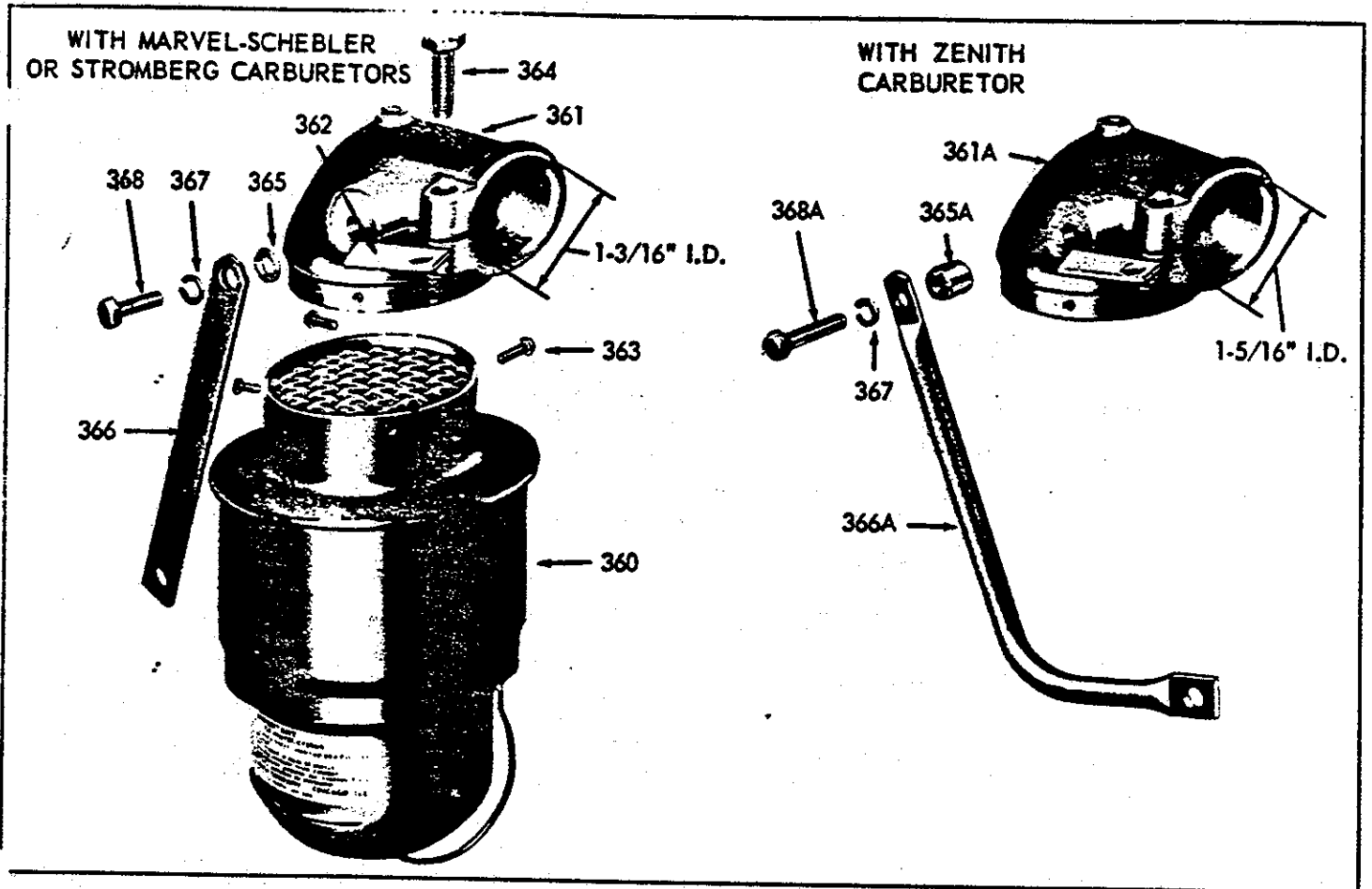


78456C-1

Ref No	PART NUMBER		Description	No Req	Ref No	PART NUMBER		Description	No Req
	With Marvel-Schebler or Stromberg Carburetors, 1-3/16"D. Air Horn	With Zenith Carburetor, 1-5/16"D. Air Horn				With Marvel-Schebler or Stromberg Carburetors, 1-3/16"D. Air Horn	With Zenith Carburetor, 1-5/16"D. Air Horn		
350	LO-28-S1	LO-28-S5	AIR FILTER and BRACKET ASSEMBLY-Complete .....	1	354	PG-287		SUPPORT STRAP (flat) .....	1
	HF-276		SPACER for support.....	1			PG-487-A	SUPPORT STRAP (curved)..	1
		HF-363	SPACER, 9/16" long.....	1					
351	LO-28	LO-28	AIR FILTER, United Specialties No. T030-6325 .....	1	<b>STANDARD HARDWARE</b>				
			Service Parts:		355	PE-3	PE-3	LOCKWASHER, 1/4" Positive For support strap.	1
			6263 Body assembly .....	1	356	XA-86	XA-86	SCREW, Type 'Z', No. 6 x 3/8" long, self tapping .....	3
			A-6329 Baffle.....	1					
			B-6331 Cup fastener.....	1					
			6332 Filter element.....	1					
			A-6333 Filter screen.....	2					
			9834 Oil cup assembly .....	1	357	XD-6	XD-6	SCREW, 1/4"-20 thread x 1/2" long, hexagon head.....	1
			A-6339 Decal .....	1					
352	BI-298-S1		BRACKET ASSEMBLY.....	1	358	XB-20	XB-20	SCREW, 1/4"-20 thread x 1 1/4" long, hexagon head.....	1
		BI-225B-1-S1 replaced by BI-298-S1.							
		BI-298-1-S1	BRACKET ASSEMBLY.....	1				SCREW, 1/4"-20 thread x 1" long, fillister head.....	1
			BI-290-S1 replaced by BI-298-1-S1.					For bracket clamp.	
			Assemblies include:						
			1 QD-647 Gasket						
			3 XA-86 Screws						
			1 XB-20 Screw						
353	QD-647	QD-647	GASKET for bracket .....	1					

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

... FILTER FOR AK, AKS AND AKN ENGINES

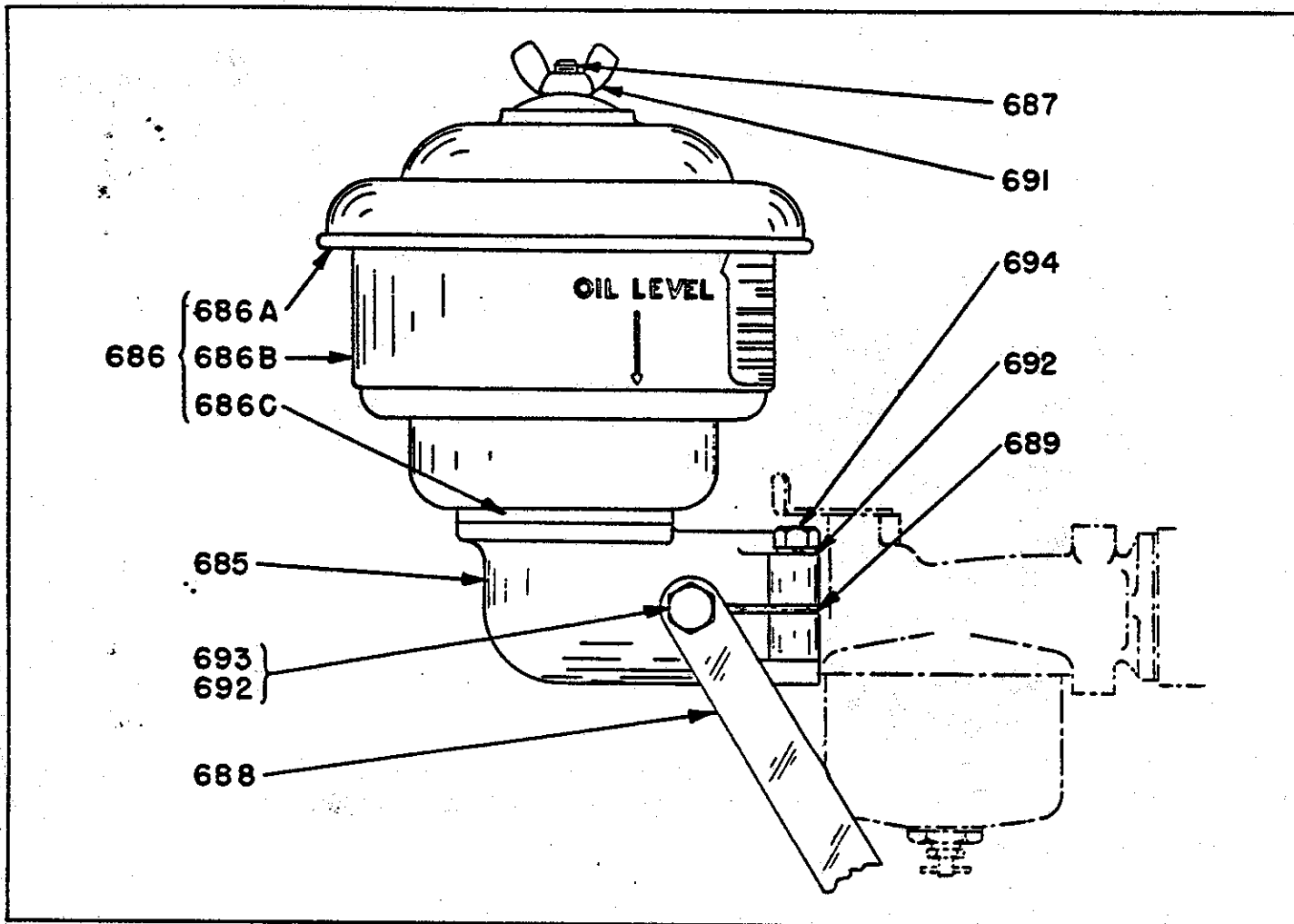


PART NUMBER				PART NUMBER					
Ref. No	With Marvel-Schebler or Stromberg Carburetors, 1-3/16"D. Air Horn	With Zenith Carburetor, 1-5/16"D. Air Horn	Description	No Req	Ref No	With Marvel-Schebler or Stromberg Carburetors, 1-3/16"D. Air Horn	With Zenith Carburetor, 1-5/16"D. Air Horn	Description	No Req
360	LO-113-S1	LO-113-S2	AIR FILTER and BRACKET ASSEMBLY-Complete..... 1 LO-28A-S1 repl'd by LO-113-S1 LO-28A-S4 repl'd by LO-113-S2	1	364	XB-20	XB-20	SCREW for bracket clamp.... 1/4"-20 thread x 1" long.	1
	LO-113	LO-113	AIR FILTER, United Specialties No. 76B1 ..... 1 Service Parts: 1316B1 Body assembly.... 1 417A1K10 Baffle ..... 1 1317B1 Oil cup assembly 1 B6331 Cup fastener..... 1 A6339 Decal..... 1	1	365	HF-276		SPACER for support ..... 3/16" long.	1
						365A	HF-363	SPACER, 9/16" long ..... PH-84, 1/16" long, repl'd. by HF-276 or HF-363.	1
361	BI-298-S1		BRACKET ASSEMBLY ..... BI-225B-1-S1 replaced by BI-298-S1.	1	366	PG-287		SUPPORT STRAP (flat).....	1
361A		BI-298-1-S1	BRACKET ASSEMBLY ..... BI-290-S1 replaced by BI-298-1-S1. Bracket Assembly includes the next 3 items:	1	366A	PG-668		SUPPORT STRAP (tubular) PG-487-A repl'd by PG-668.	1
362	QD-647	QD-647	GASKET for bracket.....	1	367	PE-3	PE-3	LOCKWASHER for support strap, 1/4" Positive.....	1
363	XA-86	XA-86	SCREW for air filter..... Type 'Z' No. 6 x 3/8" long, self tapping, round head.	3	368	XD-6		SCREW for support strap .. 1/4"-20 x 1/2" long, hex. head.	1
					368A	XD-8		SCREW, 1/4"-20 thread x 1 1/4" long, hexagon head.....	1

\* LO-113 replaces LO-28-A and is interchangeable for replacement on engines with Marvel-Schebler carburetor. On engines having Zenith carburetors, it is necessary to also order HF-363 Spacer, PG-668 Support Strap and XD-8 Capscrew. All other mounting parts are interchangeable for both air filters.

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

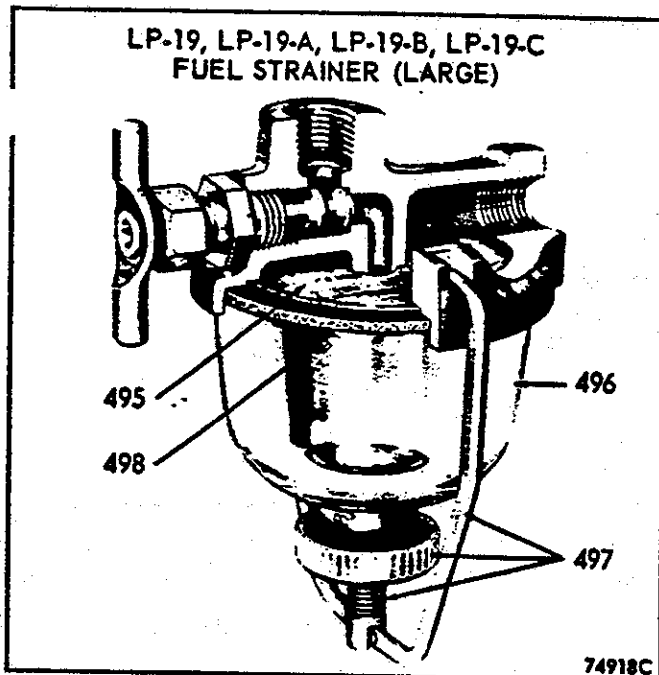
**OIL BATH AIR CLEANER  
ON MODELS ABN and AKN TRACTOR ENGINES**



Ref. No.	Part Number	Description	No.			Net Wt.		
			Req	Lb	Oz	Req	Lb	Oz
685	BI-289-S1	AIR CLEANER BRACKET ASSEMBLY .. Consisting of: 1 BI-289 Bracket 1 PC-445 Stud 1 PE-3 Lockwasher 1 QD-647 Gasket 1 XD-7 Screw	1		8			
686	LO-87	AIR CLEANER, United Specialties No. H-40-9385 .....	1	1	8			
686A		Consisting of: A-12196 Upper half and decal assembly	1		13			
686B		A-10186 Body, centertube and decal assembly .....	1		10			
686C		A-10153 Gasket .....	1		1			
687	PC-445	STUD for mounting air cleaner .....	1		2			
688	PC-287	SUPPORT STRAP .....	1		2			
689	QD-647	GASKET for bracket .....	1		1			
		<b>STANDARD HARDWARE</b>						
691	PD-147	WING NUT, 1/4"-20 thread .....	1		1			
		For mounting air cleaner.						
692	PE-3	LOCKWASHER, 1/4" Positive .....	2		1			
		1-for clamp screw.						
		1-for mounting support strap.						
693	XD-6	SCREW, 1/4"-20 thread x 3/4" long, hexagon head .....	1		1			
		For mounting support strap to bracket.						
694	XD-7	SCREW, 1/4"-20 thread x 1" long, hex- agon head .....	1		1			
		For bracket clamp.						

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

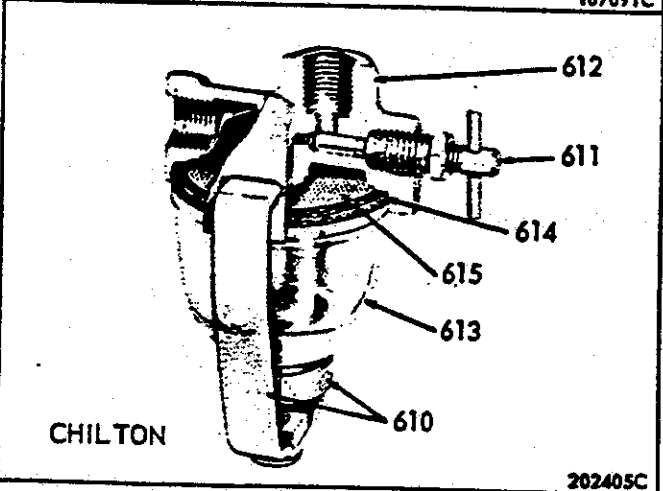
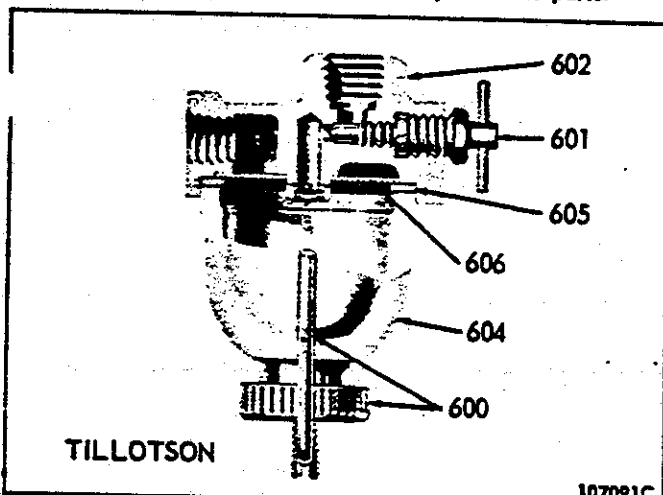
## FUEL STRAINER ASSEMBLIES



Ref. No.	Part Number	Description	No. Net Wt.		
			Req	Lb	Oz
	<b>LP-19</b>	<b>FUEL STRAINER ASSEMBLY</b> ..... (With Shut-off valve in cover, and glass bowl) Tillotson No. OW-418-T.	1		8
	<b>LP-19-A</b>	<b>FUEL STRAINER ASSEMBLY</b> ..... (With Shut-off valve in cover, and metal bowl) Tillotson No. OW-449-T.	1		7
	<b>LP-19-B</b>	<b>FUEL STRAINER ASSEMBLY</b> ..... (Without Shut-off valve in cover, and glass bowl) Tillotson No. OW-444.	1		6
	<b>LP-19-C</b>	<b>FUEL STRAINER ASSEMBLY</b> ..... (Without Shut-off valve in cover, and metal bowl) Tillotson No. OW-476-T.	1		5
	The following serviceable parts are interchangeable for the above strainers.				
495	OW-352	<b>FILTER SCREEN</b> .....	1		1
496	OW-363	<b>GLASS BOWL</b> .....	1		2
	06137	<b>METAL BOWL</b> .....	1		1
497	OW-447	<b>CLAMP WIRE and NUT ASSEMBLY</b> .....	1		1
498	06096	<b>BOWL GASKET</b> (Wisconsin No. QD-653)	1		5

### LP-43 FUEL STRAINER ASSEMBLIES

**NOTE:** The LP-43 small fuel strainer is furnished by either the TILLOTSON or CHILTON Companies. The strainers are interchangeable as complete units, but only the glass bowl, gasket and screen (LQ-31 Kit) are interchangeable as service replacement parts.

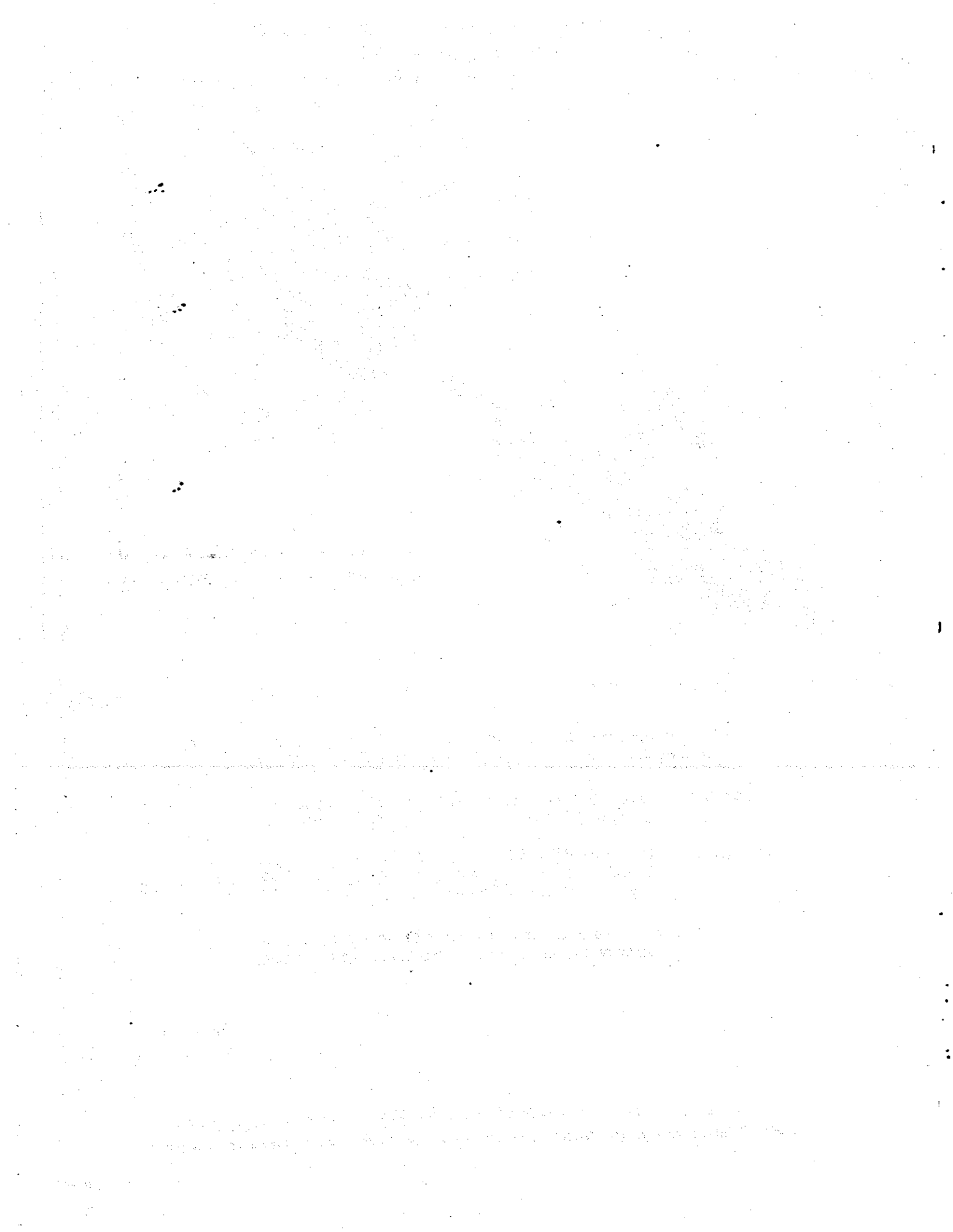


Ref. No.	Part Number	Description	No. Net Wt.		
			Req	Lb	Oz
	<b>OW-480-T</b>	<b>TILLOTSON FUEL STRAINER ASSEMBLY</b> (Wisconsin No. LP-43) .....	1		6
600	07766	<b>CLAMP WIRE and NUT ASSEMBLY</b> .....	1		1
601	07769	<b>NEEDLE VALVE ASSEMBLY</b> ..... Includes 0705 Packing.	1		1
602	07770	<b>COVER</b> .....	1		2
	<b>LQ-31</b>	<b>REPAIR PARTS KIT</b> .....	1		2
	Consisting of:				
604	07759	Glass Bowl .....	1		2
605	08227	Gasket .....	1		1
606	07762	Screen .....	1		1
	- OPTIONAL -				
	<b>830</b>	<b>CHILTON FUEL STRAINER ASSEMBLY</b> (Wisconsin No. LP-43) .....	1		6
610	830-15A	<b>BAIL ASSEMBLY</b> .....	1		1
611	830-C	<b>NEEDLE VALVE ASSEMBLY</b> ..... Includes 830-9 Packing.	1		1
612	830-1	<b>COVER</b> .....	1		2
	<b>LQ-31</b>	<b>REPAIR PARTS KIT</b> .....	1		2
	Consisting of:				
613	100-2	Glass Bowl .....	1		2
614	100-10N	Neoprene Gasket .....	1		1
615	100-11	Screen .....	1		1

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

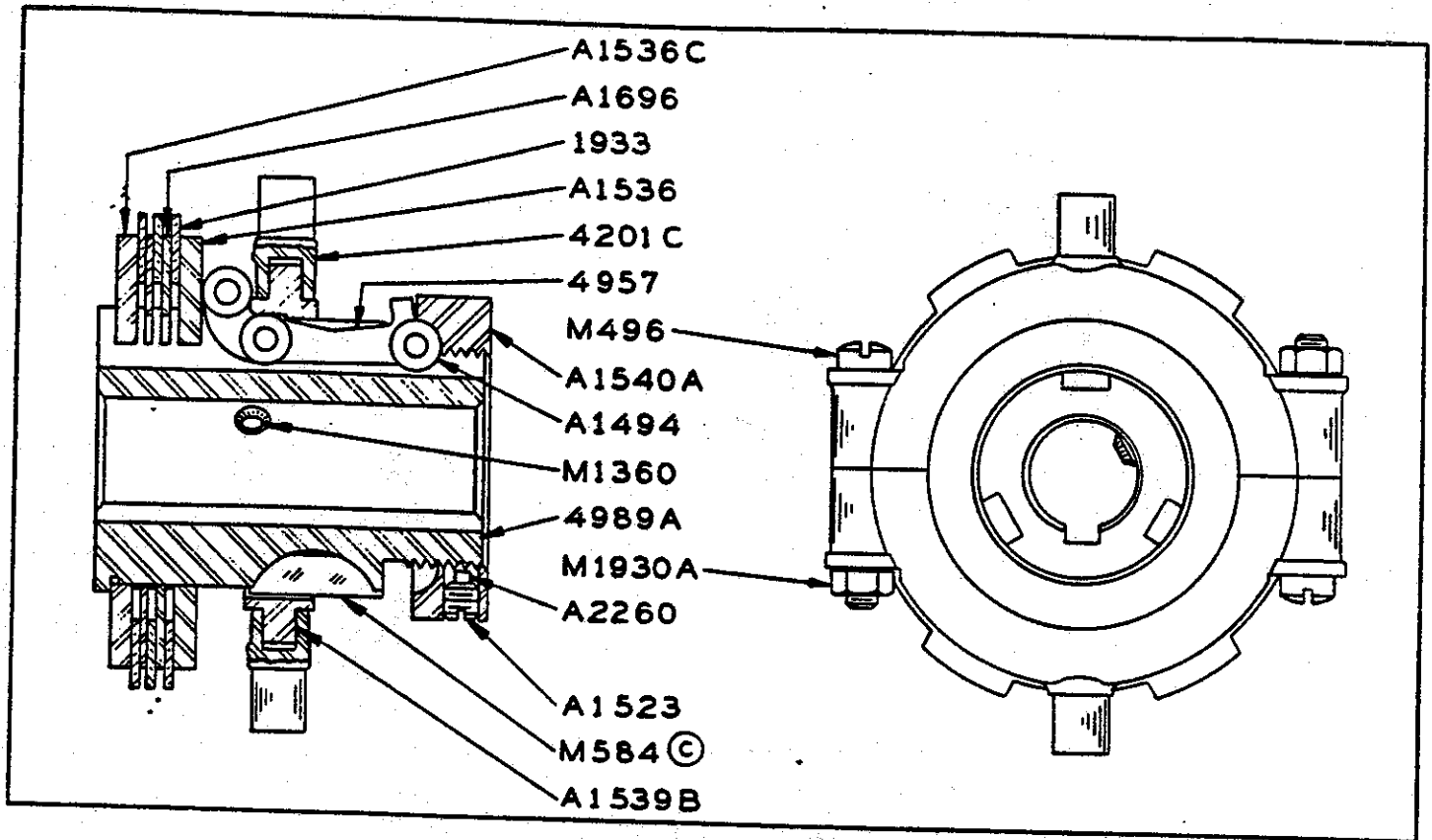








# TWIN DISC CLUTCH



**WISCONSIN MOTOR PART NO. WC-239  
REPAIR PARTS LIST FOR XA3033 MODEL V3035 CLUTCH, SPECIFICATION 16251**

- |       |        |                                                |
|-------|--------|------------------------------------------------|
| 4989A | 1      | Hub                                            |
|       |        | Bore .874, Ky. 1/4 x 1/8                       |
| M1360 | 1      | Cup Pt Set Screw (5/16-18NC x 1/2)             |
| X-361 | 1      | Miscellaneous Clutch Parts                     |
|       | 4201C  | 1 Cone Collar Assembly                         |
|       |        | Includes:                                      |
|       | M496   | 2 Fillister Head Cap Screws (1/4-28NF x 1-7/8) |
|       | M1930A | 2 Hexagon Nuts (1/4-28NF)                      |
|       | A1539B | 1 Wedge Sleeve                                 |
|       | A1536  | 1 Clamping Plate                               |
|       | 4957   | 6 Levers                                       |
|       | A1494  | 9 Lever Rollers                                |
|       | A1540A | 1 Adjusting Nut                                |
|       | A1523  | 1 Adjusting Nut Screw                          |
|       | A2260  | 1 Lock Wire                                    |
|       | A1536C | 1 Back Clamping Plate                          |
| c     | M584   | 1 Hi-Pro Key (141 Special)                     |
|       | A1791  | 1 Instruction Plate (not illustrated)          |
|       | M422   | 4 Drive Pins (not illustrated)                 |
|       | 1933   | 3 Driving Plates                               |
|       | A1696  | 2 Driven Plates                                |

c Replaces 1711 Key

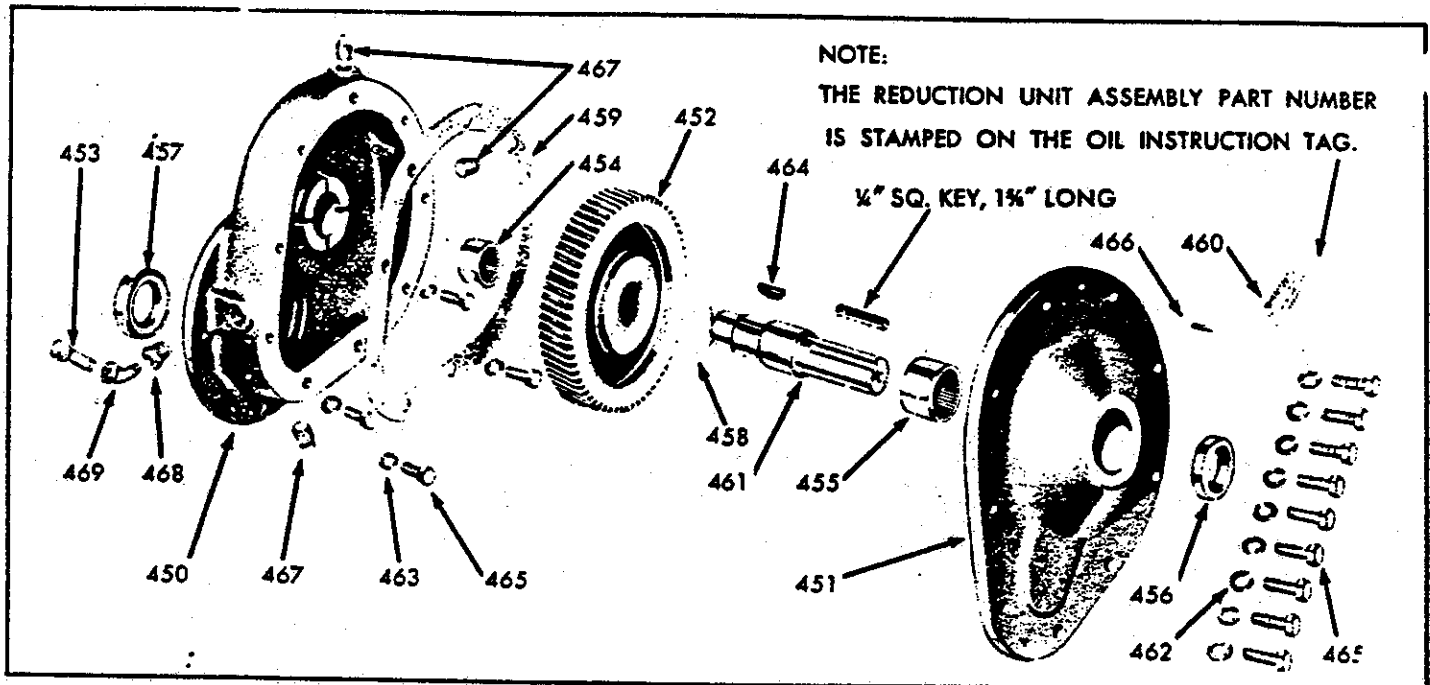
**NOTE:** The 1711 Key was formerly used on this unit. However, on March 21, 1946, it was replaced by our M584 Hi-Pro Key which is now being used. As these parts are not interchangeable, it will be necessary for you to specify the number of the key required when ordering repair parts.

When ordering parts, kindly advise the specification number.

**TWIN DISC CLUTCH COMPANY  
Racine, Wisconsin**

# WW-35-C, 3/4 TO 1 GEAR REDUCTION UNIT ASSEMBLY

(WW-35-3 Replaced By WW-35-C - See Note)



NOTE: Engines equipped with this reduction unit require a CA-51-65-S1 Crankshaft Assembly (13 tooth Spiral Gear) with bearings, gear and key (not illustrated)

8614C-1

Ref. No.	Part Number	Description	No.		Net Wt.		Ref. No.	Part Number	Description	No.		Net Wt.	
			Req		Lb	Oz				Req		Lb	Oz
	WW-35-C	SPIRAL GEAR REDUCTION UNIT..... Consisting of:		12					STANDARD HARDWARE				
450	BG-177-A-1	MAIN HOUSING and ENGINE BEARING PLATE .....	1		5	12	462	PE-4	LOCKWASHER, 5/16" Positive .....	7			1
451	BH-125	COVER for housing .....	1		1	10	463	PH-14-D	WASHER, 5/16" I.D. x 19/32" O.D. x 1/16" thick, plain steel .....	4			1
452	GG-87-1	DRIVEN SPIRAL GEAR, 42 teeth .....	1		2		464	PL-16	KEY, No. 11 Woodruff .....	1			1
453	LO-44	BREATHER .....	1		4		465	XD-16	SCREW, 5/16"-18 thread x 7/8" long, hexagon head .....	11			1
454	ME-90	INNER BEARING .....	1		1		466	PA-289	PIN, No. 2 x 5/8" long, half length taper Groov-Pin cover to housing .....	2			1
455	ME-91	OUTER BEARING .....	1		2		467	XK-2	PLUG, 1/4" square head pipe .....	3			1
456	PH-264-A	OIL SEAL for take-off shaft .....	1		2		468	XK-21	REDUCER BUSHING, 1/4" to 1/8" pipe .....	1			1
457	PH-280	OIL SEAL for crankshaft .....	1		2		469	XK-77	STREET ELL, 1/8" x 45° .....	1			1
458	PH-333-A	THRUST WASHER for driven gear .....	1		1								
459	QD-582	GASKET for cover to housing .....	1		1								
460	SD-79	TAG for oil instructions .....	1		1								
461	WA-68	TAKE-OFF SHAFT.....	1		1	8							

NOTE: On AA, AB, ABS, AK, AKS engines beginning with No. 787385 WW-35-C (Spiral Gear) Unit replaced WW-35-3 (Spur Gear) Unit. The following parts are not interchangeable and must be ordered for WW-35-3 Unit:

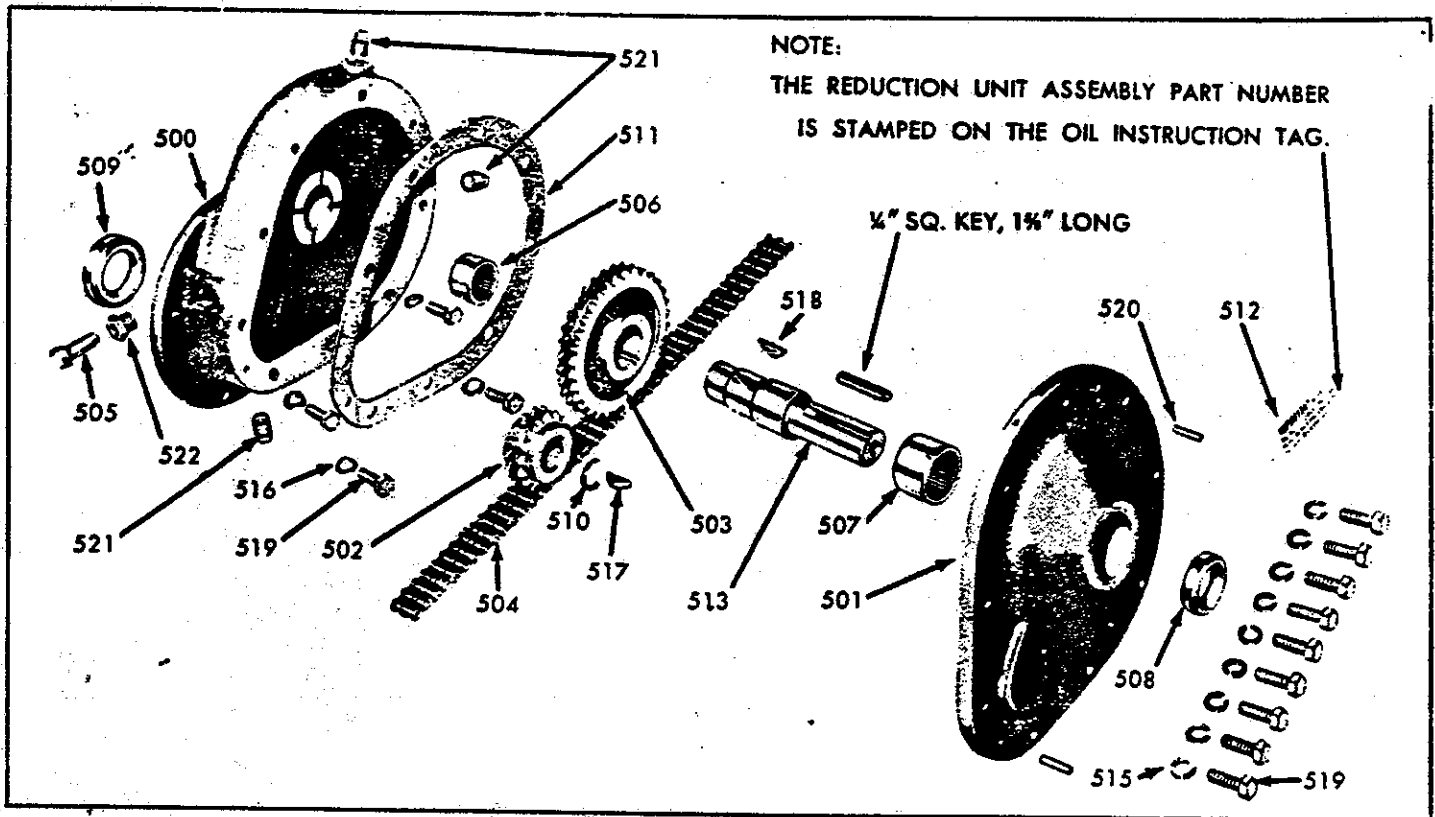
CA-51-5-S1 Crankshaft Assembly (12 tooth Spur Gear)  
GG-87 Driven Gear (39 tooth Spur Gear)

All other parts are interchangeable.

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.



# WW-45-C, 2 TO 1 CHAIN DRIVE REDUCTION UNIT ASSEMBLY



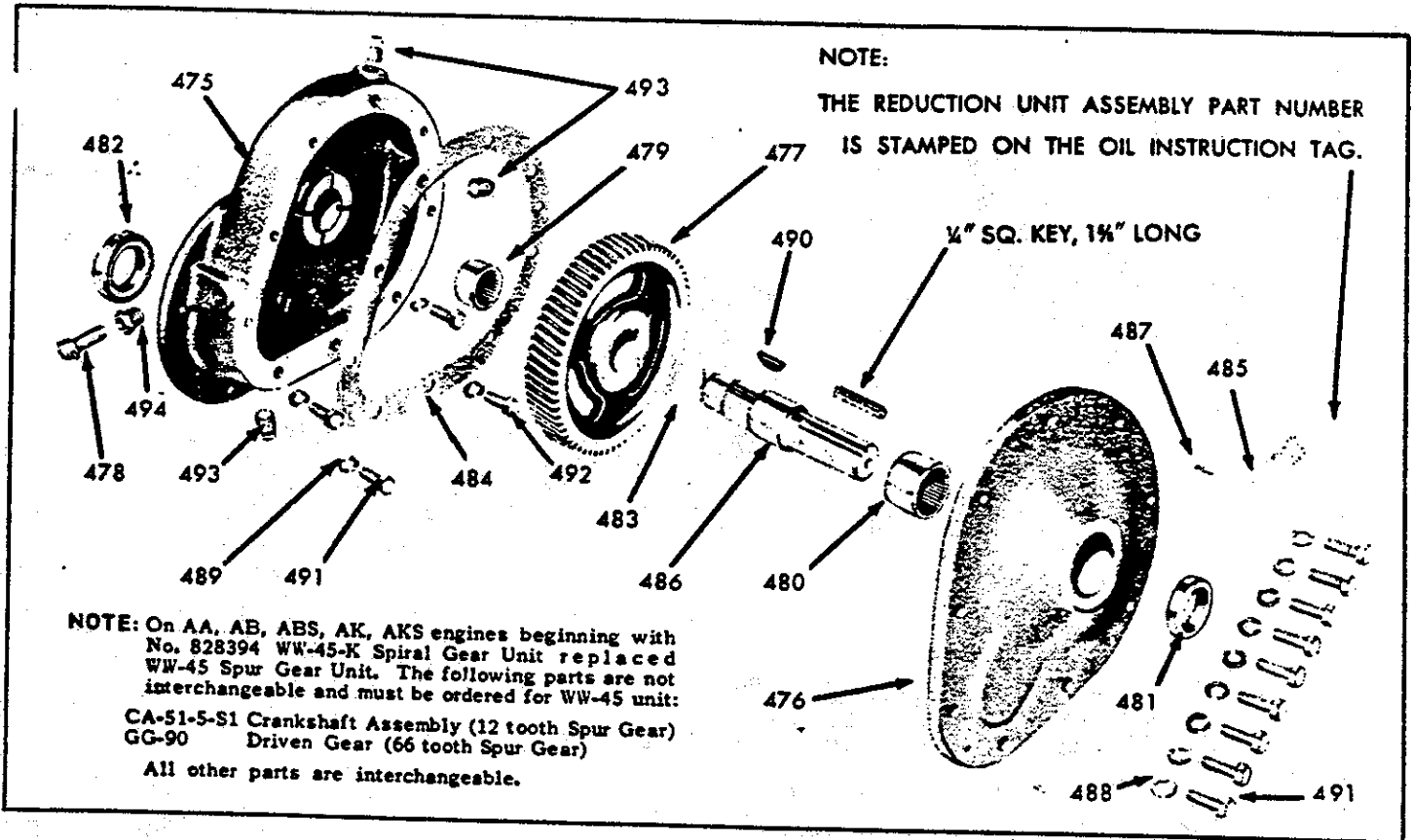
**NOTE:** Engines equipped with this reduction unit require a  
**CA-51-14-S1 Crankshaft Assembly (not illustrated)**  
 Consisting of:  
 1 GA-34-A Gear                      2 ME-88-2 Bearing Cones  
 2 ME-88-1 Bearing Cups      1 PL-21 Key

84071C

Ref. No.	Part Number	Description	No.		Net Wt.		Ref. No.	Part Number	Description	No.		Net Wt.		
			Req		Lb	Oz				Req		Lb	Oz	
	<b>WW-45-C</b>	<b>REDUCTION UNIT ASSEMBLY</b> ..... Engine-wise rotation. Consisting of:		17					<b>STANDARD HARDWARE</b>					
500	BG-195-A-1	MAIN HOUSING and ENGINE BEARING PLATE .....	1		9	8	515	PE-4	LOCKWASHER, 5/16" Positive .....	9			1	
501	BH-131-A-1	COVER for housing .....	1		2	8	516	PH-14-D	WASHER, 5/16" I.D. x 19/32" O.D. x 1/16" thick plain steel .....	4			1	
502	GG-104	DRIVE SPROCKET, 16 teeth .....	1			7	517	PL-15	KEY, No. 9 Woodruff .....	1			1	
503	GG-105	DRIVEN SPROCKET, 32 teeth .....	1			3	518	PL-16	KEY, No. 11 Woodruff .....	1			1	
504	GJ-13	CHAIN, 3/8" pitch, 42 pitches long .....	1			12	519	XD-16	SCREW, 5/16"-18 thread x 7/8" long, hexagon head .....	13			1	
505	LO-44	BREATHER .....	1			4		520	PA-289	PIN, No. 2 x 5/8" long, half length taper Groov-Pin for cover to housing, replaces XH-41 (not interchangeable) .....	2			1
506	ME-90	INNER BEARING .....	1			1			XH-41, No. 2 x 3/4" long, taper pin .....	2			1	
507	ME-91	OUTER BEARING .....	1			2	521	XK-2	PLUG, 1/4" square head pipe .....	3			1	
508	PH-264-A	OIL SEAL for take-off shaft .....	1			2		522	XK-21	REDUCER BUSHER, 1/4" to 1/8" pipe ..	1			1
509	PH-280	OIL SEAL for crankshaft .....	1			2			For breather mounting.					
510	PK-76	RETAINER RING for drive sprocket .....	1			1								
511	QD-596	GASKET for cover to housing .....	1			1								
512	SD-79	TAG for oil instructions .....	1			1								
513	WA-68	TAKE-OFF SHAFT .....	1			8								

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

**WW-45-K, 5½ TO 1 GEAR REDUCTION UNIT ASSEMBLY**  
(WW-45 Replaced By WW-45-K - See Note)



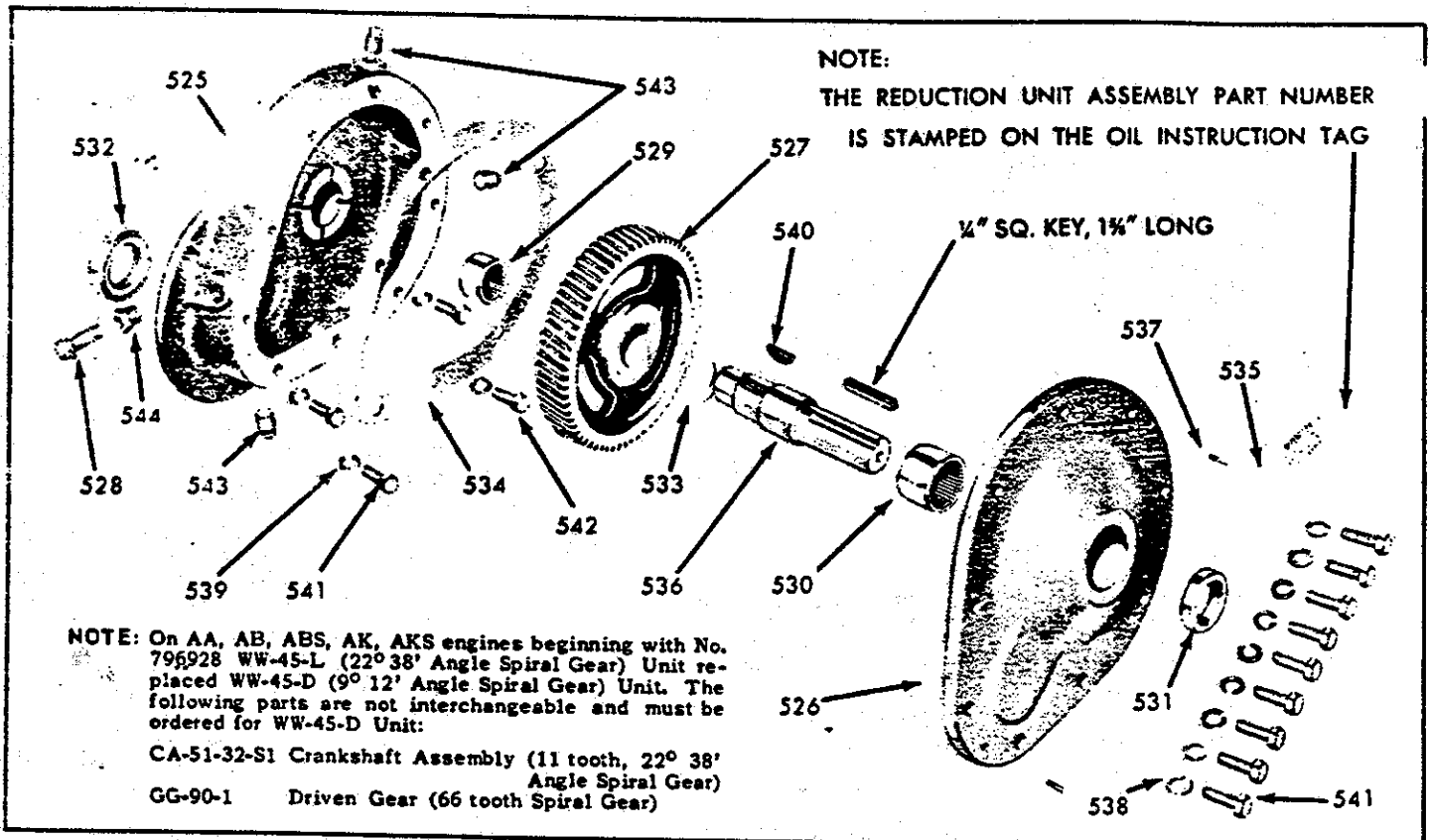
**NOTE:** Engines equipped with this reduction unit require a CA-51-65-S1 Crankshaft Assembly (13 tooth Spiral Gear) with bearings, gear and key (not illustrated)

84067C-1

Ref. No.	Part Number	Description	No.		Net Wt.		Ref. No.	Part Number	Description	No.		Net Wt.	
			Req		Lb	Oz				Req		Lb	Oz
	<b>WW-45-K</b>	<b>SPIRAL GEAR REDUCTION UNIT</b> ..... Consisting of:		17					<b>STANDARD HARDWARE</b>				
475	BG-195-A	MAIN HOUSING and ENGINE BEARING PLATE .....	1		9	8	487	PA-289	PIN, No. 2 x 5/8" long, half length taper Groov-Pin cover to housing .....	2			1
476	BH-131-A	COVER for housing .....	1		2	8	488	PE-4	LOCKWASHER, 5/16" Positive .....	9			1
477	GG-90-8	DRIVEN SPIRAL GEAR, 71 teeth.....	1		4	8	489	PH-14-D	WASHER, 5/16" I.D. x 18/32" O.D. x 1/16" thick, plain steel .....	4			1
478	LO-44	BREATHER .....	1			4			For housing to crankcase mounting.				
479	ME-90	INNER BEARING .....	1		1		490	PL-16	KEY, No. 11 Woodruff .....	1			1
480	ME-91	OUTER BEARING .....	1		2				For driven gear.				
481	PH-264-A	OIL SEAL for take-off shaft..... PH-264, replaced by PH-264-A.	1		2		491	XD-16	SCREW, 5/16"-18 thread x 7/8" long, hexagon head .....	11			1
482	PH-280	OIL SEAL for crankshaft .....	1		2				8-for cover mounting.				
483	PH-333-A	THRUST WASHER for driven gear.....	1		1		492	XD-17	SCREW, 5/16"-18 thread x 1" long, hexagon head .....	2			1
484	QD-596	GASKET for cover to housing .....	1		1				For housing mounting, inner holes.				
485	SD-79	TAG for oil instructions .....	1		1		493	XK-2	PLUG, 1/4" square head pipe.....	3			1
486	WA-68	TAKE-OFF SHAFT .....	1		1	8	494	XK-21	REDUCER BUSHING, 1/4" to 1/8" pipe..	1			1
									For breather mounting.				

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

**WW-45-L, 6 TO 1 GEAR REDUCTION UNIT ASSEMBLY**  
(WW-45-D Replaced By WW-45-L - See Note)



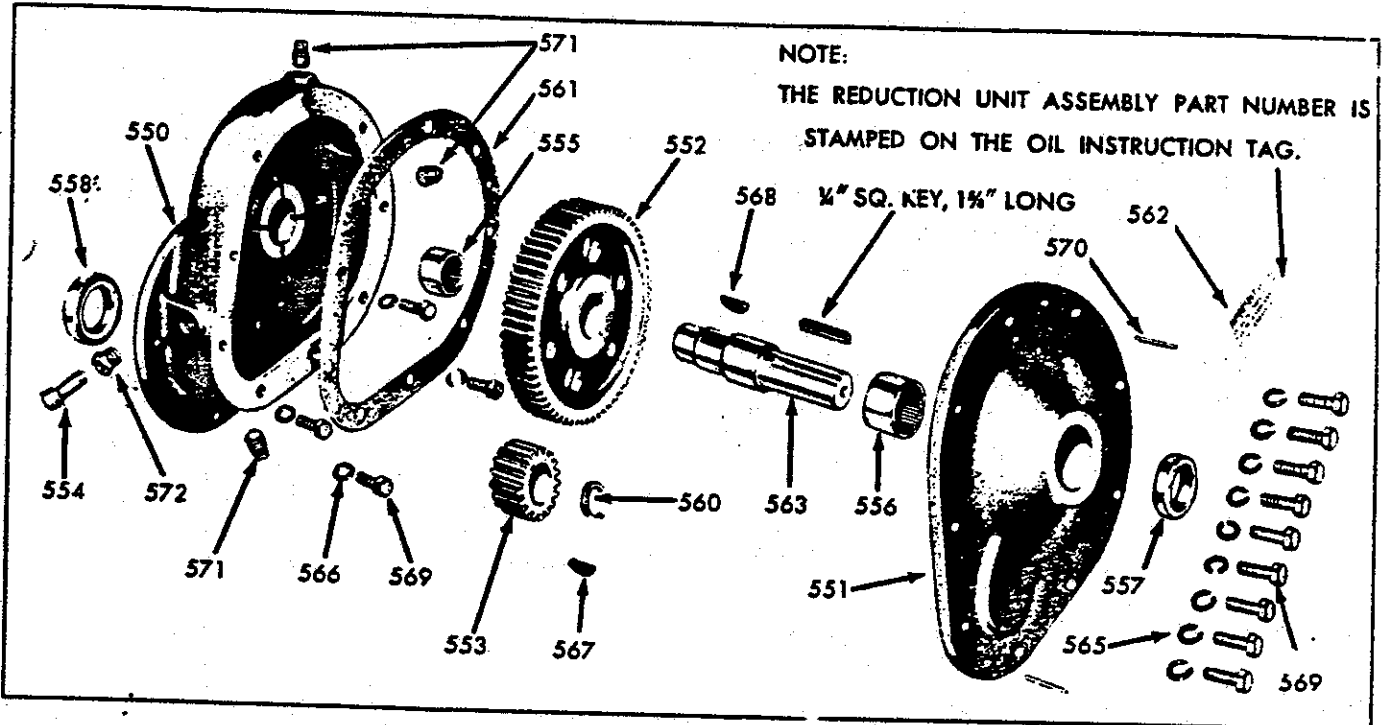
**NOTE:** Engines equipped with this reduction unit require a CA-51-64-S1 Crankshaft Assembly (12 tooth, 22° 38' angle Spiral Gear) with bearings, gear and key (not illustrated)

84067C-1

Ref. No.	Part Number	Description	No.		Net Wt.		Ref. No.	Part Number	Description	No.		Net Wt.	
			Req		Lb	Oz				Req		Lb	Oz
	WW-45-L	GEAR REDUCTION UNIT..... Consisting of:		17					<b>STANDARD HARDWARE</b>				
525	BG-195-A	MAIN HOUSING and BEARING PLATE..	1		9	8	537	PA-289	PIN, No. 2 x 5/8" long, half length taper Groov-Pin cover to housing .....	2			1
526	BH-131-A	COVER for housing.....	1		2	8	538	PE-4	LOCKWASHER, 5/16" Positive..... For cover mounting.	9			1
527	GG-90-7	DRIVEN GEAR, 72 teeth .....	1		4	8	539	PH-14-D	WASHER, 5/16" I.D. x 19/32" O.D. x 1/16" thick, plain steel .....	4			1
528	LO-44	BREATHER .....	1										
529	ME-90	INNER BEARING .....	1		1		540	PL-16	KEY, No. 11 Woodruff .....	1			1
530	ME-91	OUTER BEARING .....	1		2		541	XD-16	SCREW, 5/16"-18 thread x 7/8" long, hexagon head .....	11			1
531	PH-264-A	OIL SEAL for take-off shaft .....	1		2								
		PH-264, replaced by PH-264-A.					542	XD-17	SCREW, 5/16"-18 thread x 1" long, hexagon head .....	2			1
532	PH-280	OIL SEAL for crankshaft.....	1		2								
533	PH-333-A	THRUST WASHER for driven gear.....	1		1		543	XK-2	PLUG, 1/4" square head pipe .....	3			1
534	QD-596	GASKET for cover to housing.....	1		1								
535	SD-79	TAG for oil instructions.....	1		1		544	XK-21	REDUCER BUSHING, 1/4" to 1/8" pipe ..	1			1
536	WA-68	TAKE-OFF SHAFT.....	1		1	8							

Order parts from nearest **SERVICE STATION** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

**WW-45-E, J.200 TO 1 SPUR GEAR REDUCTION UNIT ASSEMBLY  
FOR AA, AB, ABS, AK, AKS ENGINES**



87005C

**NOTE:** Engines Equipped With This Reduction Unit Require a CA-51-14 Crankshaft Assembly. (Not illustrated)

Consisting of:

- 1—GA-34-A Gear
- 2—ME-88-2 Bearing Cones
- 2—ME-88-1 Bearing Cups
- 1—PL-21 Key

REF. NO.	PART NO.	DESCRIPTION	NO. REQ.	NET WEIGHT	
				LBS.	OZ.
	WW-45-E	REDUCTION UNIT ASSEMBLY—Counter-engine-wise rotation.....		17	
550	BG-195-A	MAIN HOUSING AND ENGINE BEARING PLATE.....	1	9	8
551	BH-131-A	COVER—HOUSING.....	1	2	8
552	GG-99-1	DRIVEN GEAR—49 TEETH.....	1	3	12
553	GG-128	DRIVE GEAR—15 TEETH.....	1		7
554	LO-44	BREATHER.....	1		4
555	ME-90	BEARING—INNER.....	1		1
556	ME-91	BEARING—OUTER.....	1		2
557	PH-264	OIL SEAL—TAKE-OFF SHAFT.....	1		2
558	PH-280	OIL SEAL—CRANKSHAFT.....	1		2

(continued)

Order parts from nearest SERVICE STATION shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers shown on name plate.

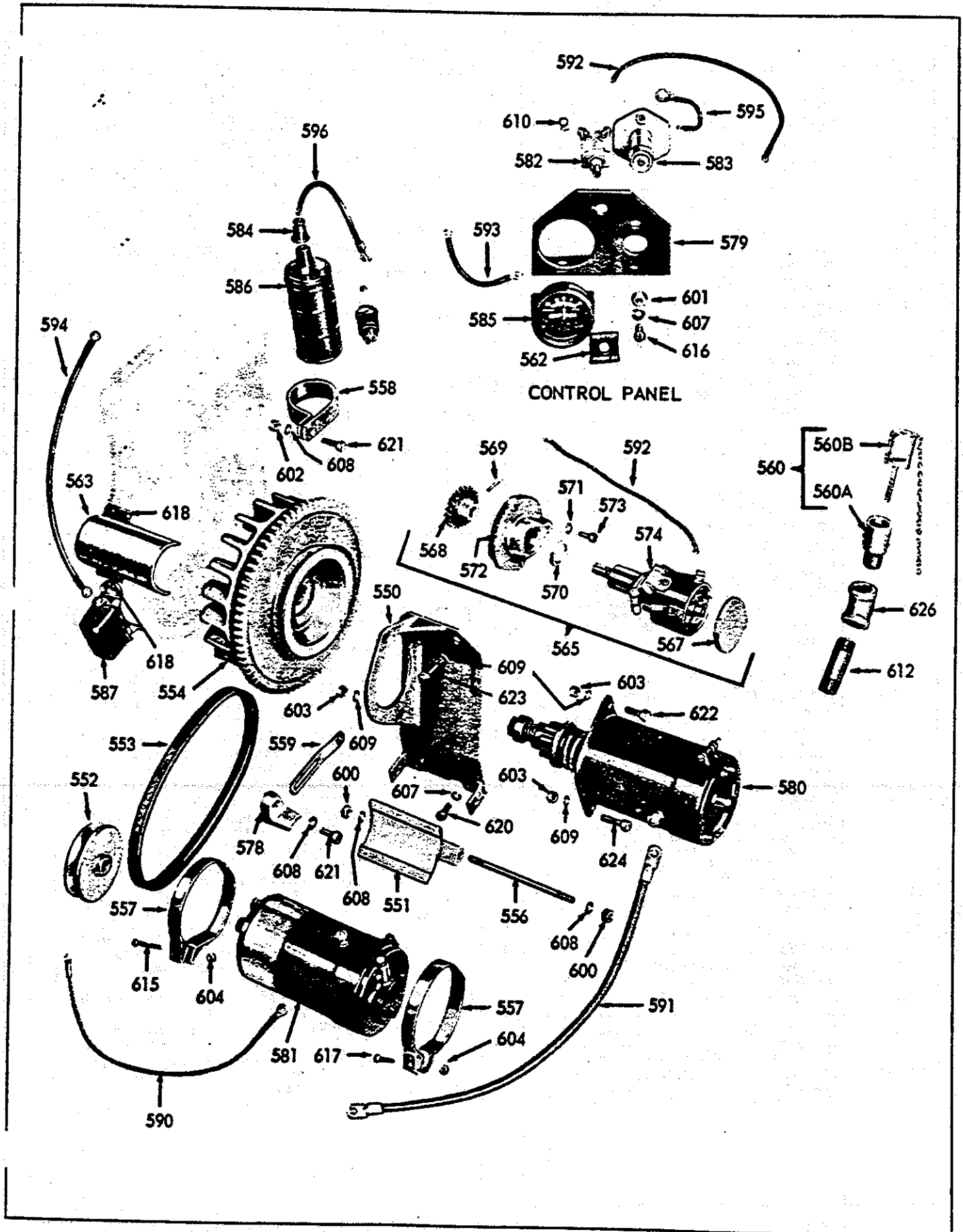
**WW-45-E, 3.266 TO 1 SPUR GEAR REDUCTION UNIT ASSEMBLY  
FOR AA, AB, ABS, AK, AKS ENGINES**

REF. NO.	PART NO.	DESCRIPTION	NO. REQ.	NET WEIGHT	
				LBS.	OZ.
559	PH-333	THRUST WASHER—DRIVEN GEAR (not illustrated).....	1		1
560	PK-76	RETAINING RING—DRIVE GEAR.....	1		1
561	QD-596	GASKET—COVER TO HOUSING.....	1		1
562	SD-79	TAG—OIL INSTRUCTION.....	1		1
563	WA-68	TAKE-OFF SHAFT.....	1	1	8
<b>STANDARD HARDWARE</b>					
565	PE-4	LOCKWASHER, $\frac{5}{16}$ " POSITIVE..... For cover mounting.	9		1
566	PH-14-D	WASHER, $\frac{5}{16}$ " I.D. x $\frac{19}{32}$ " O.D. x $\frac{1}{16}$ " thick..... For housing to crankcase mounting.	4		1
567	PL-15	KEY, #9 WOODRUFF..... For drive gear.	1		1
568	PL-16	KEY, #11 WOODRUFF..... For driven gear.	1		1
569	XD-16	SCREW, $\frac{5}{16}$ "—18 thread x $\frac{3}{8}$ " long hexagon head..... 9—for cover mounting. 4—for housing mounting.	13		1
570	XH-41	PIN, #2 x $\frac{3}{4}$ " LONG TAPER..... For cover to housing.	2		1
571	XK-2	PLUG, $\frac{1}{4}$ " SQUARE HEAD PIPE..... For oil level and drain.	3		1
572	XK-21	REDUCER BUSHING, $\frac{1}{4}$ " to $\frac{1}{8}$ " PIPE..... For breather mounting.	1		1

Order parts from nearest SERVICE STATION shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers shown on name plate.



**ELECTRIC STARTER AND GENERATOR WITH TIMER IGNITION  
FOR MODELS ABN AND AKN ENGINES**



Parts are identified by reference number. See parts list for correct part number.

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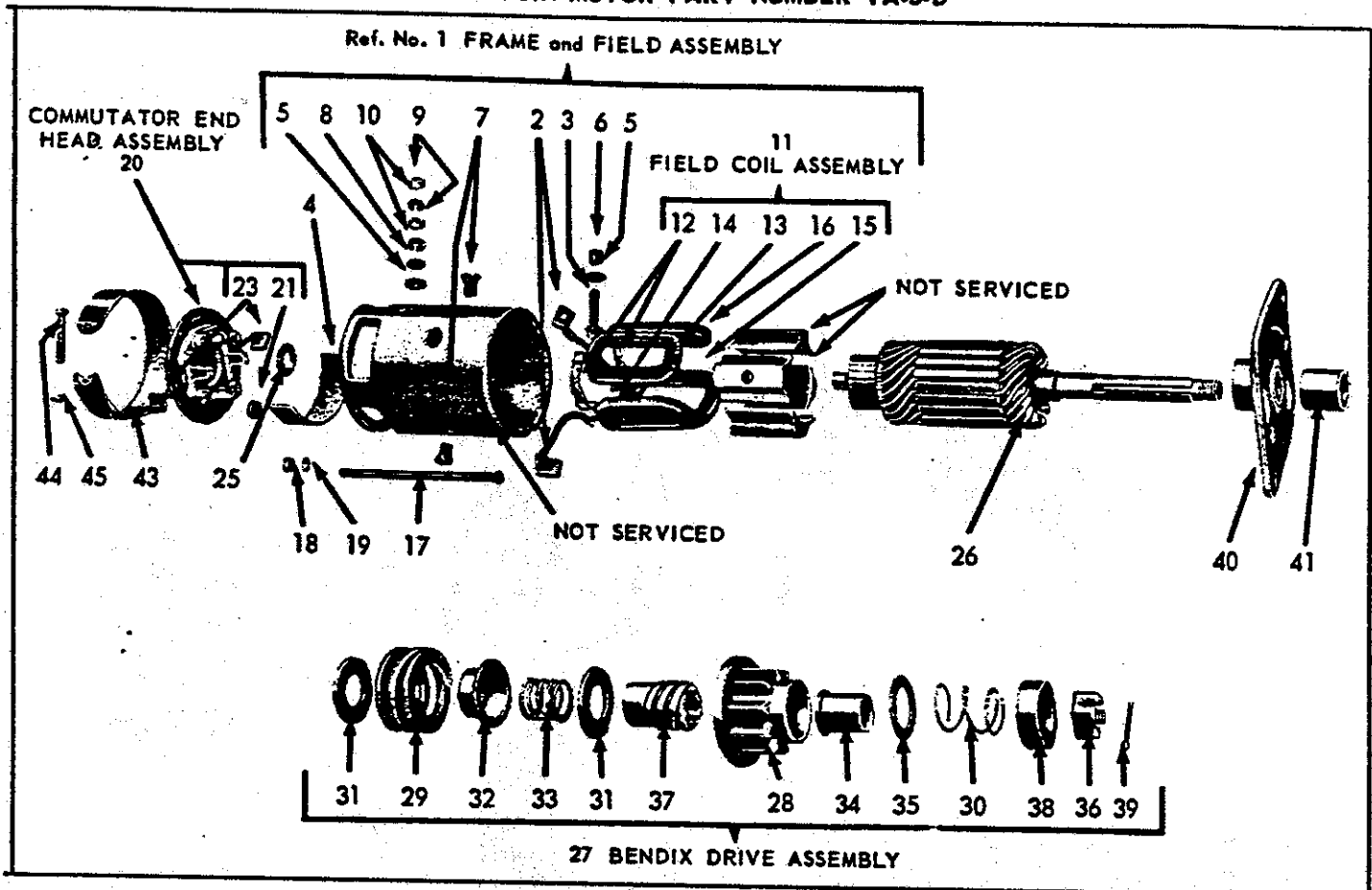
## ELECTRIC STARTER AND GENERATOR WITH TIMER IGNITION FOR MODELS ABN AND AKN ENGINES

Ref. No.	Part Number	Description	No. Req.	Net Wt.		Ref. No.	Part Number	Description	No. Req.	Net Wt.	
				Lb	Oz.					Lb	Oz.
550	BI-299	BRACKET for mounting starter .....	1	2	4	592	YL-156	IGNITION WIRE ASSEMBLY .....	2		1
551	BI-301	CRADLE for mounting generator.....	1	1	8			1-for ignition switch to coil. 1-for ignition timer to coil. No. 14 GA. cable, 12½" long with terminals			
552	MD-333	PULLEY for generator drive.....	1		14	593	YL-179	IGNITION WIRE ASSEMBLY, ignition switch to ammeter .....	1		1
553	MH-155 (Optional) MH-160-1	DRIVE BELT for generator, Gates 2270 VEELOS link V belt, 25¼" long.....	1		5			No. 14 GA. cable, 3¼" long with terminals			
554	NC-137F-S1	FLYWHEEL with ring gear .....	1	20		594	YL-180	IGNITION WIRE ASSEMBLY, ammeter to circuit breaker .....	1		2
		Includes: 1 GH-49 Ring gear 3 XE-17 Set screws				595	YL-184	IGNITION WIRE ASSEMBLY, ammeter to starting switch .....	1		1
556	PC-454	STUD for mtg gen. cradle to bracket.....	1		2	596	YL-223	IGNITION CABLE ASSEMBLY, coil to spark plug .....	1		2
557	PG-117	STRAP for mounting generator .....	2		2			No. 7 MM cable, 7¼" long with terminals.			
558	PG-556	CLAMP for mounting coil.....	1		4			<b>STANDARD HARDWARE</b>			
559	PG-569	ADJUSTING STRAP for generator .....	1		1	600	PD-10	NUT, 5/16"-24 thread, hexagon steel.....	2		1
560	R-114-11	OIL FILLER and GAUGE ASSEMBLY....	1		7			For generator cradle stud.			
		Consists of:				601	PD-77	NUT, ¼"-20 thread, hexagon steel .....	2		1
560A		RB-76-S1 BODY with pins .....	1		4			For mounting starting switch.			
560B		RJ-140-3-S1 OIL GAUGE and CAP ASSY	1		3	602	PD-78	NUT, 5/16"-18 thread, hexagon steel.....	1		1
562	SD-109	TAG for ignition switch .....	1		1			For mounting ignition coil.			
563	SE-177	COVER for starter Bendix.....	1		4	603	PD-79	NUT, 3/8"-16 thread, hexagon steel.....	3		1
565	TF-102	IGNITION TIMER ASSEMBLY .....	1	4	8			2-for mounting starter. 1-for mounting generator adjusting strap to lower starter screw.			
		Consisting of:				604	PD-115	NUT, No. 10-32 thread, hexagon steel.....	2		1
567		1 BH-151 COVER .....	1		4			For generator straps.			
568		1 GD-111 GEAR .....	1		8	607	PE-3	LOCKWASHER, ¼" Positive .....	4		1
569		1 PA-313 PIN for gear .....	1		1			2-for mtg starter bracket (lower holes). 2-for mounting starter switch.			
570		1 PH-329 SEAL .....	1		1	608	PE-4	LOCKWASHER, 5/16" Positive .....	5		1
571		1 PE-3 LOCKWASHER, for advance arm lock .....	1		1			2-for generator cradle stud. 1-for generator adjusting strap. 1-for mounting ignition coil.			
572		1 TB-116 ADAPTER .....	1	1	6	609	PE-5	LOCKWASHER, 3/8" Positive .....	5		1
573		1 XD-4 SCREW, for advance arm lock	1		1			2-for mounting starter to bracket. 2-for mounting starter brkt. (upper holes) 1-for mounting generator adjusting strap to lower starter screw.			
574		YF-8A-S1 IGNITION TIMER ASSEMBLY	1	2	3	610	PE-72	LOCKWASHER for ignition switch term'l.	2		1
		Consisting of:				612	RF-1144	PIPE NIPPLE, ¼" W.L. x 2½" long .....	1		3
		1 BH-151 Cover						For oil filler and level gauge.			
		1 YF-8-A (Auto-Lite IGW-4179) Timer				615	XA-11	SCREW, No. 10-32 thread x 1½" long, round head. For generator strap .....	1		1
		NOTE: For all repairs contact the Elec- tric Auto-Lite Company at Toledo, Ohio, or their nearest service station. For ignition timer service parts, refer to illustration immediately following this parts list.				616	XA-34	SCREW, ¼"-20 thread x ½" long, round hd. For mounting starter switch.	2		1
578	VC-34	SUPPORT for generator adjusting strap	1		3	617	XA-53	SCREW, No. 10-32 thread x 1" long, round head. For generator strap.....	1		1
579	VE-601	CONTROL PANEL .....	1		8	618	XA-73	SCREW, No. 7 x 3/8" long, self-tapping....	6		1
580	YA-5-B	ELECTRIC STARTER (6 volt) AUTO- LITE No. MAK-4008 .....	1	10	12			2-for mounting circuit breaker. 4-for mounting starter Bendix cover.			
		NOTE: For all repairs contact the Elec- tric Auto-Lite Company at Toledo, Ohio, or their nearest service station. For starting motor service parts, refer to illustration immediately following this parts list.				620	XD-6	SCREW, ¼"-20 thread x ¼" long, hex. hd... For mtg starter bracket (lower holes).	2		1
581	YB-6-A	GENERATOR (6 volt) AUTO-LITE No. GAS-4103-1 .....	1	11		621	XD-15	SCREW, 5/16"-18 thread x ¼" long, hex. hd	2		1
		NOTE: For all repairs contact the Elec- tric Auto-Lite Company at Toledo, Ohio, or their nearest service station. For generator service parts, refer to illustra- tion immediately following this parts list				622	XD-26	SCREW, 3/8"-16 thread x 7/8" long, hex. hd	1		1
582	YC-9-B	IGNITION SWITCH .....	1		2			For mounting starter (upper hole).			
583	YC-10	STARTING SWITCH.....	1		4	623	XD-27	SCREW, 3/8"-16 thread x 1" long, hex. hd. For mtg starter bracket (upper holes).	2		1
584	YD-20	CAP for coil terminal .....	1		1	624	XD-30	SCREW, 3/8"-16 thread x 1½" long, hex. hd	1		2
585	YE-2	AMMETER .....	1		6	626	XX-105	PIPE ELBOW, ¼" x 45°, W.I. ....	1		4
586	YF-11	IGNITION COIL (6 volt) AUTO-LITE No. CR-6005 .....	1	1	12			For mounting oil filler and level gauge.			
587	YJ-5	CIRCUIT BREAKER, AUTO-LITE No. CB-4008 .....	1		6						
590	YL-112	IGNITION WIRE ASSEMBLY, generator to circuit breaker .....	1		1						
		No. 14 GA. cable, 12½" long, with term'l's									
591	YL-115	STARTER CABLE ASSEMBLY, starter to starting switch .....	1		8						
		No. 4 AWG. cable, 16" long, with term'l's.									

Order parts from nearest **SERVICE STATION** shown in directory following parts list.

**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

**ELECTRIC AUTO-LITE MAK-4008 STARTING MOTOR PARTS LIST**  
**WISCONSIN MOTOR PART NUMBER YA-5-B**

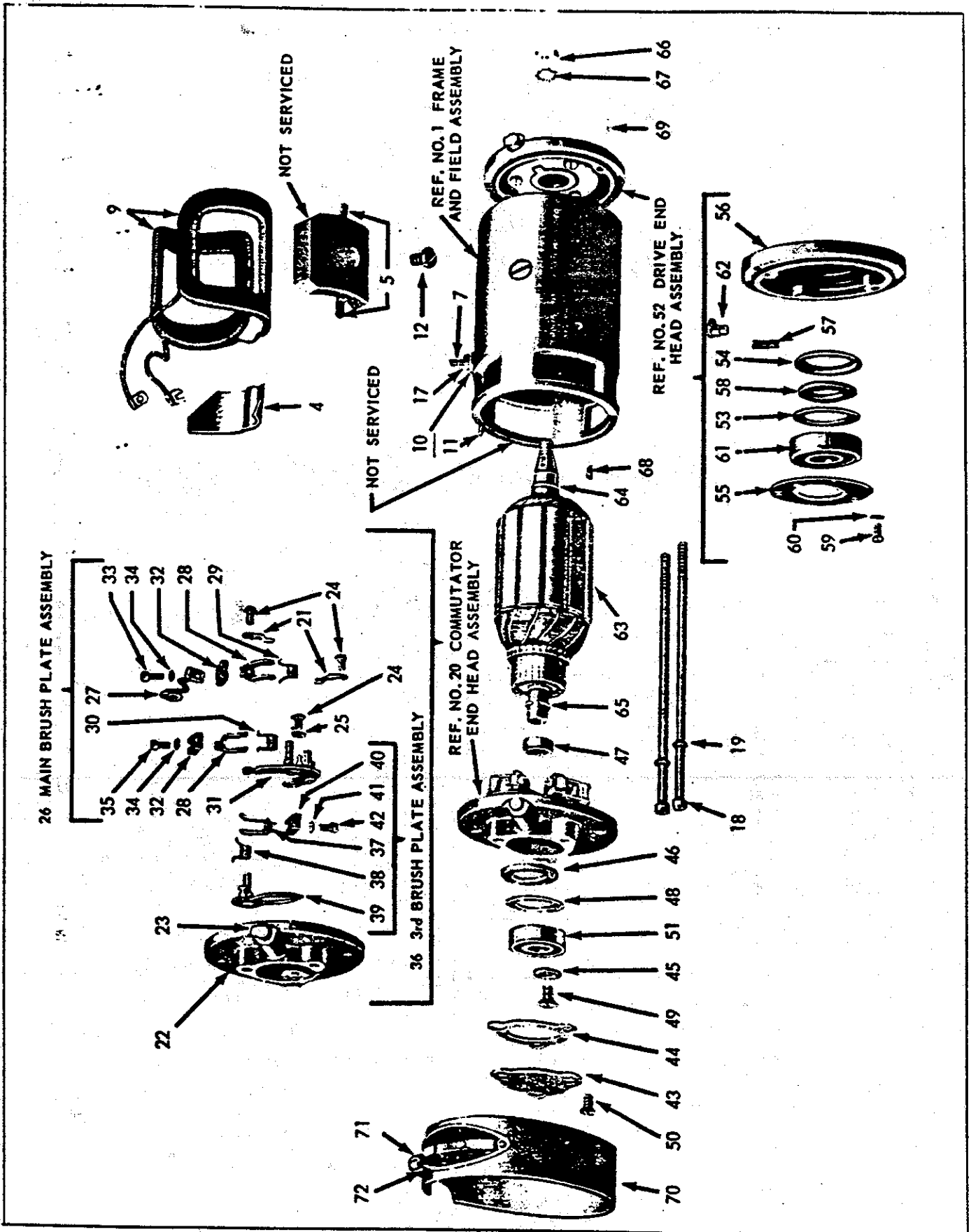


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Ref No	Auto-Lite Part Number	Description	No Req	Ref No	Auto-Lite Part Number	Description	No Req
1	MAK-2001	FRAME and FIELD ASSEMBLY .....	1	26	MAK-2006	ARMATURE .....	1
2	MAK-12	Consisting of:		27	EBA-10	BENDIX DRIVE ASSEMBLY .....	1
3	MAK-28	BRUSH .....	2	28	EB-65045	Consisting of:	
4	MAK-30	TERMINAL STUD .....	1	29	EB-6505	PINION .....	1
5	MAK-49	INSULATION for field coils .....	1	30	EB-6513	DRIVE SPRING .....	1
6	MAK-51	INSULATING WASHER for terminal stud .....	2	31	EB-6823	ANTI-DRIFT SPRING .....	1
7	MZ-38A	INSULATING BUSHING for terminal stud .....	4	32	EB-6824	THRUST WASHER .....	2
8	SSA-43	SCREW for pole shoe .....	1	33	EB-6824	SUPPORT for drive spring .....	1
9	8X-146	PLAIN WASHER for terminal stud .....	2	34	EB-6825	MESHING SPRING .....	1
10	12X-199	NUT for terminal stud, 1/8"-20 thread, hex. ....	2	35	EB-6826	SLEEVE for anti-drift spring .....	1
11	MAK-30055	LOCKWASHER for terminal stud, 1/8" .....	2	36	EB-6827	PINION WASHER .....	1
		FIELD COIL ASSEMBLY .....	1	37	EB-6828	CASTELLATED NUT .....	1
12	MAK-44	Consisting of:		38	EB-7101	SHAFT .....	1
13	MAK-1007	CONNECTOR for field coil .....	2	39	EB-7902	DRIVE STOP .....	1
14	MAK-1008	FIELD COIL, U.R. ....	1		X-528	COTTER PIN .....	1
15	MAK-1009	FIELD COIL, L.R. ....	1	40	MAK-1048	DRIVE END HEAD ASSEMBLY .....	1
16	MAK-1010	FIELD COIL, L.L. ....	1	41	MAK-39	Includes:	
		FIELD COIL, U.L. ....	1			BRONZE BEARING .....	1
17	MAK-20	THRU BOLT for frame .....	2	42	X-386	OILER for bronze bearing (not illustrated) .....	1
18	8X-173	NUT for thru bolt, No. 10-32 thread, hexagon ..	2	43	GAS-1024F	COVER BAND .....	1
19	X-196	LOCKWASHER for thru bolt, No. 10 .....	2	44	X-714	SCREW for cover band .....	1
20	MAK-3002	COMMUTATOR END HEAD ASSEMBLY .....	1			No. 10-32 thread x 1/2" long, round head.	
21	MAK-19	Includes:		45	8X-794	NUT for cover band .....	1
22	MAK-59	BRUSH SPRING .....	4			No. 10-32 thread, square.	
23	MAK-10345 *	FELT (not illustrated) .....	1				
		GROUNDING BRUSH .....	2				
24	MAK-54	THRUST WASHER for armature, drive end .....	1				
		(not illustrated)					
25	MAK-55	THRUST WASHER for armature, com. end .....	1				

\* BRUSH SET for service, MAK-2012AS.

ELECTRIC AUTO-LITE GAS-4103-1 GENERATOR PARTS LIST  
 WISCONSIN MOTOR PART NUMBER YB-6-A



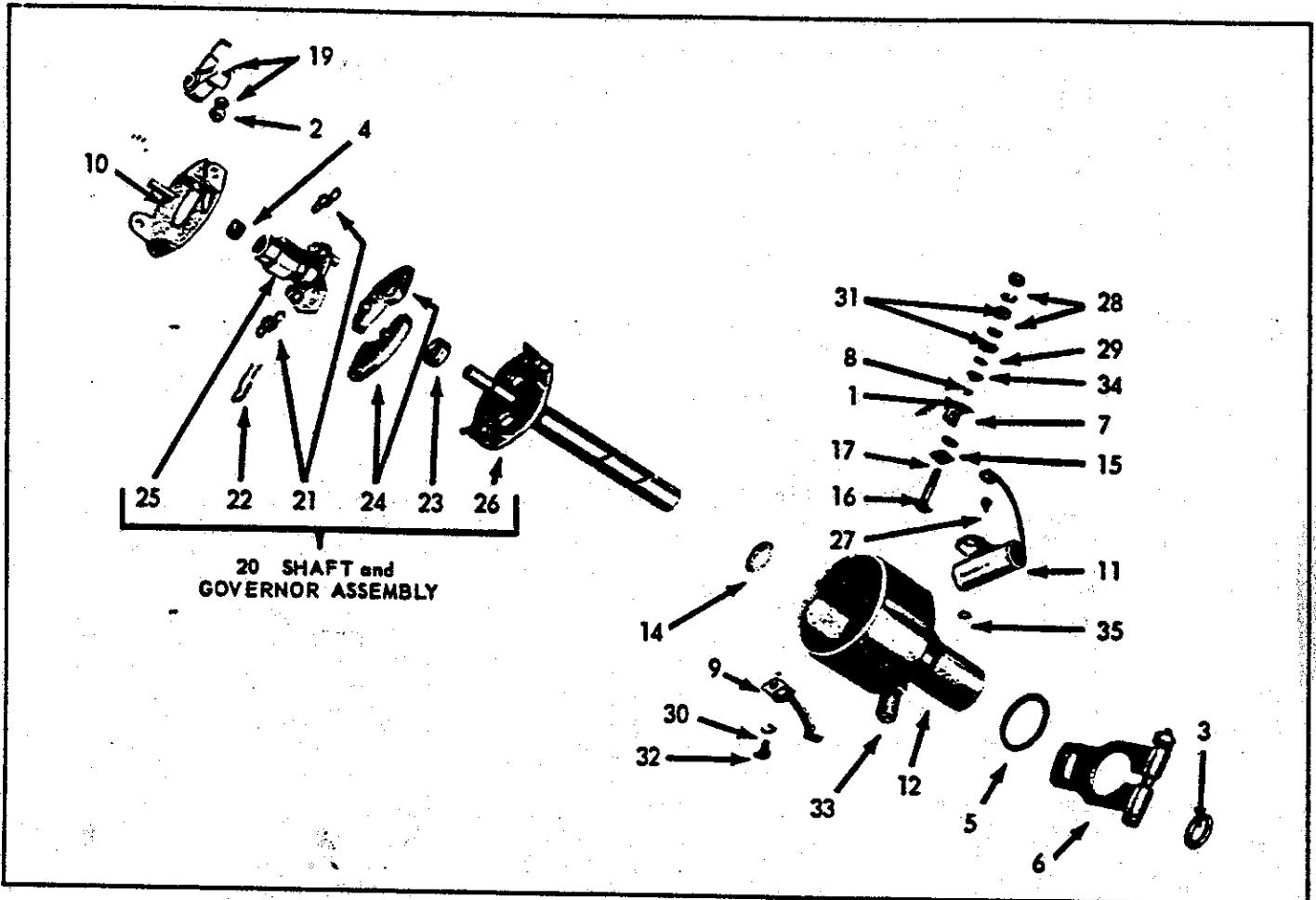
Parts are identified by reference number. See parts list for correct part number.

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**ELECTRIC AUTO-LITE GAS-4103-1 GENERATOR PARTS LIST**  
**WISCONSIN MOTOR PART NUMBER YB-6-A**

Ref No	Auto-Lite Part Number	Description	No Req	Ref No	Auto-Lite Part Number	Description	No Req
1	GAS-2084	FRAME and FIELD ASSEMBLY .....	1	44	GAS-70	GASKET for commutator end cover .....	1
2	GAS-40	Consisting of: INSULATING WASHER for terminal stud, inner (not illustrated).....	1	45	GAS-71	BEARING RETAINER WASHER .....	1
3	GAS-41	INSULATING BUSHING for terminal stud, (not illustrated).....	1	46	GAS-77	FELT WASHER .....	1
4	GAS-44	INSULATION for field coil connection.....	1	47	GAS-78	RETAINER for felt washer .....	1
5	GAS-45	HOLDER for field coil .....	4	48	IA-175	FELT RETAINING WASHER.....	1
6	GAS-81	LEAD ASSEMBLY (not illustrated).....	1	49	8X-61	SCREW for bearing retainer .....	1
7	GBF-36	Includes: TERMINAL STUD .....	1			No. 10-32 thread x 7/16" long, flat head.	
8	X-1423	TERMINAL (not illustrated).....	1	50	8X-63	SCREW for cover mounting .....	3
9	GAS-2005A	FIELD COIL ASSEMBLY complete .....	1			No. 8-32 thread x 3/8" long, flat head.	
10	GBF-55	INSULATING WASHER for terminal stud, outer .....	1	51	X-293	BALL BEARING, S.A.E. No. 201, commutator end .....	1
11	MN-21	DOWEL PIN.....	2	52	GAS-1075E	DRIVE END HEAD ASSEMBLY .....	1
12	MZ-38A	POLE SHOE SCREW.....	2			Consisting of:	
13	X-140	NUT for field ground screw .....	1	53	DB-13	FLAT RETAINER for felt washer.....	1
14	X-1274	No. 6-32 thread, hexagon (not illustrated) WASHER for terminal stud .....	2	54	GAS-73	CUPPED RETAINER for felt washer .....	1
15	X-1275	Shakeproof No. 10 (not illustrated) WASHER for ground screw.....	1	55	GAS-74	BEARING RETAINER.....	1
16	X-1350	Shakeproof No. 8 (not illustrated) FIELD GROUND SCREW, No. 6-32 thread x 7/16" long, flat head (not illustrated).....	1	56	GAS-75B	DRIVE END HEAD.....	1
17	5X-1377	NUT for terminal stud .....	2	57	IGP-34	FELT WICK .....	1
18	GAS-20A	No. 10-32 thread, hexagon. THRU BOLT for end head mounting .....	2	58	SC-127	FELT WASHER .....	1
19	12X-196	LOCKWASHER for thru bolt and terminal stud No. 10 Positive .....	3	59	8X-55	SCREW for bearing retainer .....	3
20	GAS-2079C	COMMUTATOR END HEAD ASSEMBLY .....	1			No. 8-32 thread x 3/8" long, round head.	
21	GAS-51	Consisting of: SPRING RETAINER for 3rd brush plate .....	2	60	X-195	LOCKWASHER for retainer screw, No. 8 .....	3
22	GAS-79B	DRIVE END HEAD .....	1	61	X-294	BALL BEARING, S.A.E. 202, drive end .....	1
23	X-489	OILER .....	1	62	X-489	OILER .....	1
24	8X-55	SCREW for brush plate mounting .....	3	63	GAS-2076	ARMATURE ASSEMBLY.....	1
25	X-195	No. 8-32 thread x 3/8" long, round head. LOCKWASHER for plate mounting, No. 8 .....	1			Includes:	
26	GAS-2021R	MAIN BRUSH PLATE ASSEMBLY .....	1	64	GAS-53	SNAP RING, D. E. ....	1
27	GAL-31	Consisting of: GROUND WIRE with terminals .....	1	65	IA-158	SNAP RING, C. E. ....	1
28	GAS-15	BRUSH HOLDER .....	2	66	8X-160	NUT for armature shaft.....	1
29	GAS-17	SPRING for grounded brush .....	1	67	X-1278	WASHER for armature shaft, 7/16" Shakeproof	1
30	GAS-18	SPRING for insulated brush .....	1	68	X-1460A	KEY for drive pulley, No. 212 Woodruff.....	1
31	GAS-1021R	MAIN BRUSH PLATE .....	1	69	-----	DRIVE PULLEY Supplied by Wisconsin Motor Corp. Refer to Electrical Equipment in engine parts list for correct part number.	1
32	GEM-12 *	MAIN BRUSH .....	2	70	GAS-1024F	COVER BAND .....	1
33	8X-122	SCREW for grounded brush .....	1	71	X-714	SCREW for cover band .....	1
34	X-195	No. 8-32 thread x 1/2" long, fillister head. LOCKWASHER for brush screw, No. 8 .....	2			No. 10-32 thread x 1 1/2" long, round head.	
35	8X-1496	SCREW for insulated brush .....	1	72	8X-794	NUT for band cover, No. 10-32 thread, square	1
36	GAS-2082RA	No. 8-32 thread x 7/16" long, binding head. 3rd BRUSH PLATE ASSEMBLY .....	1			* BRUSH SET for SERVICE GEM-2012S	
37	GAS-15	Consisting of: BRUSH HOLDER .....	1				
38	GAS-17	BRUSH SPRING .....	1				
39	GAS-1082RA	3rd BRUSH PLATE .....	1				
40	GEM-13 *	3rd BRUSH .....	1				
41	X-195	LOCKWASHER for 3rd brush screw, No. 8 ..	1				
42	8X-878	SCREW for 3rd brush .....	1				
43	GAS-69A	No. 8-32 thread x 7/16" long, fillister head. COVER for commutator end head.....	1				

**ELECTRIC AUTO-LITE IGW-4179 IGNITION TIMER PARTS LIST**  
**WISCONSIN MOTOR PART NUMBER YF-8A-S1**

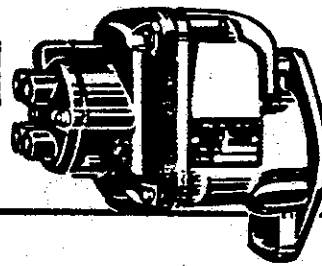


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Ref No	Auto-Lite Part Number	Description	No Req	Ref No	Auto-Lite Part Number	Description	No Req
1	CB-140	INSULATING BUSHING for terminal stud .....	1	19	IGW-3028S	BREAKER CONTACT SET .....	1
2	IB-23	LOCKNUT for contact screw .....	1	20	IGW-3103LA	SHAFT and GOVERNOR ASSEMBLY .....	1
3	IG-90	THRUST WASHER for drive shaft .....	1	21	IGB-3015	Consisting of: SPRING SET for governor weights .....	1
4	IG-495	FELT WICK for cam sleeve .....	1	22	IGW-37	CAM RETAINING SPRING .....	1
5	IG-816A	THRUST WASHER for advance arm .....	1	23	IGW-92	CAM SPACER .....	1
6	IG-1860A-1	ADVANCE ARM .....	1	24	IGW-1014LB	GOVERNOR WEIGHT .....	2
7	IGB-21	INSULATION for terminal stud .....	1	25	IGW-2100LAD	CAM and STOP PLATE .....	1
8	IGB-22	INSULATING WASHER for terminal stud .....	1	26	IGW-2103L	DRIVE SHAFT .....	1
9	IGB-1007	CLAMP SPRING and HINGE for cap .....	2	27	8X-59	SCREW for condenser mounting .....	1
10	IGB-1010	BREAKER PLATE .....	1			No. 8-32 thread x 3/16" long, round head.	
11	IGB-1025	CONDENSER .....	1	28	8X-173	NUT for terminal stud .....	2
12	IGB-2176	BASE ASSEMBLY .....	1			No. 10-32 thread, hexagon.	
13	IG-579A	Includes: BRONZE BEARING (not illustrated) .....	2	29	8X-183A	WASHER for terminal stud, No. 10 plain .....	1
14	IGS-104	THRUST WASHER for drive shaft, upper .....	1	30	12X-195	LOCKWASHER for breaker plate, No. 8 .....	3
15	IGW-38	INSULATING WASHER for terminal stud .....	1	31	12X-196	LOCKWASHER for terminal stud, No. 10 .....	2
16	IGW-39	TERMINAL STUD .....	1	32	8X-304	SCREW for breaker plate mounting .....	3
17	IGW-54	WASHER for terminal stud .....	1			No. 8-32 thread x 3/16" long, round head.	
18	IGW-188	FELT WICK for oiler (not illustrated) .....	1	33	X-490A	OILER .....	1
				34	X-1270	WASHER for terminal stud .....	1
						Shakeproof No. 10.	
				35	X-1276	WASHER for condenser mounting .....	1
						Shakeproof No. 8.	

# FAIRBANKS-MORSE

MAGNETO DIVISION  
BELOIT, WISCONSIN



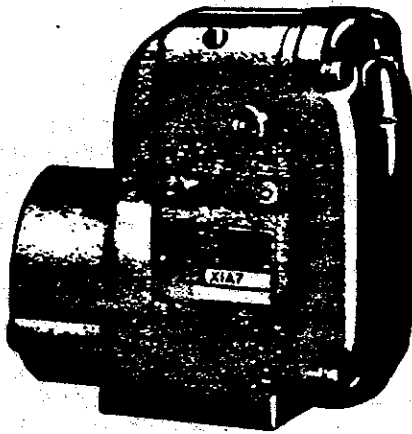
Y-73, 76, 83, 84 Series

Instructions 2921 WB  
SUPERSEDES INSTRUCTION 2921 WA  
April 1957

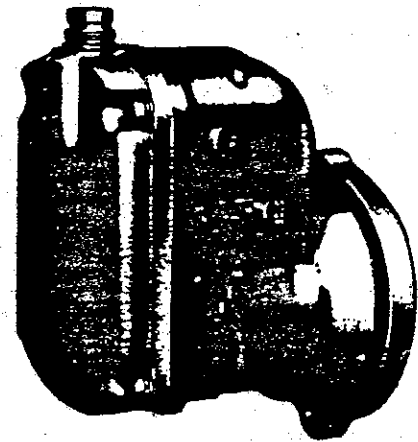
## TYPE FM-X ONE CYLINDER MAGNETOS FOR WISCONSIN MOTORS

Base Mounted for Models ADH, AEH, AFH, AGH and AHH

Flange Mounted for Models ACN, BKN and AEN



BASE MOUNTING



FLANGE MOUNTING

## Service and Adjustment Information

### GENERAL DESCRIPTION

The one cylinder magnetos whose parts are listed in this instruction sheet were built specifically for application on Wisconsin single cylinder engines. The variations of the Type FM-X1A7 magneto are all of a special base mounting design with a shaft height of 35 mm., and the modifications of the Type FM-X1B7 unit have a special mounting flange. The magnetic and electrical circuits of all units are identical, with a two pole magnetic rotor and a single lobe cam producing one ignition spark per revolution. Rotation of the base-mounting types is counterclockwise when viewed from the drive end, while the flange-mounting magnetos rotate clockwise. All are fitted with dependable, single pawl impulse couplings which facilitate starting by providing an intensified and retarded ignition spark at low engine speeds.

### SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of much engine trouble arising from other sources, such as a flooded carburetor, an obstructed air intake, defective ignition connections, or corroded spark plug points. Since a brief engine inspection will often locate the trouble before the magneto is reached, it prevents maladjustment of magneto parts in good condition. It is suggested that the magneto be opened only when it is certain that the ignition spark produced is unsatisfactory. This condition may be determined by simple tests which are easily made in the field.

### TESTING THE IGNITION SPARK

With a properly adjusted spark plug in good condition, the ignition spark should be strong enough to bridge a short gap in addition to the actual spark plug discharge. This may be determined by holding the end of the ignition cable not more than 1/16 in. away from the spark Instructions 2921 WB  
April 1957

plug terminal. The engine should not misfire when this is done. Ignition tests made while any part of the system is wet are useless.

### TESTING THE MAGNETO SPARK

Remove the ignition cable from the end cap socket and insert a short piece of stiff wire. Bend this wire to within 1/8 in. of the engine block. Turn the engine over slowly and watch carefully for the spark which should occur at the instant the impulse coupling releases. If a strong spark is observed, it is recommended that the magneto be eliminated as the source of the difficulty and that the cable, terminals, and spark plug be thoroughly inspected.

### SERVICE OF BREAKER POINTS

Remove the magneto end cap and compare the arrangement of parts with the drawings of Fig. 1. The breaker points should then be inspected for evidence of pitting or pyramiding. A small tungsten file or fine stone may be used to resurface the points, except in the case

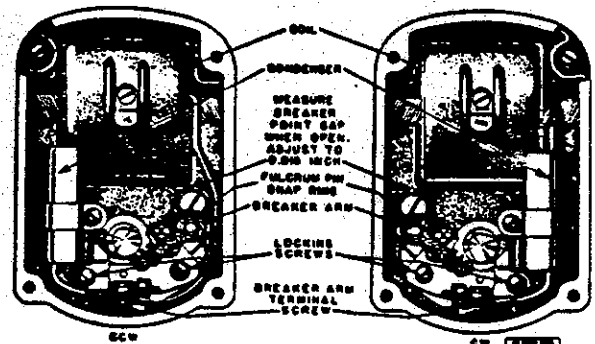


Fig. 1. End View of Type FM-X Magneto

File Section - TYPE FM - X

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in U.S.A.  
MY-24-8

of badly worn or pitted points, which should be replaced. Removal of worn points may be accomplished by removing the fulcrum pin snap ring, the breaker arm terminal screw, and the contact support locking screws, all of which are identified in Fig. 1. If it is necessary to re-surface or replace the breaker points, it will also be necessary to adjust them to their proper clearance, which is 0.015 in. at full separation. This adjustment is made in the following manner: Loosen the contact support locking screws, then move the contact support until the proper breaker point clearance is obtained. This is accomplished by means of a screwdriver inserted in the horizontal slot at the bottom of the contact support and pivoted between the two small bosses on the bearing support. Lock the assembly in place by tightening the locking screws and make a final measurement of the breaker point gap after the locking screws are tightened.

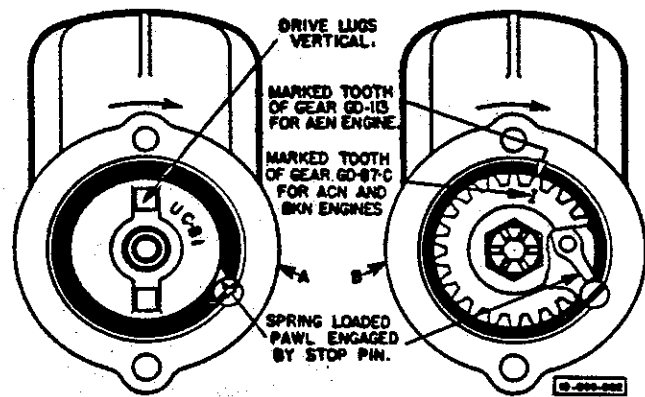


Fig. 2. Mounting Drive Gear

just to the right of the uppermost tooth on the gear. See drawing B of Fig. 2. The tooth on gear GD-113, used on AEN engines, is marked with an X on the outer edge of the tooth and on gear GD-87-C for ACN and BKN engines an I is stamped on the face of the tooth.

**SEALING MAGNETO**

Type FM-X magnetos are sealed at the factory against the entry of dust and moisture through the use of a varnish-coated gasket joint. Opening the magneto for breaker point adjustment or other service necessitates resealing of the magneto upon reassembly. The surfaces between the magneto frame and the end cap should be cleaned thoroughly, a new gasket should be provided, and the joint should be sealed with a coating of FMCO2 Gasket Sealing Varnish.

**SPECIAL DRIVE GEAR**

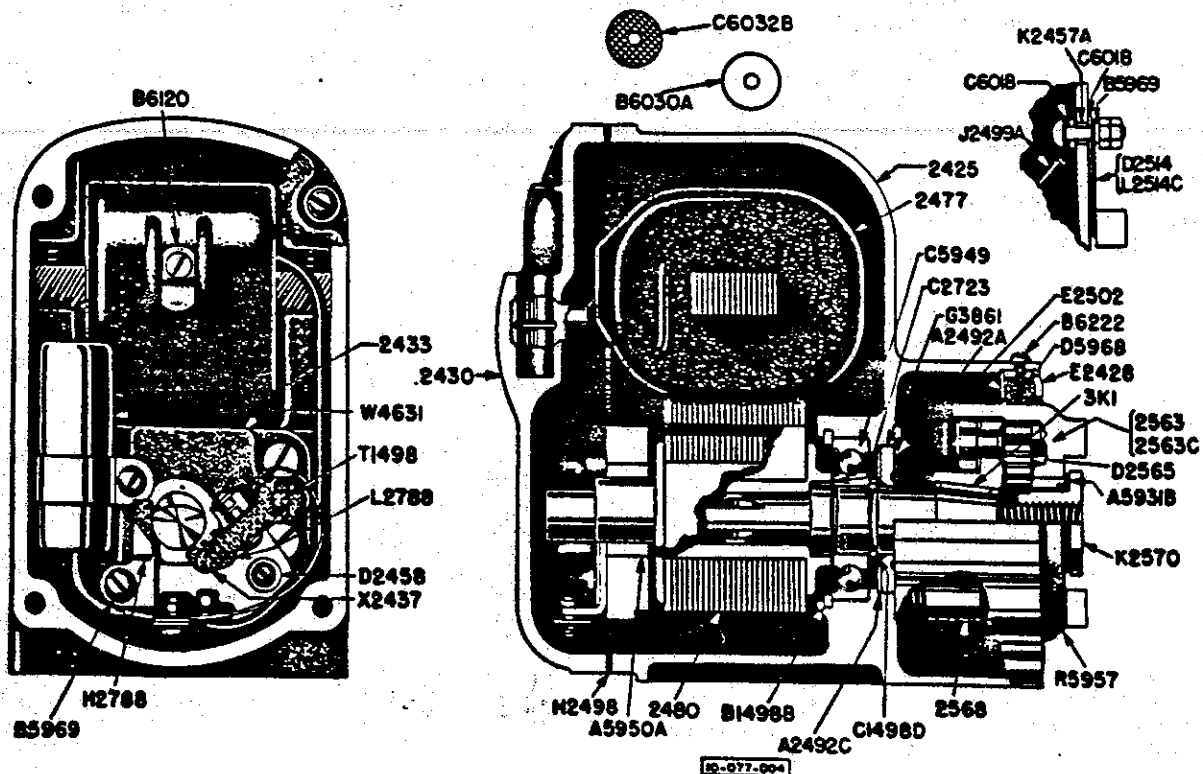
Flange mounting magnetos for Wisconsin motors require a drive gear fitted to the impulse coupling by means of an extended drive shaft. To engage the slotted drive gear correctly with the drive lugs of the coupling, the magneto rotor should be turned by hand until the coupling pawl engages the stop pin in the flange, the coupling drive lugs then being in the position shown by A of Fig. 2. The drive gear should then be fitted to the coupling so that on ACN, BKN and AEN engines the marked tooth of the Wisconsin Motor Magneto gear is

**RADIO-SHIELDED MAGNETOS**

Applications which require complete radio shielding of the ignition system are equipped with a Type FM-XE or a Type FM-XDE magneto. These magnetos are similar to standard models except that the plastic end cap is replaced by an all-metal cover through which the high-tension lead is conducted by means of a special insulated socket. Detailed information covering these units can be obtained upon inquiry.

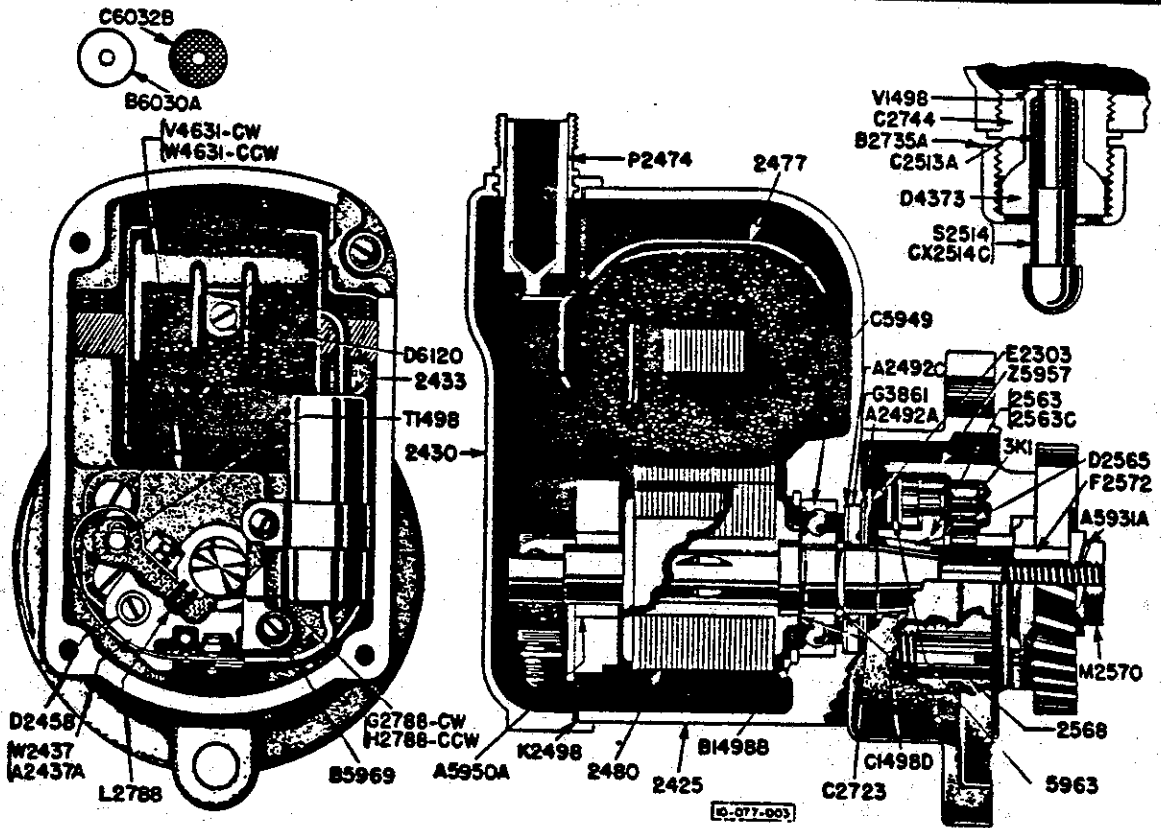
**GROUND SWITCHES**

Magnetos for Wisconsin Motor Corporation one cylinder engines are furnished with either a push button or an insulated lever switch. Both designs function to ground the primary circuit of the magneto when the engine is to be stopped. The switch must be kept closed until the engine is completely at a standstill.



Repair Chart for Standard Base Mounting Magnetos





### Repair Chart for Radio Shielded Flange Mounting Magnetos

Order by Part No.	Name of Part	Number Used				
		FM-X1A7	FM-XE1A7F	FM-X1B7E	FM-XD1B7	FM-XDE1B7F
T1498	Fulcrum Pin Snap Ring	1	1	1	1	1
V1498	Ground Switch Snap Ring	1	1	1	1	1
B1498B	Rotor Drive End Bearing Snap Ring	1	1	1	1	1
C1498D	Rotor Drive End Shaft Snap Ring	1	1	1	1	1
E2303	Oil Slinger Baffle Disc	1	1	1	1	1
RX2425	Frame	1	1	1	1	1
ZX2425	Frame	1	1	1	1	1
E2428	Impulse Coupling Housing Cupped Washer	1	1	1	1	1
AX2430	End Cap	1	1	1	1	1
BZ2430	End Cap	1	1	1	1	1
J2430A	End Cap	1	1	1	1	1
AX-M-R2433	Condenser - Bracket in "R" Position	1	1	1	1	1
W2437	Breaker Arm, Support Bracket and Points CW	1	1	1	1	1
X2437	Breaker Arm, Support Bracket and Points CCW	1	1	1	1	1
A2437A	Breaker Arm, Support Bracket and Points CW	1	1	1	1	1
K2457A	Ground Switch Insulating Bushing	1	1	1	1	1
D2458	Contact Support Locking Screw Plate Washer No. 6	1	1	1	1	1
P2474	Cable Outlet	1	1	1	1	1
S2477C	Coil	1	1	1	1	1
T2477C	Coil	1	1	1	1	1
25SS14A	Coil Bridge Setscrew - 1/4-20x7/8"	1	1	1	1	1
DW2480	Magnetic Rotor	1	1	1	1	1
JZ2480	Magnetic Rotor	1	1	1	1	1
KZ2480	Magnetic Rotor	1	1	1	1	1
A2492A	Rotor Drive End Seal Outer Washer	1	1	1	1	1
A2492C	Rotor Drive End Seal Inner Washer	1	1	1	1	1
H2498	End Cap to Frame Gasket	1	1	1	1	1
K2498	End Cap to Frame Gasket (lead)	1	1	1	1	1

ONE CYLINDER MAGNETOS FOR WISCONSIN MOTORS

Instructions

Order by Part No.	Name of Part	Number Used				
		FM-X1A7	FM-XE1A7E	FM-X1B7E	FM-XD1B7	FM-XDE1B7P
J2499A	Ground Switch Wire Assembly	1				
E2502	Impulse Coupling Outer Shell Plate Washer	1				
C2513A	Ground Switch Button Spring	1				
D2514	Ground Switch Insulated Lever	1				1
S2514	Ground Switch Button	1				1
L2514C	Primary Ground Switch	1				1
CX2514C	Push Button Ground Switch	1				1
W2563	Coupling Hub Assembly	1				1
LX2563	Coupling Hub Assembly	1				1
YX2563	Coupling Hub Assembly	1				1
ZX2563	Coupling Hub Assembly	1				1
W2563C	Impulse Coupling Complete - Type UCL-1 - CCW	1				1
MX2563C	Impulse Coupling Complete - Type UC-8 - CW	1				1
EY2563C	Impulse Coupling Complete - Type UC-1 - CW	1				1
WY2563C	Impulse Coupling Complete - Type UCL-1 - CCW	1				1
D2565	Impulse Coupling Drive Spring	1		1	1	1
F2568	Impulse Coupling Pawl Stop Pin	1		1	1	1
S2568	Impulse Coupling Pawl Stop Pin	1		1	1	1
K2570	Impulse Coupling Nut	1		1	1	1
M2570	Impulse Coupling Nut	1		1	1	1
F2572	Impulse Coupling Bushing	1		1	1	1
C2723	Rotor Thrust Bearing Shim - As needed	2	2	2	2	2
B2735A	Cable Outlet Nut	1	1	1	1	1
C2744	Ground Switch Bushing	1	1	1	1	1
G2788	Cam Wick and Holder	1	1	1	1	1
H2788	Cam Wick and Holder	1	1	1	1	1
L2788	Breaker Arm Wick	1	1	1	1	1
G3861	Rotor Shaft Seal	1	1	1	1	1
D4373	Ground Switch Bushing	1	1	1	1	1
V4631	Bearing Support - CW	1	1	1	1	1
W4631	Bearing Support - CCW	1	1	1	1	1
A5913A	Impulse Coupling Nut Lockwire	1	1	1	1	1
A5931B	Impulse Coupling Nut Lockwasher	1	1	1	1	1
C5949	Rotor Drive End Bearing	1	1	1	1	1
A5950A	Rotor Cam End Bearing	1	1	1	1	1
R5957	Impulse Coupling Shell - CCW	1	1	1	1	1
Z5957	Impulse Coupling Shell - CW	1	1	1	1	1
D5963	Impulse Coupling Pawl Spring	1	1	1	1	1
D5968	Impulse Coupling Outer Shell Felt Washer	1	1	1	1	1
B5969	Contact Support Locking Screw Plate Washer	1	1	1	1	1
B5969	Ground Switch Plate Washer	1	1	1	1	1
C6018	Ground Switch Insulating Washer	1	1	1	1	1
B6030A	Vent Cover	2	2	2	2	2
C6032B	Vent Screen	2	2	2	2	2
B6120	Coil Clip	1	1	1	1	1
D6120	Coil Clip	1	1	1	1	1
B6222	Impulse Coupling Cupped Washer Screw	2	2	1	1	1
3K1	Key - Rotor Shaft to Impulse Coupling	1	1	1	1	1

173B

FAIRBANKS, MORSE & CO.

MAGNETO DIVISION - BELOIT, WISCONSIN

# MARVEL-SCHEBLER CARBURETOR

L-52 Series

Marvel-Schebler VH-53, Wisconsin Motor L-52-C  
Marvel-Schebler VH-63, Wisconsin Motor L-52-G  
Marvel-Schebler VH-70, Wisconsin Motor L-52-E

— Marvel-Schebler VH-90, Wisconsin Motor L-52-J  
— Marvel-Schebler VH-92, Wisconsin Motor L-52-K  
— Marvel-Schebler VH-93, Wisconsin Motor L-52-L

## DESCRIPTION

1. The Models VH-53 (Wis. No. L-52-C) and VH-92 (Wis. No. L-52-K) are float type carburetors with main fuel adjustment and idle adjustment, designed for use on Models AB, ABS, ABN, ABM, ACN, AK, AKS, AKN, AKM and BKN Wisconsin Air Cooled Gasoline Engines, and are made up of two major units - a cast throttle body and a stamped steel fuel bowl. The Models VH-70 (Wis. No. L-52-E) and VH-93 (Wis. No. L-52-L) are similar to the above carburetors except that they have a fixed main nozzle instead of an adjustable nozzle. Model VH-90 (Wis. No. L-52-J) is less float, valve seat and gasket, with main fuel adjustment.
2. Model VH-53 replaces Model VH-12 (Wis. No. L-52-A) and Model VH-92 replaces Models VH-14 (Wis. No. L-52) and VH-63 (Wis. No. L-52-G) on above listed Wisconsin engines. Models VH-53, VH-63, VH-70, VH-92 and VH-93 carburetors have dust shields provided on the throttle shaft to eliminate dirt and other abrasive materials, thereby increasing throttle shaft life.
3. The model number is stamped on a square boss, provided for it on the body casting.

## OPERATION

With the throttle fly slightly open from the closed position to permit idling, the main fuel nozzle may be delivering little or no fuel, as only a very small quantity of air passes through the mixing chamber at this time. An idle passage is provided to carry sufficient air and fuel to the engine side of the throttle fly where the suction is high. This passage takes the air from the inlet side of the venturi to the intersection of the vertical idle fuel passage (which connects with the main nozzle assembly) and delivers the air-fuel mixture through an opening controlled by the idle adjusting needle to the throttle barrel just beyond or on the engine side of the throttle fly. The idle system is practically independent of the main nozzle system, and only controls the fuel metering at low engine speed. As air-flow increases with the opening of the throttle fly the main nozzle begins to deliver fuel, and the delivery from the idle system decreases until at full throttle, delivery is entirely from the main nozzle.

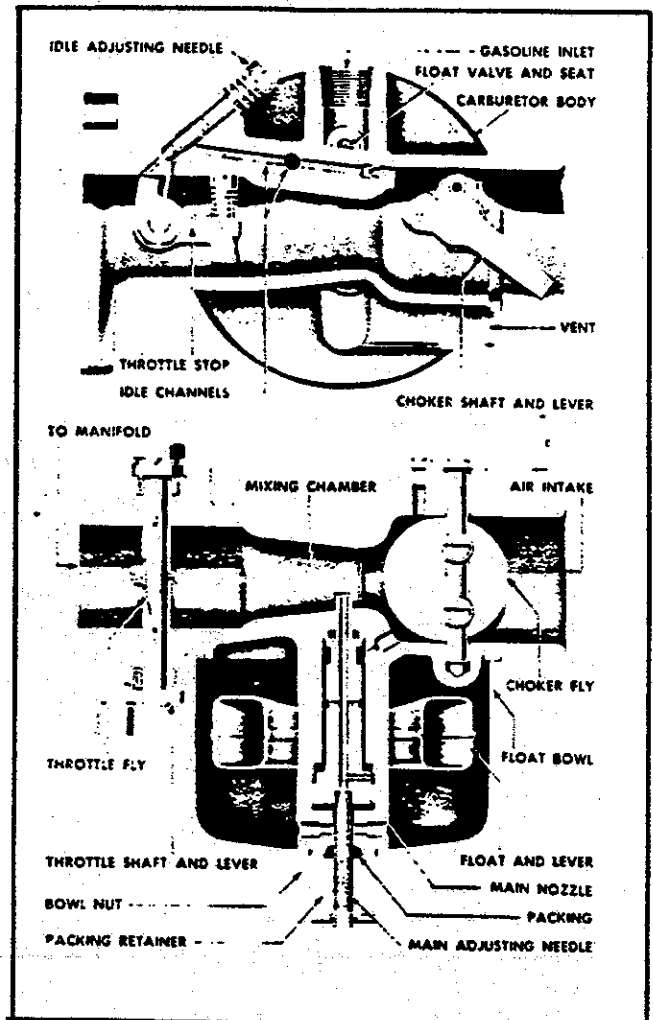
## ADJUSTING CARBURETOR

1. Set the main adjusting needle from 1-1/2 to 1-7/8 turns open, (not applicable to VH-70 (L-52E) and VH-93 (L-52L) carburetors since these have a fixed main nozzle.)

### Caution:

When setting the main adjusting needle in order to find its position, do not seat the needle too firmly, as this will damage the needle point and make satisfactory adjustment impossible.

2. To start the engine, close the choker fly. When the engine starts, the choker will automatically open to the proper warm-up position. After engine has warmed up, open choker fully.
3. After the engine has been thoroughly warmed up, make a final adjustment with the choker wide open by turning the main adjusting needle to that position at which the engine operates most smoothly with full load. This setting will also be satisfactory for starting a cold engine.
4. Close the throttle and adjust the throttle stop screw to give the proper idle speed. The idle adjusting needle should be in proper adjustment at about 1/2 to 3/4 turns open.



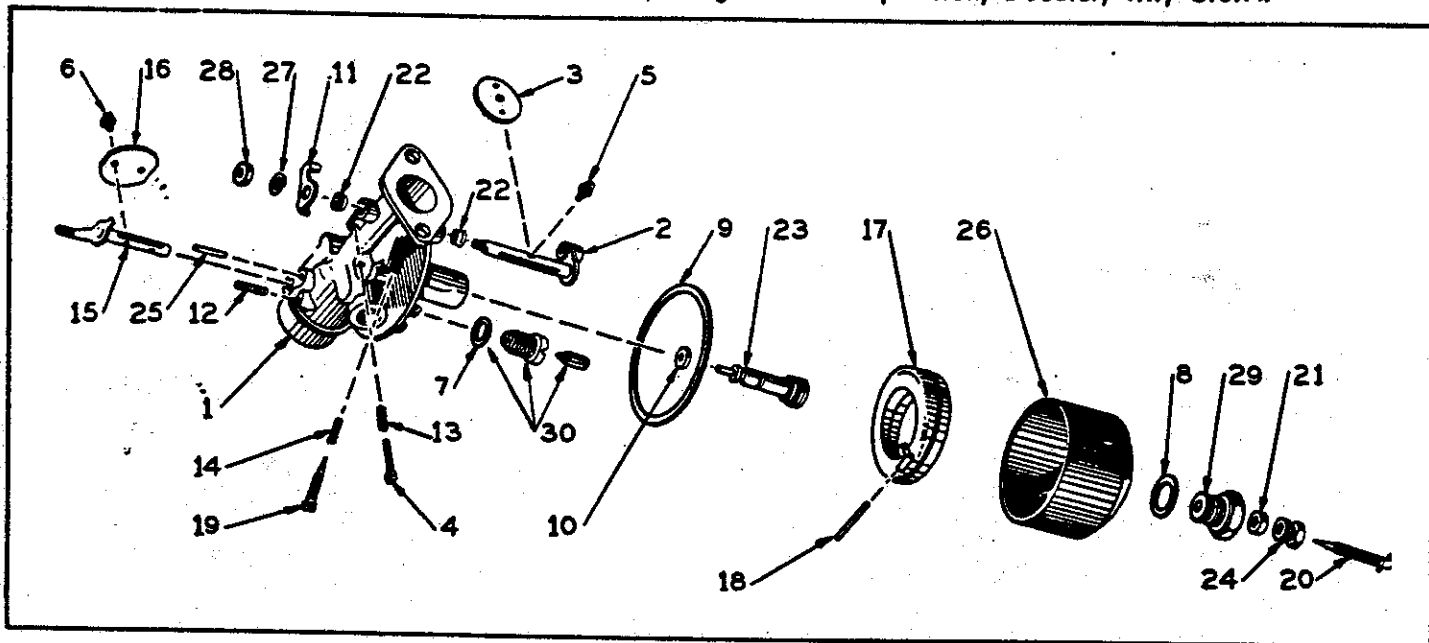
Turn the idle adjusting needle open until engine rolls from "richness." Then turn the needle towards the seat until the engine runs irregularly from "leanness." From the "lean" setting, open the idle adjusting needle to the richest mixture that will not cause the engine to "roll" or run unevenly. This adjustment will, in most cases, give a slower idling speed than a slightly leaner adjustment with the same throttle stop screw setting, but will give the smoothest idle operation. After the idle adjusting needle setting has been made, it may be necessary to revise the throttle stop screw setting to give the proper idling speed.

### CAUTION:

Care should be taken not to damage the idle adjusting needle nor its seat by turning the idle adjusting needle too tightly against the seat, as damage to either of these parts will make a satisfactory idle adjustment very difficult.

MARVEL-SCHEBLER CARBURETOR DIVISION, BORG-WARNER CORPORATION  
DECATUR, ILL., U.S.A.

Marvel-Schebler Carburetor Division, Borg-Warner Corporation, Decatur, Ill., U.S.A.



SERVICE PARTS LIST

Ref No	Marvel-Schebler Part Numbers						Description
	Wisconsin L-52-C Marvel-Schebler VH-53	Wisconsin L-52-G Marvel-Schebler VH-63	Wisconsin L-52-E Marvel-Schebler VH-70	Wisconsin L-52-J Marvel-Schebler VH-90	Wisconsin L-52-K Marvel-Schebler VH-92	Wisconsin L-52-L Marvel-Schebler VH-93	
1	10-3474	10-3687	10-3672	10-4181	10-4236	10-4241	CARBURETOR ASSEMBLY - Complete
2	10-3475	10-3688	10-3475	10-4303	10-4246	10-4246	CARBURETOR BODY ASSEMBLY
3	13-924	13-849	13-924	13-924	13-924	13-924	THROTTLE SHAFT ASSEMBLY
4	14-216	---	14-216	14-216	14-216	14-216	THROTTLE FLY (12°)
5	---	14-204	---	---	---	---	THROTTLE FLY (10°)
6	15-28	15-28	15-28	15-28	15-28	15-28	SCREW - No. 6-32 x 1/2" Fillister Head (Throttle Adj.)
7	---	15-A46	---	---	---	---	SCREW - No. 4-40 x 1/4" Sems (Throttle Fly)
8	15-A47	---	15-A47	15-A47	15-A47	15-A47	SCREW - No. 4-40 x 3/16" Sems (Throttle Fly)
9	15-A47	15-A47	15-A47	15-A47	15-A47	15-A47	SCREW - No. 4-40 x 3/16" Sems (Choke Shaft - 2)
10	16-4	16-4	16-4	16-4	16-4	16-4	GASKET - Float Valve Seat
11	16-14	16-14	16-14	16-14	16-14	16-14	GASKET - Bowl Nut to Bowl
12	16-A83	16-A83	16-A83	16-A83	16-A83	16-A83	GASKET - Body to Bowl
13	16-A95	16-A95	16-A95	16-A95	16-A95	16-A95	GASKET - Nozzle
14	16-638	16-638	16-638	16-701	16-638	16-638	GASKET ASSORTMENT
15	21-161	21-161	21-161	21-161	21-161	21-161	STOP - Throttle
16	24-A63	24-A63	24-A63	24-A63	24-A63	24-A63	SPRING - Choke Lever Friction
17	24-A69	24-A69	24-A69	24-A69	24-A69	24-A69	SPRING - Throttle Adjusting Screw
18	24-A136	24-A136	24-A136	24-A136	24-A136	24-A136	SPRING - Idle Adjusting Needle
19	26-673	26-673	26-673	26-673	26-673	26-673	CHOKE SHAFT ASSEMBLY
20	27-185	27-185	27-185	27-185	27-185	27-185	CHOKE FLY
21	30-658	30-658	30-658	---	30-658	30-658	FLOAT and LEVER ASSEMBLY
22	32-16	32-16	32-16	---	32-16	32-16	SHAFT - Float Lever
23	43-129	43-129	43-129	43-129	43-129	43-129	NEEDLE - Idle Adjusting
24	43-604	43-604	---	43-604	43-604	---	MAIN ADJUSTING NEEDLE, PACKING NUT and RETAINER ASSEMBLY
25	44-51	44-51	---	44-51	44-51	---	PACKING - Main Adjusting Needle
26	44-86	44-86	44-86	44-86	44-86	44-86	PACKING (2) - Throttle Shaft
27	47-373	47-331	47-730	44-331	47-331	47-766	NOZZLE
28	55-285	55-285	---	55-285	55-285	---	RETAINER - Main Adjusting Needle Packing
29	62-61	62-61	62-61	62-61	62-61	62-61	PIN - Choker Stop
30	65-170	65-170	65-170	65-720	65-170	65-170	FLOAT BOWL
	78-62	78-62	78-62	78-A60	78-62	78-62	LOCKWASHER - Throttle Shaft (No. 8 Screw)
	81-145	81-145	81-145	81-145	81-145	81-145	NUT - No. 8-32 - Throttle Shaft
	81-150	81-150	---	81-150	81-150	---	BOWL NUT
	---	---	80-216	---	---	80-216	BOWL RETAINER and NOZZLE PLUG (Not illustrated)
	233-536	233-536	233-536	---	233-536	233-536	FLOAT VALVE, SEAT and GASKET ASSEMBLY
	---	---	---	16-A56	---	---	GASKET - Fuel Overflow Fitting (Not illustrated)
	---	---	---	68-1	---	---	FITTING - Gas Overflow (Not illustrated)
	---	---	---	81-242	---	---	LOCKNUT - 1/8" Pipe - (Not illustrated)
	---	---	---	178-40	---	---	FUEL BAFFLE (Not illustrated)
	286-1024	286-1026	286-1051	286-1305	286-1051	286-1051	REPAIR KIT - Service

# CARBURETOR

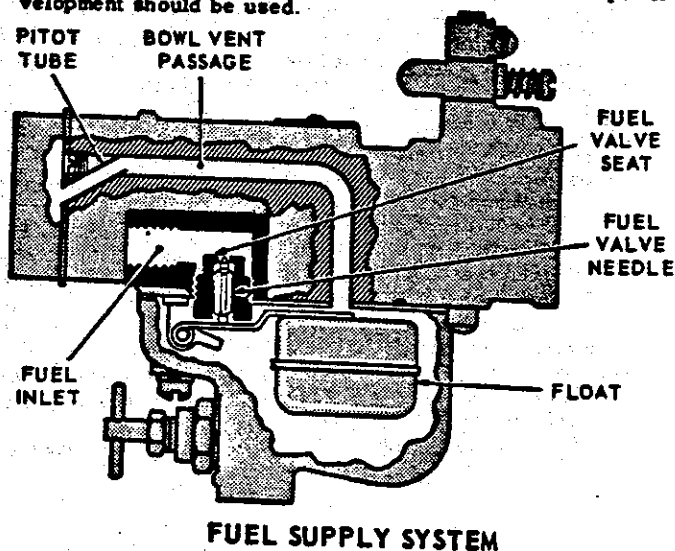
ZENITH MODEL 87

WISCONSIN L-51 SERIES

The Zenith 87-Series is a horizontal carburetor with a concentric fuel bowl. It is a "balanced" carburetor, because all air for fuel chamber, and metering well ventilation and idling must come through the air cleaner. Air cleaner restrictions have a minimum influence on the fuel-air ratio when a carburetor is thus "balanced".

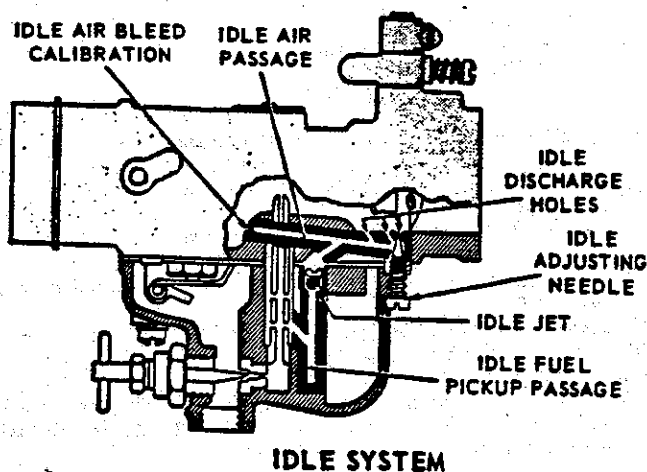
The main jet and discharge jet are centrally located. The metering well which completely surrounds the discharge jet is in the center of the fuel bowl assembly. This construction permits extremely high angle operation in any direction.

The venturi, which is part of the throttle body casting, measures the volume of air that passes through the carburetor. In selecting the venturi size, the smallest size that will permit full power development should be used.



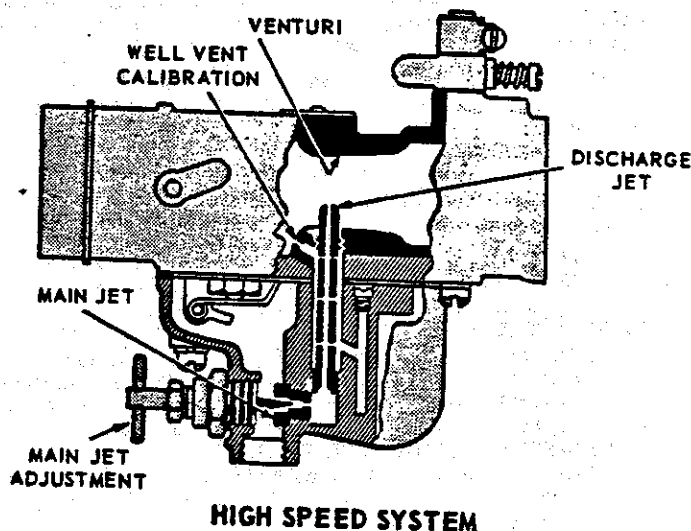
**FUEL SUPPLY SYSTEM.** Fuel under normal pressure entering the float chamber through the fuel valve seat is controlled by the twin float which, moving on its axle, closes the needle valve when the fuel reaches the proper level in the bowl.

**IDLING SYSTEM.** At idling speeds the throttle plate is almost closed, thus a very high suction exists at the edge of the throttle plate. At this point the idle discharge orifices are located. All fuel for idling and part throttle operation is supplied through the main jet. Fuel from the float chamber flows through the main jet into the metering well. Fuel for idling is drawn from this well through the calibration, or metering orifice, in the center of the idling jet. As the fuel reaches the idling channel it is mixed with air which is admitted through a calibrated orifice in the channel



from the inside of the air intake to form an emulsion. This emulsion is discharged into the air stream, to form the idling mixture through two holes, one of which is controlled by the idle adjusting needle. Turning the adjusting needle counter-clockwise (out) permits more of the emulsion to reach the air stream and make the idling mixture richer while turning the needle in (clockwise) cuts off the amount of the emulsion reaching the air stream and makes the mixture leaner.

**HIGH SPEED SYSTEM.** As the throttle is opened, the suction of the idling system diminishes, but the increased volume of air entering the engine through the venturi creates sufficient vacuum (suction) on the discharge jet to draw an emulsion of fuel and air from the metering well which receives its fuel from the main jet and its air from the well vent. The flow characteristics of the discharge jet are influenced by the size, location, and number of



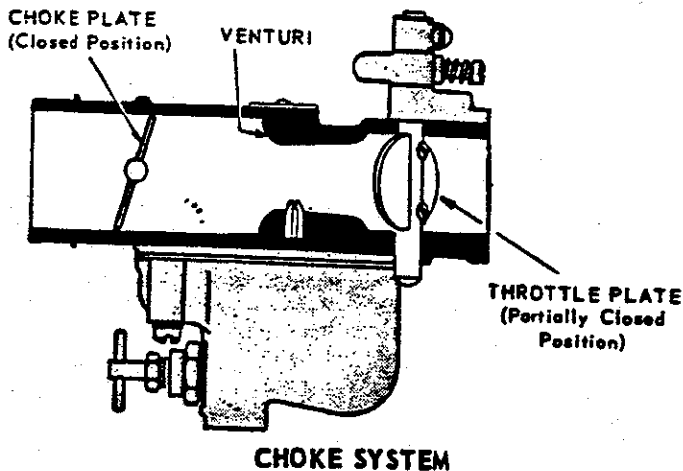
holes in the sides of that part of the jet which is in the metering well, as well as by the sizes of the discharge jet orifice, the size of the main jet, and the size of the well vent. The well vent is located in the air intake and permits air to enter the top of the metering well around the outside of the discharge jet. The flow of fuel through the main jet is controlled by the main jet adjustment.

**CHOKE SYSTEM.** Starting a cold engine requires a much richer mixture of fuel and air. Moving the choke lever to close the choke plate restricts the air entering the carburetor, except at the pitot tube to the bowl vent, and increases the suction on the idling system which makes the mixture richer.

**STARTING THE ENGINE.** Before cranking the engine, the carburetor throttle should be opened a little to expose both idle discharge ports to suction. The choke should be fully closed until the engine starts, then opened a little to prevent stalling from being over-choked, then when the engine is fully warmed up the choke can be returned to wide open position and the throttle closed to the idling position.

**ADJUSTMENTS.** Adjust the throttle stop screw to obtain the desired idling speed by turning the screw in (clockwise) to increase the speed and out (counter-clockwise) to decrease the engine speed.

Adjust the idle adjusting needle to obtain smooth idling of the engine at idling speed. Turn the needle out (counter-clockwise) to make the mixture richer, and in (clockwise) to make it leaner.



Adjust the main jet adjustment for full power of the engine while under a load. Turning the adjusting needle out (counter-clockwise) makes the mixture richer while turning the needle in (clockwise) cuts off the flow of fuel to make the mixture leaner.

**NOTE:** Do not try to operate on a very lean mixture; better performance and better fuel economy will be obtained if the mixture is not too lean.

## DISASSEMBLY

### A. IDENTIFY CARBURETOR

- Check numbers on metal identification disk riveted to top of throttle body. The inside number next to the rivet is the Zenith assembly number and the one next to the outer edge of the disk is the vehicle manufacturer's.

### B. DISASSEMBLED VIEWS

- The disassembled view will identify the various component parts and show the relation to assembly. Use the disassembled view to identify and locate parts when performing the disassembly and reassembly operations.

### C. SEPARATE CARBURETOR BODIES

- Remove the three bowl assembly screws (37 & 38) and lockwashers (36) and separate fuel bowl (30) from throttle body (9).

### D. DISASSEMBLE FUEL BOWL

- Remove the main jet adjustment (34) and fibre washer (33), using a 9/16" open end wrench.
- Remove the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.
- Remove the Idle Jet (29), using a small screwdriver.
- Remove the bowl drain plug (35).

### E. DISASSEMBLE THROTTLE BODY

- Remove the float axle (26) by pressing against the end with the blade of a screwdriver.
- Remove the float (27).
- Remove the fuel valve needle (25), using the fingers.
- Remove the fuel bowl to throttle body gasket (28).
- Remove the main discharge jet (23), using a small screwdriver.
- Remove the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.
- Remove the idle adjusting needle (11) and spring (10).

## CLEAN AND INSPECT PARTS

### A. CLEAN PARTS

- Clean all metal parts thoroughly with cleaning solution and rinse in solvent.
- Blow out all passages in the air intake assembly, fuel bowl assembly and throttle body. **NOTE:** Be sure all carbon deposits have been removed from throttle bore and idle discharge holes. It is advisable to reverse flow of compressed air in all passages to insure all dirt has been removed. Never use a wire or drill to clean out jets.

### B. INSPECT PARTS

- Float Assembly.** Replace float assembly if loaded with gasoline, damaged, or if float axle bearing is worn excessively. Inspect top side of float lever for wear where it contacts fuel valve needle.
- Float Axle.** Replace if any wear can be visually detected

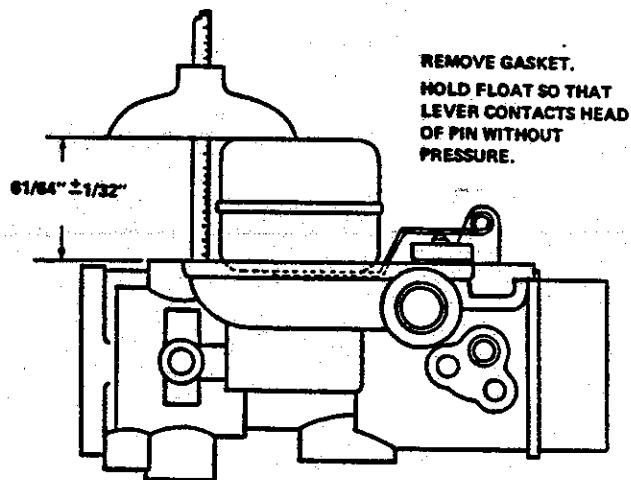
on the bearing surface.

- Fuel Valve Seat & Needle Assembly.** Replace fuel valve seat and needle because both parts wear and may cause improper float level.
- Idle Adjusting Needle and Spring.** Inspect point of needle. This must be smooth and free of ridges.
- Gaskets and Fibre Washers.** Replace all gaskets and fibre washers every time the carburetor is disassembled.
- Check Specifications.** Verify the correctness of the following parts. Numbers will be found on the parts. Venturi; Main Jet; Idling Jet; and Fuel Valve Seat.

## REASSEMBLY

### A. REASSEMBLE THROTTLE BODY

- Install the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.
- Install the main discharge jet (23), using a small screwdriver.
- Install fuel valve needle (25), in seat (25), followed by float (27) and float axle (26). **NOTE:** Insert tapered end of float axle (26) into float bracket on side opposite slot and push through the other side. Press float axle (26) into slotted side until the axle is centered in bracket.
- Fuel Level.** Check position of float assembly for correct measurement to obtain proper fuel level using a depth gage. **NOTE:** Do not bend, twist, or apply pressure on the float body.
- With bowl cover assembly in an inverted position, viewed from free end of float, the float body must be centered and at right angles to the machined surface. The float setting is measured from the machined surface (no gasket) of float bowl-cover to top side of float body at highest point. This measurement should be 61/64", plus or minus 1/32".
- Bending Float Lever.** To increase or decrease distance between float body and machined surface use long nosed pliers and bend lever close to float body. **NOTE:** Replace with new float if position is off more than 1/16".



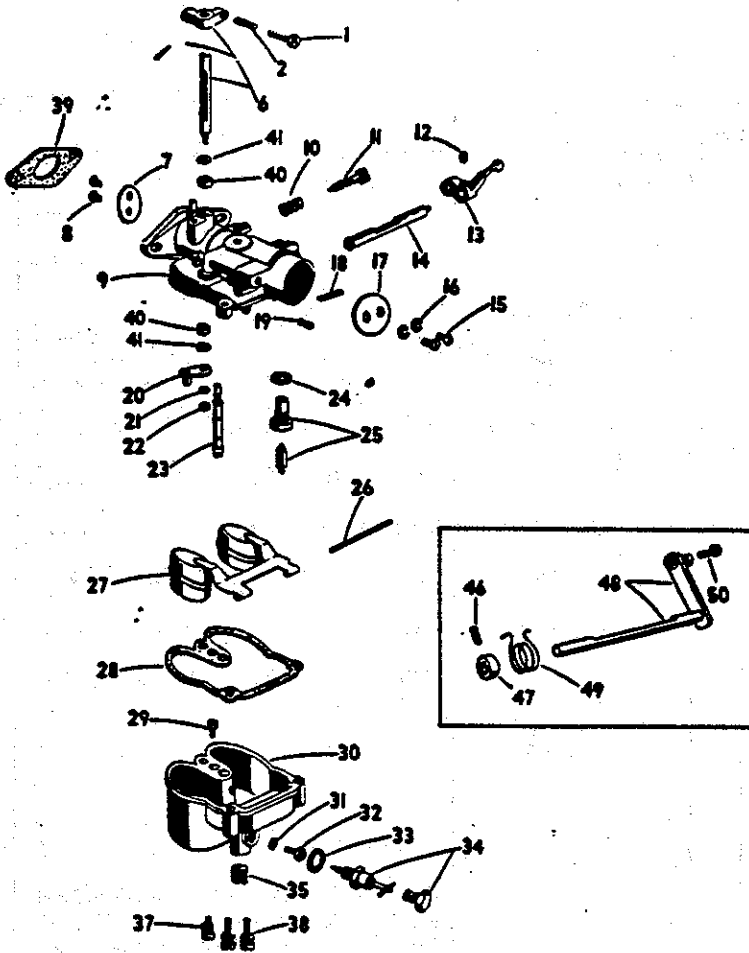
## FLOAT SETTING

- Install throttle body to fuel bowl assembly gasket (29) on machined surface of throttle body (9).
  - Install the idle adjusting needle (11) and spring (10).
- ### B. REASSEMBLE FUEL BOWL
- Install the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.
  - Install the main jet adjustment (34) and fibre washer (33), using a 9/16" open end wrench.
  - Install the idle jet (29), using a small screwdriver.
  - Install the bowl drain plug (35).
- ### C. REASSEMBLE CARBURETOR BODIES
- Install the three bowl assembly screws (38) and lockwashers (36) through the fuel bowl and into the throttle body and draw down firmly and evenly.

## SPECIAL TOOLS

- The special tools recommended for the 87-Series carburetors are:
- C161-83 Main Jet Wrench.
  - C161-85 Fuel Valve Seat Wrench.

## SERVICE PARTS LIST for ZENITH 87 Series CARBURETOR



CARB. REF.	ZENITH ASSEMBLY NO.	WISCONSIN PART NO.
1	10223	L-51
2	10258	L-51-A
3	S-1151	L-51-B
4	10730	L-51-C
5	11193 or (5A) 11026	L-51-E
6	11194 or (6A) 11027	L-51-F
7	10956	L-51-G
8	11385	L-51-H
9	11412	L-51-J
10	11484	L-51-K
11	12025	L-51-L
12	12539	L-51-M

Item No	Part Number	Description	No Req	Item No	Part Number	Description	No Req
1	93-T1858-10	SCREW-STOP LEVER .....	1	10	93-C111-155	SPRING-ADJUSTMENT NEEDLE .....	1
2	93-C111-10	SPRING-STOP SCREW .....	1	11	93-C46-49	NEEDLE-IDLE ADJUSTMENT .....	1
6	93-C29-721	SHAFT & LEVER-THROTTLE for 4, 7 .....	1	12	93-T10-11	SCREW-CHOKE LEVER SET for 2, 3, 5, 5A, 6, 6A, 8, 9, 10, 12 .....	1
	93-C29-1120	SHAFT & LEVER-THROTTLE for 2, 3, 5, 5A, 6, 6A, 8, 9, 10 .....	1	13	93-C106-152	LEVER-CHOKE for 2, 3, 5A, 6A .....	1
	93-C29-1313	SHAFT & LEVER-THROTTLE for 1, 7, 11 .....	1		93-C106-182	LEVER-CHOKE for 5, 6, 8, 9, 10, 12 .....	1
	93-C29-1439	SHAFT & LEVER-THROTTLE for 12 .....	1	14	93-C105-208	SHAFT-CHOKE for 2, 3, 5A, 6A .....	1
7	93-C21-157	PLATE-THROTTLE for 1, 4, 7, 11 .....	1	15	93-C140-47	SCREW-CHOKE PLATE, with L.W. ....	2
	93-C21-159	PLATE-THROTTLE for 2, 3 .....	1	17	93-C102-87	PLATE-CHOKE for 1, 2, 3, 4, 7, 11 .....	1
	93-C21-182	PLATE-THROTTLE for 5, 5A, 6, 6A, 8, 9, 10, 12 .....	1		93-C102-104	PLATE-CHOKE for 5, 5A, 6, 6A, 8, 9, 10, 12 ..	1
8	93-C136-1	SCREW-THROTTLE PLATE for 4 .....	1	18	93-C63-140	TUBE-BOWL VENT .....	1
	93-T31555-3	SCREW-THROTTLE PLATE for 1, 2, 3, 5, 5A, 6, 6A, 7, 8, 9, 10, 11, 12 .....	2	19	93-T10-10	SCREW-VENT TUBE SET .....	1
9		BODY-THROTTLE (Not serviceable. Purchase complete carburetor).					

Order parts from nearest **SERVICE CENTER** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.

**CARBURETOR SERVICE PARTS LIST**  
ZENITH MODEL 87                      WISCONSIN L-51 SERIES

Item No	Part Number	Description	No Req	Item No	Part Number	Description	No Req
20	93-C25-120 93-C25-148	LEVER-THROTTLE for 2, 3 ..... LEVER-THROTTLE for 5, 5A, 6, 6A, 8, 9, 10, 12 .....	1 1	46	93-T10-11	SCREW-THRUST COLLAR SET for 1, 4, 7, 11 .....	1
21	93-T41-10	LOCKWASHER-SHAFT NUT for 2, 3, 5, 5A, 6, 6A, 8, 9, 10, 12 .....	1	47	93-C130-29	COLLAR-SHAFT THRUST for 1, 4, 7, 11 ..	1
22	93-T2551	NUT-THROTTLE SHAFT for 2, 3, 5, 5A, 6, 6A, 8, 9, 10, 12 .....	1	48	93-C108-92 93-C108-113 93-C108-134 93-C108-127	SHAFT and LEVER-CHOKE for 1, 7 ..... SHAFT and LEVER-CHOKE for 4 ..... SHAFT and LEVER-CHOKE for 9 ..... SHAFT and LEVER-CHOKE for 5, 6, 8, 10, 12 .....	1 1 1 1
23	93-C66-69-1-26 93-C66-71-1-26 93-C66-89-1-26 93-C66-72-1-26	JET-DISCHARGE for 1, 4, 7, 11 ..... JET-DISCHARGE for 2, 6A ..... JET-DISCHARGE for 5, 5A, 8, 9, 12 ..... JET-DISCHARGE for 3, 6, 10 .....	1 1 1 1	49	93-C117-58	SPRING-CHOKE LEVER for 1, 4, 7 .....	1
24	†93-T56-20	WASHER-FUEL VALVE SEAT .....	1	50	93-T858-6	SCREW-SWIVEL for 1, 4, 7, 11 .....	1
25	†93-C81-17-35 †93-C81-17-30	VALVE and SEAT-FUEL for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12 ..... VALVE and SEAT-FUEL for 7, 11 .....	1 1	-	93-T75-3	SEAL-CHOKE SHAFT (not illus.) for 9 .....	2
26	†93-C120-18	AXLE-FLOAT .....	1	-	93-C181-296	GASKET KIT .....	
27	93-C85-97	FLOAT .....	1	-	LQ-35	KIT-REPAIR PARTS for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12 .....	
28	†93-C142-55	GASKET-BOWL .....	1	-	LQ-34	KIT-REPAIR PARTS for 7, 11 .....	
29	93-C52-2-11 93-C52-2-10	JET-IDLE for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12 ..... JET-IDLE for 7, 11 .....	1 1			†Parts in Repair Kit.	
30	93-B3-98	BOWL-FUEL ASSEMBLY .....	1			NOTE: The Venturi, Idle Air Vent and Well Vent are Calibrated Parts of the Throttle Body (Item 9) and are not Readily Remov- able.	
31	†93-T56-24	WASHER-MAIN JET .....	1				
32	93-C52-7-20 93-C52-7-21 93-C52-7-22 93-C52-7-24 93-C52-7-26 93-C52-7-23 93-C52-7-27	JET-MAIN for 8 ..... JET-MAIN for 9 ..... JET-MAIN for 1, 10 ..... JET-MAIN for 2, 5, 5A, 12 ..... JET-MAIN for 4 ..... JET-MAIN for 7, 11 ..... JET-MAIN for 3, 6, 6A .....	1 1 1 1 1 1 1				
33	†93-T56-23	WASHER-MAIN PASSAGE .....	1				
34	93-C138-23 93-C138-24 93-C71-49	PLUG-MAIN PASSAGE for 4 ..... PLUG-MAIN PASSAGE for 1, 7, 8, 9, 10, 11 ADJUSTMENT-MAIN for 2, 3, 5, 5A, 6, 6A, 12 .....	1 1 1				
35	93-T91-1	PLUG-BOWL DRAIN .....	1				
37	93-T30158-9	SCREW-BOWL to BODY (short) .....	1				
38	93-T30158-14	SCREW-BOWL to BODY (long) .....	2				
39	† QC-53	GASKET-FLANGE .....	1				
40	93-T48-7	SEAL-THROTTLE SHAFT .....	2				
41	93-T52-13	RETAINER-SHAFT SEAL .....	2				

Order parts from nearest **SERVICE CENTER** shown in directory following parts list.  
**IMPORTANT:** Always give Model, Specification and Serial Numbers as shown on name plate.



WICO MODEL XH-1 FLANGE MOUNTED MAGNETO Y-57, 62, 68 Series  
WICO SPEC. No. XH-1295D (Replaces XH-1295C) WISCONSIN No. Y-68A used on ABN, ACN, AKN, BKN  
OBSOLETE MAGNETOS XH-1295 (WIS. Y-57), XH-1295Y (WIS. Y-57C), XH-1295B (WIS. Y-68)  
WICO SPEC. No. XH-1995B (Replaces XH-1995) WISCONSIN No. Y-62 used on AEN

## INSTRUCTIONS

### TIMING

The magneto is properly timed to the engine at the factory. If it becomes necessary to retime the magneto to the engine, refer to the diagram and instructions in the engine instruction book.

### LUBRICATION

The only lubricating point in the magneto is the cam wiper felt, (Ref. No. 19). This felt, which lubricates the breaker arm at point of contact with the cam, should be replaced whenever it is necessary to replace the breaker contacts.

### IMPORTANT

Incorrectly adjusted spark plug gaps cause magneto failure more frequently than any other condition.

Spark plugs should be inspected at frequent intervals, the size of the gap should be carefully checked and adjusted and the plugs thoroughly cleaned.

All oil, grease, and dirt should frequently be wiped off the magneto, lead wires, and spark plug insulators. Keeping these parts clean and the spark plugs properly adjusted will improve the engine performance and at the same time will prolong the life of the magneto.

### MAGNETO COVER

The magneto cover, (Ref. No. 50), can be removed by loosening the four screws (Ref. No. 36) which hold it in place. When replacing the cover be sure that the cover gasket (Ref. No. 35) is in its proper place.

### BREAKER CONTACTS - REPLACEMENT AND ADJUSTMENT

The breaker contacts should be adjusted to .015" when fully opened. To adjust the contacts, loosen the two clamp screws (Ref. No. 40) enough so that the contact plate can be moved.

Insert the end of a small screw driver in the adjusting slot and open or close the contacts by moving the plate until the opening is .015", measuring with a feeler gauge of that thickness, tighten the two clamp screws.

To replace the contacts remove the breaker spring clamp screw (Ref. No. 43), the breaker arm lock and

washer (Ref. No. 18) and (Ref. No. 14), then lift the breaker arm from its pivot. Remove the aligning washer, 5717, and the two fixed contact clamp screws (Ref. No. 40). The breaker plate can then be removed.

If the contacts need replacing it is recommended that both the fixed contact and the breaker arm be replaced at the same time, using replacement breaker set X5996 (Ref. No. 42).

After assembly the contacts should be adjusted as described above. The contacts should be kept clean at all times. Lacquer thinner is an ideal cleaner for this purpose. Use WICO tool S-5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

### CONDENSER

To remove the condenser (Ref. No. 34), first disconnect the condenser lead by removing the breaker arm spring screw (Ref. No. 43), then remove the two condenser clamp screws (Ref. No. 22) and the condenser clamp (Ref. No. 30). When replacing the condenser make sure it is properly placed and that the clamp screws are securely tightened.

### COIL AND COIL CORE

The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw (Ref. No. 43), take out the two coil core clamp screws (Ref. No. 21) and remove the clamps (Ref. No. 38). The coil and core can then be pulled from the housing. When replacing this group make sure that the bare primary wire is connected under the core clamp screw and that the insulated wire is connected to the breaker arm spring terminal.

### REMOVAL OF COIL FROM CORE

The coil (Ref. No. 52), is held tight on the core (Ref. No. 29) by two wedges, 10383. It will be necessary to press against the coil core with considerable force to remove it from the coil. The coil should be supported in such a way that there is no danger of the primary of the coil being pushed out of the secondary.

When replacing the coil on the coil core, slide it on then press in the two coil wedges, one on each end, until they are flush with the primary of the coil.

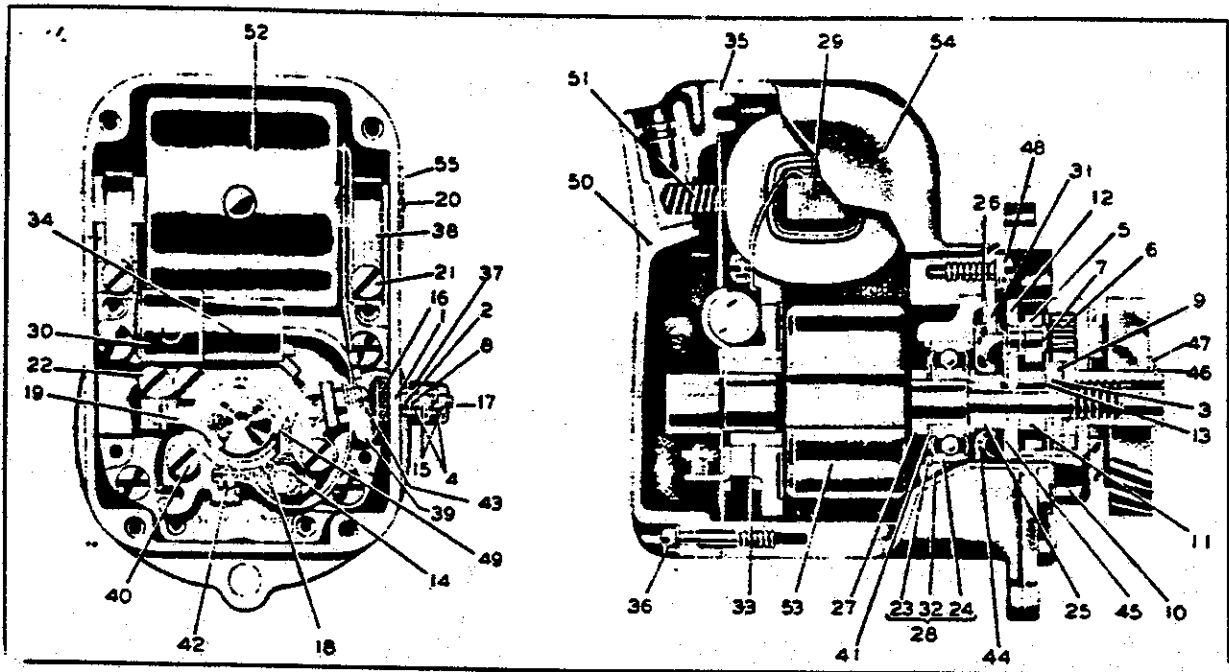
**WICO ELECTRIC COMPANY** WEST SPRINGFIELD, MASSACHUSETTS, U.S.A.

## WICO MODEL XH-1 FLANGE MOUNTED MAGNETO

WICO SPEC. NO.	* XH-1295	* XH-1295Y	* XH-1295B	XH-1295D XH-1295C	XH-1995B XH-1995
WIS. MOTOR NO.	Y-57	Y-57C	Y-68	Y-68A	Y-62

\* When replacing a complete magneto use XH-1295D Wis. No. Y-68A

The service parts for Spec. Nos. XH-1295, XH-1295B, XH-1295C, XH-1295D, XH-1295Y, XH-1995 and XH-1995B are interchangeable except where noted.



Ref. No.	Wico Part No.	Description	No Req	Ref. No.	Wico Part No.	Description	No Req
1	M-34X	SPACING WASHER, for ground stud (insul.)	2	38	5633	COIL CORE CLAMP	2
2	M-35X	WASHER for ground stud (insul.)	1	39	5635	GROUND CONNECTOR (all XH-1295)	1
3	M-42XA	SPACING WASHER for driven flange	1		X5757	GROUND LEAD GROUP (all XH-1995)	1
4	M-55XA	LOCKWASHER for ground stud	2	**	X5654	GROUND CONNECTION UNIT (all XH-1295 - incl. Ref. Nos. 1, 2, 4, 8, 15, 16, 17, & 39)	1
5	A-179X	TRIP ARM	1	**	X5750	GROUND CONNECTION UNIT (all XH-1995 - incl. Ref. Nos. 1, 2, 4, 8, 15, 16, 17, & 39)	1
6	15-186	DRIVE SPRING	1	**	5717	ALIGNING WASHER for breaker point	1
7	A-243X	SNAP RING	1	40	5900	CLAMP SCREW for fixed contact	2
8	IXA-256	WASHER for ground stud (steel)	1	41	5926	BALL BEARING SHIELD	1
9	IVA-583	SPACING WASHER for drive cup	1	42	X5996	BREAKER CONTACT SET	1
10	2040	DRIVE CUP	1	43	6017	CLAMP SCREW for breaker spring	1
11	2122	DRIVEN FLANGE SPACER	1	44	6199	OIL SEAL	1
12	X2286	DRIVEN FLANGE GROUP	1	45	6204	OIL SLINGER	1
13	2288	RETAINER for drive spring	1	46	6424	IMPULSE LOCK RING	1
14	3219	PIVOT WASHER for breaker arm	1	47	6425	THRUST WASHER	1
15	3230	NUT for ground stud	2	**	K6445	IMPULSE LOCK NUT KIT (incl. Ref. Nos. 46, 47, & nut)	1
16	3539	INSULATING LOCK for ground stud	2	**	X6459	IMPULSE COUPLING UNIT (incl. Ref. Nos. 3, 5, 6, 7, 9, 10, 11, 12, 13, 46, 47, & nut)	1
17	3945	GROUND STUD	1	48	6465	CLAMP SCREW for impulse stop (Sems)	4
18	4210	BREAKER ARM LOCK	1	49	6468	BREAKER ARM FELT	1
19	5077	CAM WIPER FELT	1	50	X6533	COVER UNIT (XH-1295, XH-1295B, XH-1295C, XH-1295D, XH-1995, XH-1995B)	1
20	5250	SCREW for name plate	2		X7114	COVER UNIT (XH-1295Y)	1
21	5411	CLAMP SCREW for coil core (Sems)	2	51	6732	COIL CONTACT SPRING	1
22	5411	CLAMP SCREW for condenser (Sems)	2	52	X5700	COIL GROUP (XH-1295, XH-1295Y)	1
23	5516	RETAINING RING for rotor bearing	1		X6762	COIL GROUP (XH-1295B, XH-1295C, XH-1295D, XH-1995, XH-1995B)	1
24	5517	ROTOR BEARING	1	53	Y7569	ROTOR (XH-1295D, XH-1995B)	1
25	5518	IMPULSE SPACER	1		Y7054	ROTOR (XH-1295C, XH-1995)	1
26	5519	GASKET for impulse stop	1		Y6606B	ROTOR (XH-1295B)	1
27	5520	SPACER for bearing cage group	1		Y6606	ROTOR (XH-1295, XH-1295Y)	1
28	X5521	BEARING CAGE GROUP	1	54	X7265	MAIN HOUSING GROUP (XH-1295C, XH-1295D, XH-1995, XH-1995B)	1
29	X5524	COIL CORE GROUP	1		X6174	MAIN HOUSING GROUP (XH-1295, XH-1295B, XH-1295Y)	1
30	6924	CONDENSER CLAMP (XH-1295D, XH-1995B)	1	55	8792	NAME PLATE	1
	5532	CONDENSER CLAMP (XH-1295, XX-1295B, XH-1295C, XH-1295Y, XH-1995)	1	**	10407	BREAKER POINT ALIGNING WASHER (thin)	1
31	X5549	IMPULSE STOP GROUP	1				
32	5567	BEARING CAGE	1				
33	5610	BUSHING for breaker plate	1				
34	X6916	CONDENSER ASSEMBLY (XH-1295D, XH-1995B)	1				
	X5614	CONDENSER (XH-1295, XH-1295B, XH-1295C, XH-1295Y, XH-1995)	1				
35	5618	COVER GASKET	1				
36	5622	SCREW for distributor cap (Sems)	4				
37	X5632	STOP BUTTON GROUP	1				

† Y7569 Rotor can be used in place of Y7054, but new Condenser X6916 and Clamp 6924 must also be used.

# FAIRBANKS-MORSE

## TYPES FM-J1A7 & FM-J1B7 MAGNETOS

Adapted to One Cylinder Engines Made by Wisconsin Motor Corp.

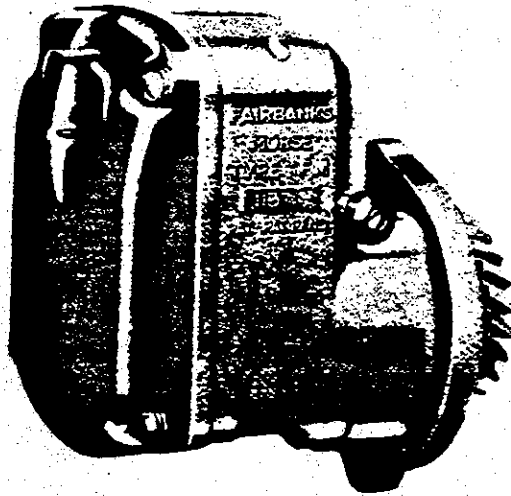


Fig. 1 - Type FM-J1B7 Magneto



Fig. 2 - Type FM-J1A7 Magneto

### Field Service and Adjustment Information

#### 1. General Description

Modern ignition systems are carefully engineered to provide quick, easy starting and maximum dependability of operation without adjustment or service. Through advanced design and sturdy, simple construction Fairbanks-Morse Type FM-J magnetos have become field performance leaders. Especially compact in assembly, the powerful Alnico magnetic rotor assures an intensely hot ignition spark under the most difficult of operating conditions. Field adjustment is rarely necessary and should only be undertaken according to the following directions.

#### 2. Application

Fairbanks-Morse Types FM-J1A7 and FM-J1B7 magnetos are built specifically for application on Wisconsin single cylinder, air-cooled engines. The Type FM-J1A7 magneto (Figure 2) is of a special base mounting design with a shaft height of 35 mm., while the Type FM-J1B7 magneto (Figure 1) has a special mounting flange. The magnetic and electric circuits of the two units are identical, a two pole magnetic rotor with a single lobe can producing one ignition spark per revolution. Rotation of the Type FM-J1A7 magneto is counterclockwise (from the drive end), while the Type FM-J1B7 turns clockwise. Both variations are equipped with dependable, single pawl impulse couplings which facilitate starting by providing an intensified and retarded ignition spark at low speeds.

#### 3. Service Procedure

A logically arranged service outline to be followed when engines fail to start, are hard to start, or miss in operation is tabulated below. Since the use of this chart locates the engine trouble in many cases before the magneto is reached, it prevents too common misadjustment of parts in good condition. Type FM-J magnetos are built in sealed housings which should be opened only when it is certain that the ignition spark produced is unsatisfactory. This condition may be determined through ignition spark tests which are easily made in the field.

#### 4. Testing the Ignition Spark

With a properly adjusted spark plug in good condition the ignition spark should be strong enough to bridge a short gap in addition to the actual spark plug discharge; this may be determined by holding the ignition cable end not more than 1/16" away from the spark plug terminal. The engine should not miss fire when this is done.

#### 5. Testing The Magneto Spark

Pull the ignition cable out of the end cover socket and insert a short piece of stiff wire. Bend this wire to within 1/8" of the engine block. Turn the engine over slowly and watch carefully for the spark which should occur at the instant the impulse coupling releases. It is highly recommended that, when a strong

TROUBLE	POSSIBLE CAUSE	SUGGESTED REMEDY
A. Flooding	Hot or cold engine; over-rich fuel mixture.	Dry out cylinder: crank engine slowly, fuel shut off; or let engine stand idle for short interval.
B. Insufficient Fuel or Air	Empty fuel tank; clogged fuel supply line; clogged air intake.	Replenish fuel; clean fuel supply system and check carburetor; clean air intake system.
C. Ignition Connections	Loose or corroded terminals; broken cable; short circuited switch.	Clean or replace cable terminals; inspect soldered or clamped joints, test and replace cable; check ignition switch.
D. Spark Plug	Corroded, worn or damaged points; cracked or carbonized insulator.	New plug; clean points and insulator, adjust points to recommended opening; never attempt to adjust center electrode.
E. Magneto	Points, impulse coupling.	See instructions beginning Paragraph #4.

ignition spark is observed, no dismantling of the magneto take place and that cable, terminals and spark plug be thoroughly inspected.

ed to prevent backfiring. The magnetos furnished for one cylinder engines are equipped with single pawl couplings.

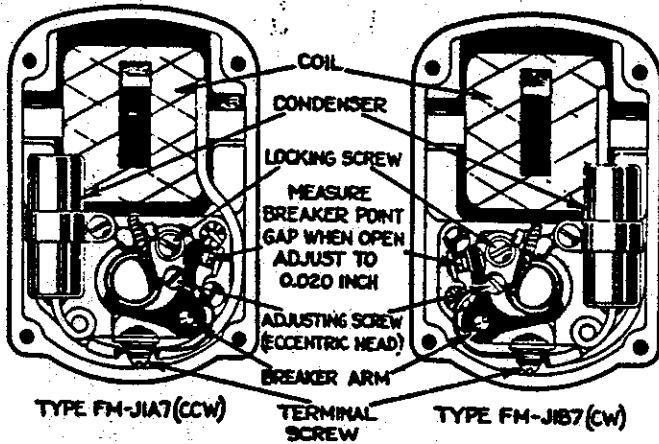


Figure 3 - End Views of Type FM-J1 Magneto.

**6. Adjustment of Breaker Points**

Remove the magneto end cover and compare the arrangement of parts with the drawings of Figure 3. If the contact points are found pitted or pyramided upon examination, they should be resurfaced, using a small tungsten file or fine stone. Complete replacement, when necessary, can easily be made by removing the locking screw of the contact support bracket and the terminal screw, which frees the breaker arm. The breaker point gap must be adjusted after either resurfacing or replacement of the points. Loosen the locking screw and turn the eccentric head adjusting screw until the proper gap is obtained. This gap should be 0.020" at full separation. The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick.

**7. Lubrication and Bearings**

Lubrication of the Type FM-J magnetos in the field is unnecessary and inadvisable. When a complete overhaul of the magneto is made by an Authorized Fairbanks-Morse Service Station, the lubricants will be renewed. Long, continued use of the magneto will eventually necessitate the inexpensive replacement of the sleeve bearing in the breaker plate, at which time its oil reservoir supply should be replenished. The grease-packed ball bearing of the drive end controls rotor thrust and as the rotor is locked in this bearing, no attempt must ever be made to remove the rotor from the housing without specific, detailed instructions. Such work should always be done by trained service men.

**8. Reassembly & Sealing**

The Type FM-J1 magnetos are sealed at the factory against the entry of dust and moisture through the use of a varnish-coated gasket joint. Opening the magneto for breaker point adjustment or other service necessitates resealing the magneto when reassembly is made. A new gasket should be provided, the joint cleaned thoroughly and the new seal coated with Special FMCO2 Sealing Varnish.

**9. Impulse Couplings**

The impulse coupling is used to facilitate starting of the engine and at the same time to automatically retard the ignition spark while starting. Through this device the rotor of the magneto is held back, while the engine is turned to its firing position, at which instant the pawl of the coupling releases and the rotor is snapped forward at high speed, thereby producing an intense, hot spark, automatically retard-

**10. Gear Drive**

Flange mounting Type FM-J1B7 magnetos require a drive gear assembled to the impulse coupling by means of an extended rotor shaft. To engage the slotted drive gear correctly with the drive lugs of the coupling, the magneto rotor should be turned by hand until the coupling pawl engages the stop pin in the flange, the coupling drive lugs then being in the position shown by A of Figure 4. The drive gear should then be fitted to the coupling so that the marked tooth is on the upper edge of the gear as shown in B of Figure 4.

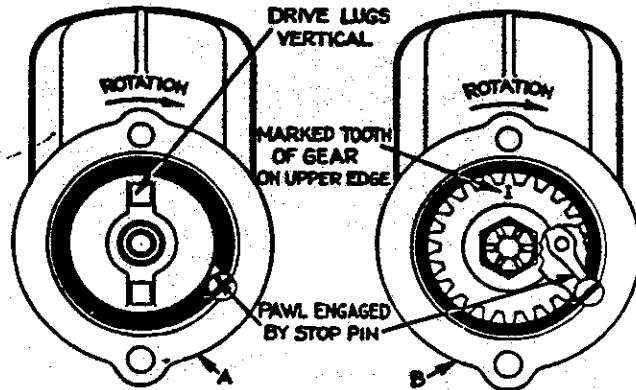


Figure 4 - Mounting Drive Gear

**11. Radio-Shielded Units**

Applications which require complete radio shielding of the ignition system are furnished with the Types FM-JE1A7 and FM-JE1B7 magnetos. These magnetos are similar to standard models except that the plastic end cap is replaced by an all-metal cover through which the high tension lead is conducted by means of a special insulated socket. Detailed information covering these units can be obtained upon inquiry to the factory.

**12. Ground Switches**

Magnetos for Wisconsin Motor Corporation one cylinder engines are furnished with either a push button or turn button switch. Both designs function to ground the primary circuit of the magneto when the engine is to be stopped. The switch must be kept closed until the engine is completely at a standstill.

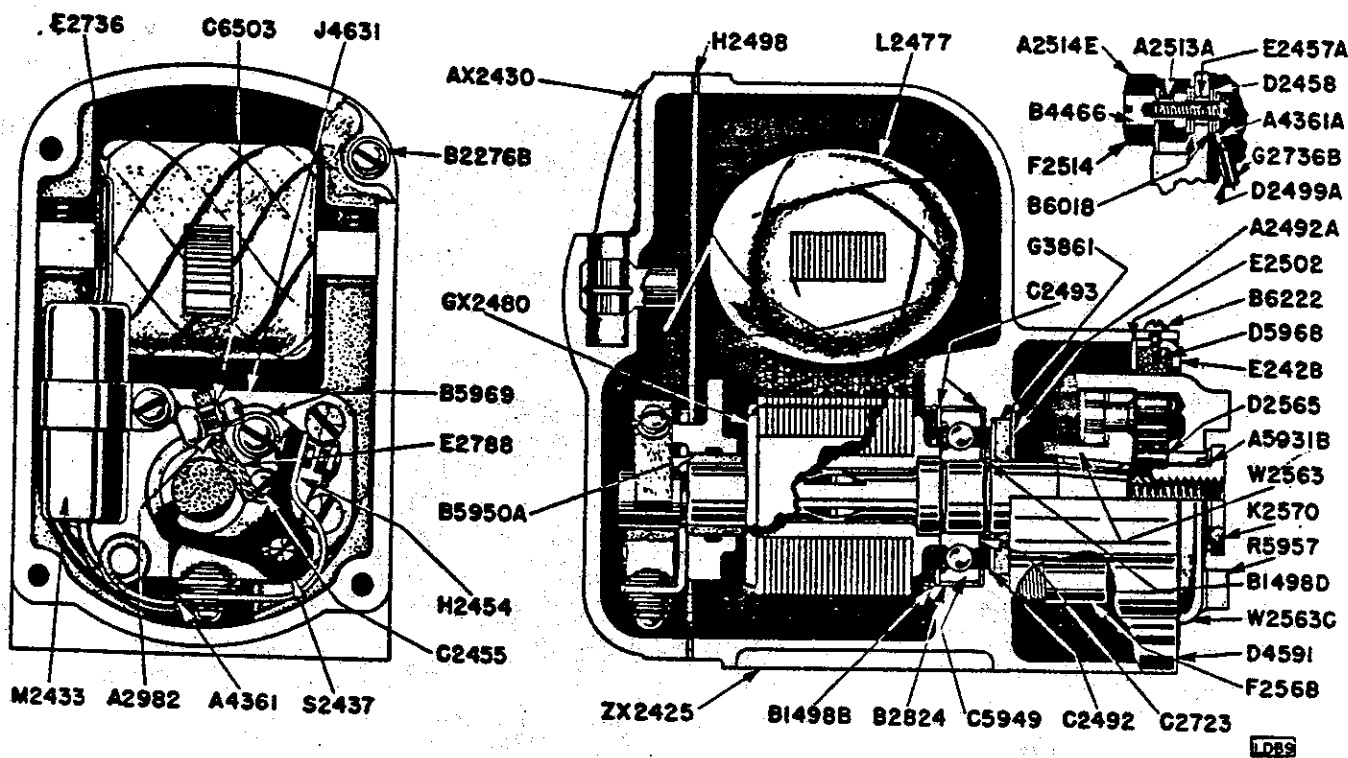
**13. Service Facilities**

Authorized Magneto Service Stations, located throughout the U.S. and foreign countries, have been carefully selected by Fairbanks, Morse & Co. in order to assure highly efficient and complete repair and inspection service to owners of Fairbanks-Morse magnetos. These Service Stations have special equipment and training for magneto repair and close contact is maintained with the factory service and engineering departments. The Service Station Directory should be consulted to locate the Service Station most convenient. (See Pages 5, 6, 7 & 8.)

**14. Genuine Replacement Parts**

Genuine Fairbanks-Morse magneto replacement parts are stocked by all Authorized Service Stations and should always be insisted upon for repairs. The use of spurious parts usually proves less satisfactory and less economical than the use of the manufacturer's original replacements, besides voiding the magneto guarantee.

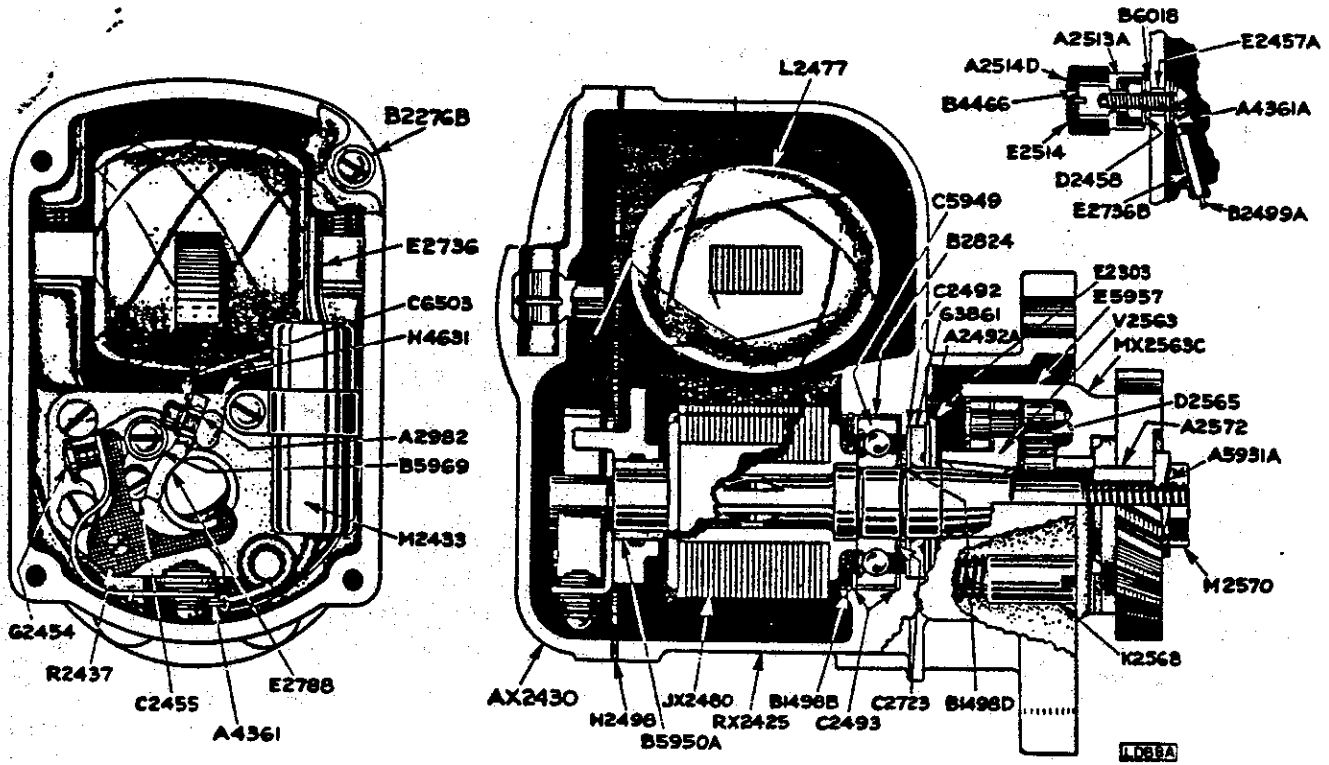
Repair Chart & List- Type FM-J1A7 Magnetos



Order By Part No.	Name of Part	No. Used	Order By Part No.	Name of Part	No. Used
B1498B	Rotor Bearing Snap Ring . . . . .	1	D2565	Coupling Drive Spring . . . . .	1
B1498D	Rotor Shaft Snap Ring . . . . .	1	F2568	Coupling Pawl Stop Pin . . . . .	1
B2276B	End Cap Screw Flat Washer . . . . .	4	K2570	Coupling Nut . . . . .	1
ZX2425	Frame (or Housing) . . . . .	1	C2723	Thrust Bearing Shim . . . . .	2
E2428	Cplg. Hsg. Cupped Washer . . . . .	1	E2736	Primary Lead Wire Tube . . . . .	1
AX2430	End Cap . . . . .	1	G2736B	Primary Ground Wire Tube . . . . .	1
M2433	Condenser (Inc. A4361) . . . . .	1	E2788	Cam Felt Wick . . . . .	1
S2437	Brkr. Pt. Set (Inc. H2454, E2788) . . . . .	1	B2824	Rotor Brg. Insulating Strip . . . . .	1
H2454	Stationary Bracket & Point . . . . .	1	A2982	Cam Felt Wick Spacer . . . . .	1
C2455	Brkr. Pt. Adjustment Screw . . . . .	1	G3861	Bearing Seal Rubber Washer . . . . .	1
E2457A	Pri. Grd. Insulating Bushing . . . . .	1	A4361	Lead Wire Terminal (#8) . . . . .	3
D2458	Pri. Grd. Flat Washer . . . . .	2	A4361A	Lead Wire Terminal (#6) . . . . .	1
L2477	Coil Assembly (Inc. E2736, A4361) . . . . .	1	B4466	Ground Screw End Nut . . . . .	1
GX2480	Magnetic Rotor . . . . .	1	J4631	Brg. Plate (Inc. B5950A, E2788, A2982, C6503) . . . . .	1
C2492	Inner Retaining Washer . . . . .	1	A5931B	Coupling Nut Lockwasher . . . . .	1
A2492A	Outer Retaining Washer . . . . .	1	C5949	Rotor Ball Bearing . . . . .	1
C2493	Bearing Insulating Washer . . . . .	2	B5950A	Rotor Sleeve Bearing . . . . .	1
H2498	End Cap to Frame Gasket . . . . .	1	R5957	Coupling Shell . . . . .	1
D2499A	Primary Grd. Wire (Inc. G2736B, A4361, A4361A) . . . . .	1	D5968	Cplg. Hsg. Felt Washer . . . . .	1
E2502	Cplg. Hsg. Flat Washer . . . . .	1	B5969	Sta'y Contact Flat Washer . . . . .	1
A2513A	Switch Button Spring . . . . .	1	B6018	Pri. Grd. Insulating Washer . . . . .	2
F2514	Switch Turn Button . . . . .	1	B6222	Cplg. Hsg. Cupped Washer Screw . . . . .	2
A2514E	Switch Group (Inc. E2457A, D2458, A2513A, F2514, A4361A, B4466, B6018) . . . . .	1	C6503	Cam Felt Wick Holding Washer . . . . .	1
W2563	Coupling Hub Assembly . . . . .	1	GK16	Complete Gasket Kit (Inc. A2492A, H2498, G3861) . . . . .	1
W2563C	Coupling Complete (Inc. W2563, D2565, A5931B, R5957) . . . . .	1			

Obtain Repair Parts From Authorized Fairbanks-Morse Magneto Service Stations

Repair Chart & List- Type FM-J1B7 Magnetos



Order By Part No.	Name of Part	No. Used	Order By Part No.	Name of Part	No. Used
B1498B	Rotor Bearing Snap Ring . . . . .	1	D2565	Coupling Drive Spring . . . . .	1
B1498D	Rotor Shaft Snap Ring . . . . .	1	K2568	Coupling Pawl Stop Pin . . . . .	1
B2276B	End Cap Screw Flat Washer . . . . .	4	M2570	Coupling Nut . . . . .	1
E2303	Oil Slinger Disc - Std. Flange . . . . .	1	A2572	Coupling Gear Bushing . . . . .	1
RX2425	Frame (or Housing) . . . . .	1	C2723	Thrust Bearing Shim . . . . .	2
AX2430	End Cap . . . . .	1	E2736	Primary Lead Wire Tube . . . . .	1
M2433	Condenser (Inc. A4361) . . . . .	1	E2736B	Primary Ground Wire Tube . . . . .	1
R2437	Brkr. Pt. Set (Inc. G2454, E2788) . . . . .	1	E2788	Cam Felt Wick . . . . .	1
G2454	Stationary Bracket & Point . . . . .	1	B2824	Rotor Bearing Insulating Strip . . . . .	1
C2455	Brkr. Pt. Adjustment Screw . . . . .	1	A2982	Cam Felt Wick Spacer . . . . .	1
E2457A	Pri. Grd. Insulating Bushing . . . . .	1	G3861	Bearing Seal Rubber Washer . . . . .	1
D2458	Pri. Grd. Flat Washer . . . . .	2	A4361	Lead Wire Terminal (#8) . . . . .	3
L2477	Coil Assembly (Inc. E2736, A4361) . . . . .	1	A4361A	Lead Wire Terminal (#6) . . . . .	1
JX2480	Magnetic Rotor . . . . .	1	B4466	Ground Screw End Nut . . . . .	1
C2492	Inner Retaining Washer . . . . .	1	H4631	Brg. Plate (Inc. B5950A, E2788, A2982, C6503) . . . . .	1
A2492A	Outer Retaining Washer . . . . .	1	A5931A	Coupling Nut Lockwire . . . . .	1
C2493	Bearing Insulating Washer . . . . .	2	C5949	Rotor Ball Bearing . . . . .	1
H2498	End Cap to Frame Gasket . . . . .	1	B5950A	Rotor Sleeve Bearing . . . . .	1
B2499A	Primary Grd. Wire (Inc. E2736B, A4361, A4361A) . . . . .	1	Z5957	Coupling Shell . . . . .	1
A2513A	Switch Button Spring . . . . .	1	B5969	Sta'y Contact Flat Washer . . . . .	1
E2514	Switch Push Button . . . . .	1	B6018	Pri. Grd. Insulating Washer . . . . .	2
A2514D	Switch Group (Inc. E2457A, D2458, E2514, A4361A, B4466, A2513A, B6018) . . . . .	1	C6503	Cam Felt Wick Holding Washer . . . . .	1
V2563	Coupling Hub Assembly . . . . .	1	GK16	Complete Gasket Kit (Inc. A2492A, H2498, G3861) . . . . .	1
MX2563C	Coupling Complete (Inc. V2563, D2565, Z5957) . . . . .	1			

# STROMBERG OH-5/8 CARBURETOR

FOR STROMBERG NUMBER, CODE NUMBER, WISCONSIN SYMBOL NUMBER, ENGINE MODELS  
AND BORE AND STROKE SPECIFICATIONS SEE PARTS PAGE

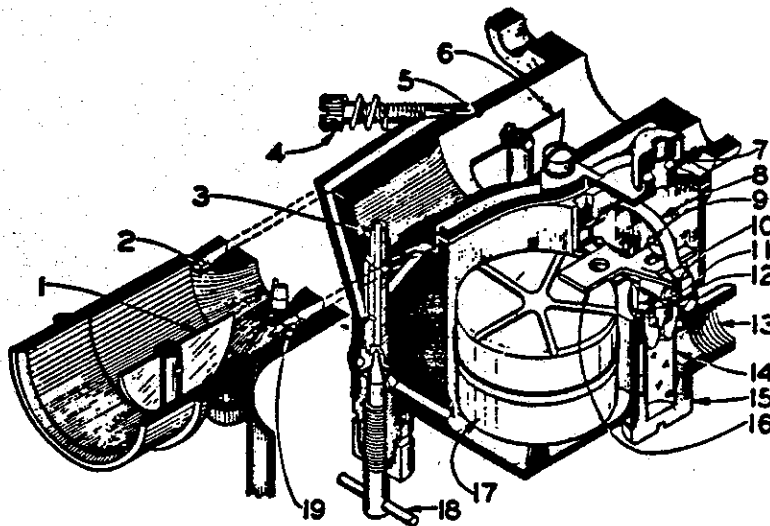
SIZE: 5/8" HORIZONTAL S.A.E. 1-13/16" FLANGE CENTERS

L-26 Series

## Wisconsin Motors

### PARTS ILLUSTRATED

1. Choke Valve
2. Idle Air Bleeder
3. Main Discharge Jet
4. Idle Needle Valve
5. Idle Discharge Hole
6. Throttle Valve
7. Float Chamber Vent
8. Float Fulcrum Pin Clip
9. Float Needle Valve
10. Float Fulcrum Pin
11. Float Needle Valve Seat
12. Float Seat Gasket
13. Fuel Inlet
14. Fuel Strainer
15. Fuel Strainer Plug
16. Float Lever
17. Float
18. High Speed Needle Valve
19. High Speed Air Bleeder



Note—Specifications below are for latest production, previous major changes listed on Parts Page.

**GENERAL DESCRIPTION**—The Stromberg "OH" series are the horizontal type carburetors which employ the same basic principles as those used in all Stromberg carburetors. Due to its size, and the installations on which it is used, no accelerating pump or economizer is necessary in this series. Adjustable needle valves are incorporated in the unit to assure obtaining the best possible performance and economy under various operating conditions.

**ADJUSTMENTS—IDLE OR LOW SPEED**—Have the engine well warmed up so that the intake manifold is at least warm to the hand. Close the hand throttle until minimum steady idling speed is reached. Idle needle valve "4" controls the quantity of fuel delivered to the idle discharge hole "5." Turning OUT the needle valve gives a richer mixture and turning it IN gives a leaner mixture. Turn the needle valve in slowly until the engine speed decreases, and then turn out slowly until the engine runs steady and as fast as this throttle position will permit. If, after adjusting the needle valve, the engine idles too fast or too slow, the desired speed can be obtained by setting the throttle stop screw. If a satisfactory adjustment

cannot be obtained, see that idle discharge hole "5" is open and is permitting a full flow of fuel.

**INTERMEDIATE AND HIGH SPEED**—The mixture for intermediate and high speeds is controlled by the adjustable needle "18." For adjusting, follow this procedure: Set the hand throttle about one-third open, turn the adjustment in until the speed of the engine is noticeably cut down, then turn the adjustment out slowly until the fastest and steadiest speed for that throttle position is obtained. This setting should be accurately made to assure obtaining the best possible economy and performance.

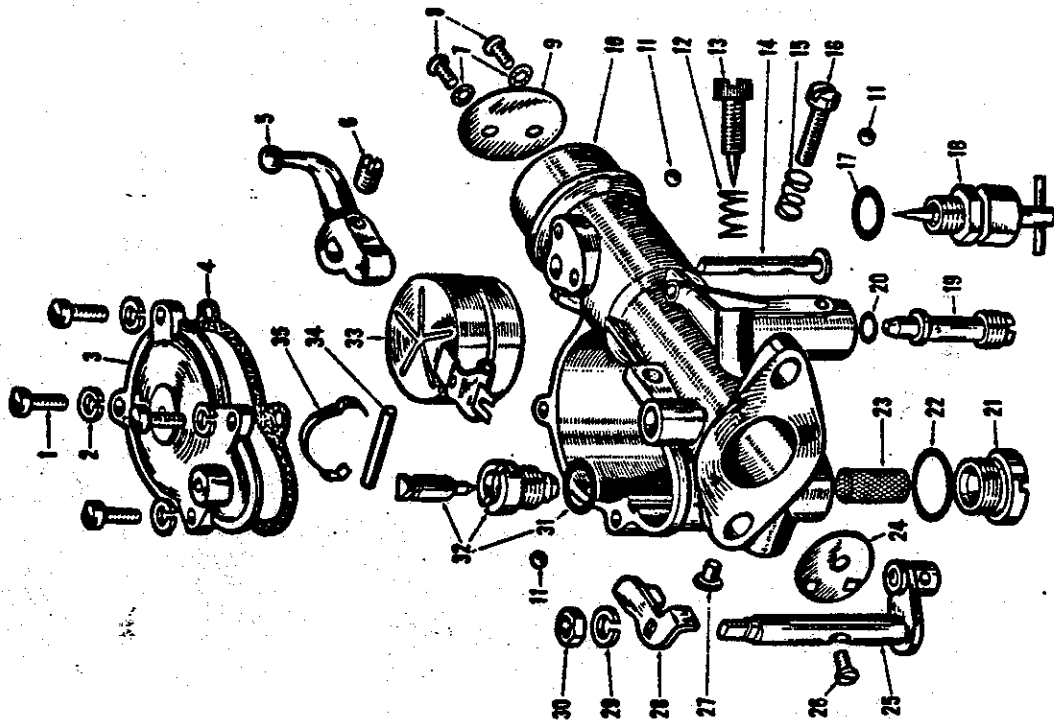
**FUEL LEVEL**—The gasoline level in the float chamber is properly set at the factory and should not be adjusted unless the carburetor has been handled roughly, or level has been changed from some other cause. The level is set at 17/32" below the top of the machined surface of the casting. If it is necessary to reset the level, it can be done by bending the float lever arm "16" at the curve close to the float to give the desired level. The float fulcrum pin "10" and float "17" are held in position by clip "8." When checking position of fuel level, hold clip in place by hand so that the float will be in its normal operating position.

## ZENITH CARBURETOR DIVISION

696 HART AVENUE



DETROIT 14, MICHIGAN



Ref. No.	Description	STROMBERG No. A-18000 CODE 25-98 WISCONSIN No. L-26 Models AA, AB AA, AB, ABN, ACN	STROMBERG No. A-18010 CODE 25-139 WISCONSIN No. L-26-2	STROMBERG No. A-18020 CODE 25-151 WISCONSIN No. L-26-A AE, AKN, BKN	STROMBERG No. 425068 WISCONSIN MOTOR No. L-26-10 Model ABS
1	Screw-Floater Cover	T-1158-7	T-1158-7	T-1158-7	T-1158-7
2	Lockwasher-Cover Screw	T-41-8	T-41-8	T-41-8	T-41-8
3	Cover-Floater Chamber	P-23572	P-23572	P-23572	P-23572
4	Gasket-Floater Chamber	P-23574	P-23574	P-23574	P-23574
5	Lever Assembly-Choke	C-106-152	C-106-152	C-106-152	C-106-152
6	Screw-Choke Lever Set	T-10-11	T-10-11	T-10-11	T-10-11
7	Lockwasher-Choke Valve Screw	P-20883	P-20883	P-20883	P-20883
8	Screw-Choke Valve	C-140-47	C-140-47	C-140-47	C-140-47
9	Valve-Choke	P-22969	P-22969	P-22969	P-22969
10	BODY-MAIN (Not serviceable. Purchase complete carburetor)				
11	Bell-Leed	CR-137-36	CR-137-36	CR-137-36	CR-137-36
12	Spring-Idle Needle Valve	C-111-9	C-111-9	C-111-9	C-111-9
13	Screw-Idle Needle	C-46-49	C-46-49	C-46-49	C-46-49
14	Stem & Washer-Choke	P-22323	P-22323	P-22323	P-22323
15	Spring-Idle Adjusting Screw	P-15301	P-15301	P-15301	P-15301
16	Screw-Idle Adjusting	T-1158-10	T-1158-10	T-1158-10	T-1158-10
17	Gasket-Metering Jet	T-56-23	T-56-23	T-56-23	T-56-23
18	Jet-Adjustable Metering	C-71-21	C-71-21	C-71-21	C-71-21
19	Jet-Main Discharge	P-23575-54	P-23575-54	P-23575-54	P-23575-54
20	Gasket-Main Discharge Jet	T-56-25	T-56-25	T-56-25	T-56-25
21	Plug-Gas Strainer	P-23587	P-23587	P-23587	P-23587
22	Gasket-Gas Strainer Plug	T-56-51	T-56-51	T-56-51	T-56-51
23	Strainer-Gas	P-23586	P-23586	P-23586	P-23586
24	Valve-Throttle	P-23594	P-23594	P-23594	P-23594
25	Stem & Lever-Throttle	P-23588	P-23588	P-23588	P-23588
26	Screw-Throttle Valve	C-136-19	C-136-19	C-136-19	C-136-19
28	Stop-Throttle	P-23593	P-23593	P-23593	P-23593
29	Lockwasher-Throttle Stop Nut	T-41-10	T-41-10	T-41-10	T-41-10
30	Nut-Throttle Stop	T-2551	T-2551	T-2551	T-2551
31	Gasket-Floater Needle Valve Seat	P-11572	P-11572	P-11572	P-11572
32	Valve & Seat-Floater Needle	P-23639	P-23639	P-23639	P-23639
33	Floater	P-23579	P-23579	P-23579	P-23579
34	Pin-Floater Fulcrum	P-23583	P-23583	P-23583	P-23583
35	Spring-Floater Fulcrum Pin	P-23584	P-23584	P-23584	P-23584
	Bleeder-High Speed (Not Illustrated)	C-67-33-70	C-67-33-70	C-67-33-70	C-67-33-70
	Bleeder-Idle Air (Not Illustrated)	C-67-33-56	C-67-33-56	C-67-33-56	C-67-33-56
	Gasket-Flange (Via. Motor Part No. QC-53)	P-23727	P-23727	P-23727	P-23727
x	Kit-Gasket	382379	382379	382379	382379
*	Kit-Repair Parts	RK-1028	RK-1028	RK-1028	RK-1028





**SERVICE AND PARTS**  
**Available from your Authorized**  
**WISCONSIN MOTORS, L. L. C.**  
**Service Center**

**Wisconsin Motors, L. L. C.**  
**2020 Fletcher Creek Dr**  
**Memphis, TN 38133**  
**(901) 371-0353**

**TTP20041**  
**August 1993**