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:

<table>
<thead>
<tr>
<th>MODEL</th>
<th>SPECIFICATION</th>
<th>SERIAL NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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
# INDEX

<table>
<thead>
<tr>
<th>PAGE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Models</td>
<td>1</td>
</tr>
<tr>
<td>Illustration of Engines</td>
<td>3–4</td>
</tr>
<tr>
<td>Cross Section of Engine</td>
<td>5</td>
</tr>
<tr>
<td>Carburetor Repair—See Manufacturers Bulletin in back of Manual</td>
<td></td>
</tr>
<tr>
<td>Disassembling and Reassembling</td>
<td>13</td>
</tr>
<tr>
<td>General Information and Design</td>
<td>6</td>
</tr>
<tr>
<td>Horse Power</td>
<td>6</td>
</tr>
<tr>
<td>Magneto Repair—See Manufacturers Bulletin in back of Manual</td>
<td></td>
</tr>
<tr>
<td>Parts List</td>
<td>21</td>
</tr>
<tr>
<td>Safety Precautions</td>
<td>11</td>
</tr>
<tr>
<td>Service Station Directory, See back of Manual</td>
<td></td>
</tr>
<tr>
<td>Starting and Operating Instructions</td>
<td>7</td>
</tr>
<tr>
<td>Storage of Engine for Winter</td>
<td>19</td>
</tr>
<tr>
<td>Troubles — Causes and Remedies</td>
<td>11</td>
</tr>
<tr>
<td>Air Cleaner</td>
<td>7</td>
</tr>
<tr>
<td>Backfires Through Carburetor</td>
<td>13</td>
</tr>
<tr>
<td>Camshaft</td>
<td>17</td>
</tr>
<tr>
<td>Carburetor — Adjustment</td>
<td>8</td>
</tr>
<tr>
<td>Choke</td>
<td>8</td>
</tr>
<tr>
<td>Clutch — Adjustment</td>
<td>19</td>
</tr>
<tr>
<td>Compression</td>
<td>12</td>
</tr>
<tr>
<td>Compression — Restoring</td>
<td>11</td>
</tr>
<tr>
<td>Cooling</td>
<td>6</td>
</tr>
<tr>
<td>Crankshaft — End Play</td>
<td>16</td>
</tr>
<tr>
<td>Cylinders — Oversize</td>
<td>16</td>
</tr>
<tr>
<td>Fuel</td>
<td>8</td>
</tr>
<tr>
<td>Gasoline Strainer</td>
<td>8</td>
</tr>
<tr>
<td>Gears — Timing (Fig. 25)</td>
<td>16</td>
</tr>
<tr>
<td>Governor</td>
<td>17</td>
</tr>
<tr>
<td>Governor Adjustment</td>
<td>18</td>
</tr>
<tr>
<td>Ignition Switch</td>
<td>9</td>
</tr>
<tr>
<td>Ignition Troubles</td>
<td>12</td>
</tr>
<tr>
<td>Knocks</td>
<td>13</td>
</tr>
<tr>
<td>Lubrication</td>
<td>7</td>
</tr>
<tr>
<td>Lubrication System</td>
<td>6</td>
</tr>
<tr>
<td>Magneto — Breaker Point Adjustment</td>
<td>9</td>
</tr>
<tr>
<td>Magneto — Ignition Spark</td>
<td>10</td>
</tr>
<tr>
<td>Magneto — Timing</td>
<td>10</td>
</tr>
<tr>
<td>Oil — Grade of</td>
<td>7</td>
</tr>
<tr>
<td>Oil Pump</td>
<td>17</td>
</tr>
<tr>
<td>Overheating</td>
<td>13</td>
</tr>
<tr>
<td>Overspeeding</td>
<td>8</td>
</tr>
<tr>
<td>Piston and Connecting Rod</td>
<td>15</td>
</tr>
<tr>
<td>Reduction Gears</td>
<td>19</td>
</tr>
<tr>
<td>Spark Plugs</td>
<td>10</td>
</tr>
<tr>
<td>Starting — Rope Starter</td>
<td>11</td>
</tr>
<tr>
<td>Starting Difficulties</td>
<td>11</td>
</tr>
<tr>
<td>Stop Engine</td>
<td>11</td>
</tr>
<tr>
<td>Surging or Galloping</td>
<td>12</td>
</tr>
<tr>
<td>Valves</td>
<td>14</td>
</tr>
</tbody>
</table>

**MI-233**
Fig. 1

CARBURETOR and MAGNETO side of ENGINE
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.

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

<table>
<thead>
<tr>
<th>R.P.M.</th>
<th>AA</th>
<th>AB</th>
<th>ABS</th>
<th>ABN</th>
<th>AK</th>
<th>AKS</th>
<th>AKN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600</td>
<td>1.4</td>
<td>2.0</td>
<td>2.2</td>
<td>2.8</td>
<td>3.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1800</td>
<td>1.6</td>
<td>2.3</td>
<td>2.5</td>
<td>3.2</td>
<td>3.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>1.8</td>
<td>2.5</td>
<td>2.7</td>
<td>3.6</td>
<td>4.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2200</td>
<td>1.9</td>
<td>2.7</td>
<td>3.1</td>
<td>3.9</td>
<td>4.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2400</td>
<td>2.0</td>
<td>2.9</td>
<td>3.1</td>
<td>4.1</td>
<td>4.4</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>2600</td>
<td>3.3</td>
<td>3.7</td>
<td></td>
<td></td>
<td>4.6</td>
<td>5.3</td>
<td></td>
</tr>
<tr>
<td>2800</td>
<td>3.6</td>
<td>3.9</td>
<td></td>
<td></td>
<td>4.8</td>
<td>5.6</td>
<td></td>
</tr>
<tr>
<td>3000</td>
<td>3.9</td>
<td>4.2</td>
<td></td>
<td></td>
<td>5.0</td>
<td>6.3</td>
<td></td>
</tr>
<tr>
<td>3200</td>
<td>4.0</td>
<td>4.4</td>
<td></td>
<td></td>
<td>5.0</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>3400</td>
<td>3.9</td>
<td>4.5</td>
<td></td>
<td></td>
<td>5.0</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>3600</td>
<td>3.6</td>
<td>4.6</td>
<td></td>
<td></td>
<td>4.7</td>
<td>6.2</td>
<td></td>
</tr>
</tbody>
</table>

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 horsepower of 3/4%.

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 3/4%.

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 percent 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 1/2 pint. 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 *Mobil Oil* as typical examples of lubricants possessing the qualities we believe desirable in oils for Wisconsin engines. We plainly state that these grades of *Mobil Oils* 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

<table>
<thead>
<tr>
<th>SEASON OR TEMPERATURE</th>
<th>GRADE OF OIL</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring, Summer, or Autumn</td>
<td>SAE 30</td>
<td><em>Mobil Oil A</em></td>
</tr>
<tr>
<td>+120°F to +40°F</td>
<td>SAE 30</td>
<td><em>Mobil Oil A</em></td>
</tr>
<tr>
<td>Winter</td>
<td>SAE 20-20W</td>
<td><em>Mobil Oil Arctic</em></td>
</tr>
<tr>
<td>+40°F to +5°F</td>
<td>SAE 10W</td>
<td><em>Mobil Oil 10W</em></td>
</tr>
<tr>
<td>+5°F to -20°F</td>
<td>SAE 10W</td>
<td><em>Mobil Oil 10W</em></td>
</tr>
<tr>
<td>Crank Case Capacity</td>
<td>1/2 Pts.</td>
<td></td>
</tr>
</tbody>
</table>

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 1/2 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.
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](image)

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 counterclockwise. 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 ¾ to 1¼ 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
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 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

Magnets are properly adjusted and timed before leaving the factory. The breaker points of the Fairbanks-Morse and Wico Magneto 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-

![Image of Fairbanks-Morse magneto with feeler gauge]

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 screwdriver into
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 Eiseimann, 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 replacing 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.

**SPARK PLUG**

The spark plug gap should be thirty thousandths (0.030) 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.
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.

MI-242
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 stick 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 cylinder head 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.


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.
Overheated valve.
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 disassem-
bling 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.
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.

CARBURATOR

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 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
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.

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.
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.

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
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 operating 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 (and) enough so that the thrust sleeve can be slipped between. By then sliding the thrust sleeve back, the
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 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
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.*

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

* *

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.
BEARING PLATE, CRANKSHAFT, PISTON AND CONNECTING ROD GROUP

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

Parts are identified by reference number. See parts list for correct part number.
Ref. No. 150 OIL PUMP ASSEMBLY

CARBURETOR AND AIR CLEANER MOUNTING FOR ABS ENGINE

Parts are identified by reference number. See parts list for correct part number.
<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>NET WT.</th>
<th>REQ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>See Fig. 1</td>
<td>CYLINDER and CRANKCASE ASSEMBLY</td>
<td>1 25</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See Fig. 1</td>
<td>Complete with valves, springs, seats, locks, inserts, cover and gasket.</td>
<td>1 24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See Fig. 1</td>
<td>NOTE: On AK, AKS and AKN engines, beginning with Serial 2,020,001, the cyl-crancase is designed so that the valve tappets are directly in line with the valve stems. (Previous to this there was a 3/32&quot; offset.) New style cyl-crancases are interchangeable with the old style, providing the new style Camshaft Assembly (EA-101-F-81) is also used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>See Fig. 1</td>
<td>CYLINDER and CRANKCASE</td>
<td>With valve seat inserts only.</td>
<td>1 4</td>
</tr>
<tr>
<td></td>
<td>See Fig. 1</td>
<td>NOTE: The part number of the cylinder &amp; crankcase is stamped on the case in the location shown in Fig. 1. ORDER BY THIS NUMBER and by giving Model Specification &amp; 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.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>AB-76-E</td>
<td>CYLINDER HEAD</td>
<td>1 1 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AB-76-E</td>
<td>AB-78-E</td>
<td>AB-78-J</td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>AE-73-C</td>
<td>EXHAUST VALVE, standard</td>
<td>1 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AE-73-D</td>
<td>STELLITE EXHAUST VALVE</td>
<td>1 4</td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>AE-73-N</td>
<td>INLET VALVE</td>
<td>1 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AE-73-N</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>DB-178-A</td>
<td>PISTON, standard size</td>
<td>1 8</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB-184-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB-184-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>DB-186-A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>DR-1</td>
<td>PISTON RING SET, standard size</td>
<td>1 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DR-3</td>
<td>Consisting of:</td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>DR-3 (See Note)</td>
<td>COMPRESSOR RING</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>DC-154(A used)</td>
<td>SCRAPER RING</td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>DC-156</td>
<td>OIL RING</td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>DC-156</td>
<td>NOTE: On &quot;AB&quot; engine DB-177-A Piston with three ring grooves order DR-2 ring set. Piston rings and ring sets are also furnished .005&quot;, .010&quot;, .020&quot; and .030&quot; oversize.</td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>REF. NO.</td>
<td>PART NUMBERS</td>
<td>DESCRIPTION</td>
<td>NET WT.</td>
<td>REQ.</td>
</tr>
<tr>
<td>---------</td>
<td>--------------</td>
<td>-------------</td>
<td>---------</td>
<td>------</td>
</tr>
<tr>
<td>113</td>
<td>DE-66</td>
<td>PISTON PIN, standard size ... Piston pins are also furnished .005&quot;, .010&quot;, .020&quot; and .030&quot; oversize.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>114</td>
<td>HG-156-1</td>
<td>VALVE SEAT INSERT (Std.) exhaust only ... For AK, AKS, AKN engines beginning with Serial No. 1550653. HG-214 (17/64&quot; wide) replaces HG-149-1 (not interchangeable). HG-149-1 Insert (3/16&quot; wide) for engines to and including Serial No. 1550652.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>115</td>
<td>HG-156-D</td>
<td>STELLITE EXHAUST VALVE SEAT INSERT ...</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>116</td>
<td>L-26-2 (A-18010)</td>
<td>STROMBERG Model UR-3/4&quot; No. F-5749 ...</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>L-26-2 (A-18010)</td>
<td>STROMBERG Model OH-5/8&quot; ...</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>L-52-G</td>
<td>MARVEL-SCHIEBLER CARBURETOR ...</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>VH-53</td>
<td>ZENITH CARBURETOR ...</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>L-51-F</td>
<td>L-26-2, L-52 Carburators for AB, ABN, replaced by L-52-G. L-26-A, L-52-A Carburators for AFS, AKS, AKN, replaced by L-52-C. L-51-F, replaced by L-51-E for ABN. L-51-E for AKN.</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>11107 rep.1.</td>
<td>NOTE: The above standards are for carburetors. Refer to stamped part or model number on carburetor. See carburetor bulletin for replacement parts list.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>118</td>
<td>NC-126</td>
<td>INLET MANIFOLD ...</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>119</td>
<td>PC-368</td>
<td>FLYWHEEL ...</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>PC-368</td>
<td>STUD - carburetor mounting ...</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>120</td>
<td>Q-1</td>
<td>GASKET SET ...</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>121</td>
<td>QD-568-E</td>
<td>GASKET for cylinder head ...</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>122</td>
<td>SE-53-B</td>
<td>AIR SHROUD ASSEMBLY ...</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>SE-53-B</td>
<td>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 AKN engines to and including engine No. 349930 order SE-53A-5-S1 (with old style fuel tank).</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>127</td>
<td>See Page 32</td>
<td>AIR CLEANER BRACKET - Stromberg carburetor ...</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>128</td>
<td>See Page 32</td>
<td>AIR CLEANER BRACKET - Schiebler carburetor ...</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>LO-28</td>
<td>AIR CLEANER - United Specialties No. TG30-6325 ... For Stromberg Carburetor.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>LO-113</td>
<td>AIR CLEANER - United Specialties No. 76B1 ... For Schiebler Carburetor.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>129</td>
<td>LO-38</td>
<td>CARBURETOR DRIP ELBOW with Stromberg carburetor ...</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>'30</td>
<td>AF-43</td>
<td>VALVE SPRING, standard</td>
<td></td>
<td></td>
<td>146</td>
<td>FA-42-A</td>
<td>VALVE TAPPET</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AF-49-A</td>
<td>VALVE SPRING, exhaust</td>
<td></td>
<td></td>
<td>147</td>
<td>GA-34-A</td>
<td>CRANKSHAFT GEAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For engines with Stellite exhaust valves</td>
<td></td>
<td></td>
<td>149</td>
<td>GD-87-B</td>
<td>MAGNETO DRIVE GEAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>131</td>
<td>AG-26</td>
<td>VALVE SPRING SEAT (Beginning with engine No. 67159 on earlier engines furnish AG-19)</td>
<td></td>
<td></td>
<td></td>
<td>GD-87-A</td>
<td>GEAR for Eisenmann magneto</td>
<td></td>
<td></td>
</tr>
<tr>
<td>133</td>
<td>AH-9</td>
<td>VALVE SPRING SEAT LOCK (Beginning with engine No. 67159 on earlier engines furnish PA-229 pins)</td>
<td></td>
<td></td>
<td>150</td>
<td>K-98</td>
<td>OIL PUMP ASSEMBLY COMPLETE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With ball seat insert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>On &quot;AB&quot; aluminum base replaced by BB-116-B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 KA-59-B Body</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>BB-116-B</td>
<td>ENGINE BASE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 KF-14 Plunger</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>On &quot;AB&quot; aluminum base replaced by BB-116-B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 ME-38 Balls</td>
<td></td>
<td></td>
</tr>
<tr>
<td>135</td>
<td>BG-170-S1</td>
<td>BEARING PLATE ASSEMBLY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 PA-217 Pin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Take-off end. Consisting of:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 PF-550 Retainer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 BG-170 Plate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 PM-56 Spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PH-254 Retainer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 SA-60 Cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PH-256 Oil seal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2 XA-64 Screws</td>
<td></td>
<td></td>
</tr>
<tr>
<td>139</td>
<td>BG-171-S1</td>
<td>BEARING PLATE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1 RD-167 Strainer</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>With oil seal, flywheel end</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>With check ball seat insert</td>
<td></td>
<td></td>
</tr>
<tr>
<td>140</td>
<td>BK-71</td>
<td>FUEL TANK BRACKET</td>
<td></td>
<td></td>
<td>152</td>
<td>KF-14-S1</td>
<td>OIL PUMP PLOWGER ASSEMBLY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>142</td>
<td>See Fig. 2</td>
<td>CRANKSHAFT ASSEMBLY</td>
<td></td>
<td></td>
<td>153</td>
<td>KF-19-A</td>
<td>CAP for oil pump plunger push rod</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
<td>154</td>
<td>KF-22</td>
<td>OIL PUMP PULL ROD</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 Crankshaft</td>
<td></td>
<td></td>
<td>156</td>
<td>LO-31-B</td>
<td>BREATHER for crankcase</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 GA-34-A Gear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LO-31-A replaced by LO-31-B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 ME-88 Bearings</td>
<td></td>
<td></td>
<td>157</td>
<td>LP-43</td>
<td>FUEL STRAINER, Tillotson OW-480-T</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PL-21 Key</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>NOTE: See illustrations in back of parts list for service replacement parts</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTE: The part number of the crankshaft will be found stamped on the cheek facing the flywheel end of shaft as illustrated in Fig. 2. ORDER BY THIS NUMBER and by giving the Model, Specification and Serial Numbers of the engine.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PART NO.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>143</td>
<td>DA-70A-S1</td>
<td>CONNECTING ROD ASSEMBLY</td>
<td></td>
<td></td>
<td>158</td>
<td>ME-38</td>
<td>CHECK BALL</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
<td>159</td>
<td>ME-88</td>
<td>For oil pump, 5/16&quot; dia. steel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 DA-70A Connecting rod</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 HG-229-A Bushing</td>
<td></td>
<td></td>
<td>160</td>
<td>1 ME-88-1 Bearing cap (Timken No. 15250X)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 PD-82 Lockwashers</td>
<td></td>
<td></td>
<td>161</td>
<td>1 ME-88-2 Bearing cone (Timken 15116)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 XD-19A Cup screws</td>
<td></td>
<td></td>
<td>163</td>
<td>PA-254</td>
<td>CAMSHAFT SUPPORT PIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DA-55B-S1 and DA-55C-S1 replaced by DA-70A-S1</td>
<td></td>
<td></td>
<td>165</td>
<td>PB-164</td>
<td>SCREW, 5/16&quot;-24 thread x 2-5/8&quot; long</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>DA-55B-S2 and DA-55C-S2 replaced by DA-70A-S1, for earlier engines less oil pump.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>For mounting Fairbanks-Morse and Wico Magneto, upper hole</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Connecting rods are also furnished .010&quot;, .020&quot;, and .030&quot; undersize.</td>
<td></td>
<td></td>
<td>166</td>
<td>PC-362</td>
<td>STUD, 5/16&quot; x 1-3/8&quot; long</td>
<td></td>
<td></td>
</tr>
<tr>
<td>145</td>
<td>EA-101F-S1</td>
<td>CAMSHAFT ASSEMBLY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>For mounting Fairbanks-Morse and Wico Magneto, lower hole</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>PC-188, 5/16&quot; x 1-5/8&quot; long</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 EA-101F Camshaft</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>For Eisenmann Magneto</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 GB-49 Gear</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LOCKWASHER for rope starter sheave</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PA-264 Support pin</td>
<td></td>
<td></td>
<td>169</td>
<td>PE-57</td>
<td>BREATHER</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PL-21 Key</td>
<td></td>
<td></td>
<td>170</td>
<td>PF-102</td>
<td>For oil pump spring compartment</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EA-101A-S1 and EA-101D-S1 replaced by EA-101F-S1</td>
<td></td>
<td></td>
<td>172</td>
<td>PG-206</td>
<td>STRAP for ignition cable support</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EA-101F-S1</td>
<td></td>
<td></td>
<td>173</td>
<td>PG-431</td>
<td>FUEL TANK STRAP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(On &quot;A&quot; engine beginning with No. 349101, &quot;AB, ABS&quot; No. 349731, &quot;AK, AKS&quot; No. 349395. For all &quot;ABN&quot; and &quot;AKN&quot; engines)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTE: 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 strips with XA-86 screw, PD-77 nut and PE-3 lockwasher.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PG-186-C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>FUEL TANK STRAP (flywheel end)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>Net Wt. Req</th>
<th>Net Wt.</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG-187-B</td>
<td>FUEL TANK STRAP (take-off end)</td>
<td>AA engine to and including No. 349100. AB and ABS No. 349730.</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG-268-A</td>
<td>FUEL TANK STRAP (flywheel end)</td>
<td>AK, AKS to and including No. 343924.</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG-269-A</td>
<td>FUEL TANK STRAP (take-off end)</td>
<td>AK, AKS to and including No. 343924.</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>177</td>
<td>PH-254</td>
<td>RETAINER for main bearing oil seal</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>178</td>
<td>PH-256</td>
<td>SEAL for main bearing cap oil</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>179</td>
<td>PI-121</td>
<td>SCREW for governor spring adjusting</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>PK-50-A</td>
<td>RETAINER for oil pump check ball</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>181</td>
<td>PK-69</td>
<td>PISTON PIN RETAINER</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>182</td>
<td>PM-58</td>
<td>SPRING for oil pump plunger</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>183</td>
<td>PM-74</td>
<td>GOVERNOR SPRING</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>185</td>
<td>QC-53</td>
<td>GASKET for carburetor flange</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>186</td>
<td>QD-569-A</td>
<td>GASKET for engine base</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>187</td>
<td>QD-570-A</td>
<td>GASKET for magneto flange</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>188</td>
<td>QD-571</td>
<td>GASKET for governor yoke shaft bracket</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>189</td>
<td>QD-572</td>
<td>GASKET for valve tappet inspection plate</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>QD-573</td>
<td>GASKET for main bearing plate, take-off end, .006&quot; thick</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>191</td>
<td>QD-573-A</td>
<td>GASKET for main bearing plate, take-off end, .003&quot; thick</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>192</td>
<td>QD-574</td>
<td>GASKET for main bearing plate, fan end</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>194</td>
<td>RC-87</td>
<td>CAP for fuel tank</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>195</td>
<td>RD-107</td>
<td>STRAINER for oil pump</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>196</td>
<td>RF-270</td>
<td>ELBOW for fuel line, for 1/4&quot; tubing</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>203</td>
<td>RP-902</td>
<td>FUEL LINE, tubing with nuts and 2 RF-270 elbows</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>205</td>
<td>SA-61</td>
<td>PLATE for valve tappet inspection</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>206</td>
<td>SA-80</td>
<td>COVER for oil pump body</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>207</td>
<td>SD-53-F</td>
<td>ENGINE INSTRUCTION PLATE</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>209</td>
<td>TC-321</td>
<td>SPACER for governor</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>TC-322-S1</td>
<td>FLYWEIGHT for governor</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>211</td>
<td>TC-323</td>
<td>SLEEVE for governor thrust</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>212</td>
<td>TC-324-C</td>
<td>GOVERNOR YOKE</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>213</td>
<td>TC-325</td>
<td>BRACKET</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>214</td>
<td>TC-328-D</td>
<td>PIN for governor flyweight thrust</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>215</td>
<td>TC-320</td>
<td>PIN for governor spring adjusting screw</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>216</td>
<td>TC-332</td>
<td>GOVERNOR CONTROL LEVER</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>217</td>
<td>U-218-A</td>
<td>STARTING ROPE ASSEMBLY</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>218</td>
<td>UC-103-A</td>
<td>STARTER SHEAVE, die cast</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>218A</td>
<td>VE-304</td>
<td>GOVERNOR CONTROL ROD</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>219</td>
<td>WD-17-B</td>
<td>MUFFLER</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>220</td>
<td>WE-112-E</td>
<td>FUEL TANK with cap</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>223</td>
<td>XD-19</td>
<td>SCREW, 5/16&quot;-18 thread x 1 1/4&quot; long, 3 for mounting cylinder head on AA, AB, ABS, ABN, 4 for mounting cylinder head on AK, AKS, AKN.</td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>224</td>
<td>XD-19-A</td>
<td>SCREW (Special hardness) 5/16&quot;-18 thread x 1 1/4&quot; long, for connecting rod.</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>225</td>
<td>XD-22</td>
<td>SCREW (Special hardness) 5/16&quot;-18 thread x 1 3/4&quot; long</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>226</td>
<td>XD-23</td>
<td>SCREW (Special hardness) 5/16&quot;-18 thread x 2 long</td>
<td></td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>228</td>
<td>XJ-47</td>
<td>RIVET for governor flyweight toggle</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>230</td>
<td>XK-66-2</td>
<td>STREET ELL for muffler mounting</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>232</td>
<td>Y-68A-S1</td>
<td>WICO XH-1295C MAGNETO with gear replaces Y-57-S1 Wico XH-1295 and Y-24E Wico C-1295. These magneto are interchangeable on engines No. 76158 and thereafter. For earlier engines, less mounting pilot, up to and including No. 76157, order Y-688-S1 WICO XH-791B MAGNETO with gear. This magneto replaces Y-57A-S1 Wico XH and Y-24B Wico C.</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>233</td>
<td>Y-73B-S1</td>
<td>FAIRBANKS-MORSE FMX187 MAGNETO with gear replaces Y-35-S1, FMX187, and is interchangeable on engines beginning with No. 76158 after mounting pilot was added.</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>234</td>
<td>YD-6-S1</td>
<td>EISEMANN A.MAGNETO with gear</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>235</td>
<td>YD-12</td>
<td>EDISON AJ MAGNETO with gear</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No. Req</th>
<th>Net Wt.</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-10</td>
<td>NUT, 5/16&quot;-24 thread, hexagon steel..................</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For magneto mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD-77</td>
<td>NUT, 1/4&quot;-20 thread, hexagon steel...................</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 for fuel tank strap clamp screws,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 for governor spring adjusting screw pin.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PD-115</td>
<td>NUT, No. 10-32 thread, hexagon steel.................</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For governor spring adjusting screw.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE-3</td>
<td>LOCK WASHER, 5/16&quot; Positive.</td>
<td>14</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 for air shroud in crankcase.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 for main bearing plate, flywheel end.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 for oil trough mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 for tank strap clamp screws.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 for mounting carburetor and manifold on ABS engine.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE-4</td>
<td>LOCK WASHER, 5/16&quot; Positive.</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 for magneto mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 for tank bracket to cylinder head mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE-5</td>
<td>LOCK WASHER, 3/8&quot; Positive.</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For mounting fuel tank bracket.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE-82</td>
<td>LOCK WASHER, 5/16&quot; (special).</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For connecting rod cap screw.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PE-52 internal lock washer, replaced by PE-82.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Interchangeable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PF-25</td>
<td>PLUG, 3/8&quot; slotted steel pipe.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For timing inspection hole in crankcase.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-16-D</td>
<td>WASHER, 5/16&quot; I.D. x 19/32&quot; O.D. x 1/16&quot; thick, plain steel.</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For main bearing plate, take-off end.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-30-A</td>
<td>WASHER, 1/4&quot; I.D. x 7/16&quot; O.D. x 1/16&quot; thick, plain steel.</td>
<td>11</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 for engine base mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 for governor spring adjusting screw pin.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-77</td>
<td>WASHER, 5/16&quot; I.D. x 5/8&quot; O.D. x 1/16&quot; thick, plain steel.</td>
<td>12</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 for cylinder head mounting on AA, AB, ABS, ABN.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 for cylinder head mounting on AK, AKS, AKN.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-30</td>
<td>WASHER, 1/4&quot; I.D. x 7/16&quot; O.D. x 1/16&quot; thick, plain copper.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For valve inspection plate mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL-17</td>
<td>WOODRUFF KEY, No. 13.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For flywheel mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL-21</td>
<td>WOODRUFF KEY, No. 3.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For crankshaft gear mounted.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RF-794</td>
<td>NIPPLE, 1/8&quot;, close pipe.</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For fuel strainer mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-26</td>
<td>EXPANSION PLUG, 5/8&quot;</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For camshaft support pin hole.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XA-34</td>
<td>SCREW, 1/4&quot;-20 thread x 1/2&quot; long, round head</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For air shroud to case mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XA-38</td>
<td>SCREW, 1/4&quot;-20 thread x 1/2&quot; long, round head</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For fuel tank strap.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XA-44</td>
<td>SCREW, Parker-Kalan No. 2, Type 'Z', 3/16&quot; long, self-clamping round head</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For oil trough cover mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XA-47</td>
<td>SCREW, Parker-Kalan No. 4, Type 'A', 1/4&quot; long, screw head, self-clamping</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>For instruction plate mounting.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 FILTER FOR AA, AB, ABS AND ABN ENGINES

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>Ref No</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>With Marvel-Schebler or Stromberg Carburetors, 1-3/16&quot;D. Air Horn</td>
<td>With Zenith Carburetor, 1-5/16&quot;D. Air Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO-28-51</td>
<td>350</td>
<td>HF-276</td>
<td>1</td>
</tr>
<tr>
<td>HF-363</td>
<td>351</td>
<td>LO-28</td>
<td>1</td>
</tr>
<tr>
<td>AIR FILTER and BRACKET ASSEMBLY—Complete</td>
<td>AIR FILTER, United Specialties No. T30-6325</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPACER for support</td>
<td>Service Parts:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3/16&quot; long</td>
<td>A-6329 Body assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6332 Cup fastener</td>
<td>A-6332 Filter element</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6333 Filter screen</td>
<td>B-6331 Oil cup assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6335 Dead</td>
<td>A-6339 Dead</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BRACKET ASSEMBLY</td>
<td>Bi-298-51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bi-298-1-51</td>
<td>352</td>
<td>Bi-298-1-51</td>
<td>1</td>
</tr>
<tr>
<td>Bi-298-51</td>
<td>353</td>
<td>QD-647</td>
<td>1</td>
</tr>
<tr>
<td>GASKET for bracket</td>
<td>Description</td>
<td>No Req</td>
<td></td>
</tr>
<tr>
<td>With Marvel-Schebler or Stromberg Carburetors, 1-3/16&quot;D. Air Horn</td>
<td>With Zenith Carburetor, 1-5/16&quot;D. Air Horn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>354 PG-287</td>
<td>SUPPORT STRAP (flat)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>355 PG-407-A</td>
<td>SUPPORT STRAP (curved)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>356 PE-3</td>
<td>LOCK WASHER, 1/4&quot; Positive</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>356 XA-86</td>
<td>SCREW, Type ‘Z’, No. 6 x 3/8&quot; long, self tapping</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>357 XD-6</td>
<td>For air filter mounting.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>358 XB-20</td>
<td>SCREW, 1/4&quot;-20 thread x 1&quot; long, hexagon head</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>358 XB-20</td>
<td>SCREW, 1/4&quot;-20 thread x 1/4&quot; long, fillister head</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>STANDARD HARDWARE</td>
<td>For bracket clamps.</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

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.
### PART NUMBER
<table>
<thead>
<tr>
<th>Ref. No</th>
<th>Description</th>
<th>No</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO-113-S1</td>
<td>AIR FILTER and BRACKET ASSEMBLY—Complete</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LO-113-S2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO-204A-S1</td>
<td>replaced by LO-193-S1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO-204A-S4</td>
<td>replaced by LO-193-S2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>360</td>
<td>AIR FILTER, United Specialties No. 76B1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Service Parts:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131U81</td>
<td>Body assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>417A410/A</td>
<td>Baffle</td>
<td></td>
<td></td>
</tr>
<tr>
<td>317U81</td>
<td>Oil cup assembly</td>
<td></td>
<td></td>
</tr>
<tr>
<td>81031</td>
<td>Cup fastener</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5235</td>
<td>Decal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI-298-S1</td>
<td>BRACKET ASSEMBLY</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BI-298-1-S1</td>
<td>replaced by BI-290-S1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>361A</td>
<td>BRACKET ASSEMBLY</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>BI-290-S1</td>
<td>replaced by BI-290-1-S1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bracket Assembly includes the next 3 items:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>362</td>
<td>GASKET for bracket</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>QD-647</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>QD-647</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XA-86</td>
<td>SCREW for air filter</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Type &quot;Z&quot; No. 8 x 3/8&quot; long, self tapping, round head.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>363</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### PART NUMBER
<table>
<thead>
<tr>
<th>Ref. No</th>
<th>Description</th>
<th>No</th>
<th>Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>XB-20</td>
<td>SCREW for bracket clamp</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1/8&quot;-20 thread x 1&quot; long.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MF-276</td>
<td>SPACER for support</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3/16&quot; long.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HF-363</td>
<td>SPACER</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9/16&quot; long</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PH-84, 1/16&quot; long, repl'd by HF-276 or HF-363.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PG-287</td>
<td>SUPPORT STRAP (flat)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PG-668</td>
<td>SUPPORT STRAP (hubular)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PG-668-A repl'd by PG-668.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE-3</td>
<td>LOCKWASHER for support strap, 1/4&quot; Positive</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>PE-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XD-6</td>
<td>SCREW for support strap</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>1/4&quot;-20 x 1&quot; long, hex. head.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>XD-8</td>
<td>SCREW, 1/4&quot;-20 thread x 1&quot; long, hexagon head</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

* LO-113 replaces LO-28-A and is interchangeable for replacement on engines having Marvel-Schebler carburetor. On engines having Zenith carburetors, it is necessary to also order HF-363 Spacer, PG-668 Support Strap and XD-8 Cap screw. 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.

MP-529
# OIL BATH AIR CLEANER
ON MODELS ABN and AKN TRACTOR ENGINES

![Diagram of oil bath air cleaner](image)

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No. Req</th>
<th>Net Wt. Lb OZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>685</td>
<td>BI-289-51</td>
<td>AIR CLEANER BRACKET ASSEMBLY</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 BI-289 Bracket</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PC-445 Stud</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 PE-3 Lockwasher</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 QD-647 Gasket</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 XD-7 Screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>686</td>
<td>LO-87</td>
<td>AIR CLEANER, United Specialties</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>686A</td>
<td></td>
<td>A-12186 Upper half and decal assembly</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>686B</td>
<td></td>
<td>A-10186 Body, center tube and decal assembly</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>686C</td>
<td></td>
<td>A-10153 Gasket</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>687</td>
<td>PC-445</td>
<td>STUD for mounting air cleaner</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>688</td>
<td>PC-287</td>
<td>SUPPORT STRAP</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>689</td>
<td>QD-647</td>
<td>GASKET for bracket</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>691</td>
<td>PD-147</td>
<td>WING NUT, 1/4&quot;-20 thread</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For mounting air cleaner.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>692</td>
<td>PE-3</td>
<td>LOCK WASHER, 1/4&quot; Positive</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-for clamp screw</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1-for mounting support strap.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>693</td>
<td>XD-6</td>
<td>SCREW, 1/4&quot;-20 thread x 3/4&quot; long, hexagon head</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For mounting support strap to bracket.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>694</td>
<td>XD-7</td>
<td>SCREW, 1/4&quot;-20 thread x 1&quot; long, hexagon head</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket clamp</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD HARDWARE**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>No. Req</th>
<th>Net Wt. Lb OZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>693</td>
<td>SCREW, 1/4&quot;-20 thread x 3/4&quot; long, hexagon head</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>694</td>
<td>SCREW, 1/4&quot;-20 thread x 1&quot; long, hexagon head</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

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

FUEL STRAINER (LARGE)

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lb. / Oz.</td>
</tr>
<tr>
<td>LP-19</td>
<td>FUEL STRAINER ASSEMBLY (With Shut-off valve in cover, and glass bowl) Tillotson No. OW-416-T.</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>LP-19-A</td>
<td>FUEL STRAINER ASSEMBLY (With Shut-off valve in cover, and metal bowl) Tillotson No. OW-446-T.</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>LP-19-B</td>
<td>FUEL STRAINER ASSEMBLY (Without Shut-off valve in cover, and glass bowl) Tillotson No. OW-444.</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>LP-19-C</td>
<td>FUEL STRAINER ASSEMBLY (Without Shut-off valve in cover, and metal bowl) Tillotson No. OW-476-T.</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>495</td>
<td>FILTER SCREEN</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>496</td>
<td>GLASS BOWL</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>60137</td>
<td>METAL BOWL</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>497</td>
<td>CLAMP WIRE and NUT ASSEMBLY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>498</td>
<td>BOWL GASKET (Wisconsin No. QO-653)</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

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.

TILLOTSON

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lb. / Oz.</td>
</tr>
<tr>
<td>OW-480-T</td>
<td>TILLOTSON FUEL STRAINER ASSEMBLY (Wisconsin No. LP-43)</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>600</td>
<td>CLAMP WIRE and NUT ASSEMBLY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>601</td>
<td>NEEDLE VALVE ASSEMBLY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Includes 07750 Packing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>602</td>
<td>COVER</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>LQ-31</td>
<td>REPAIR PARTS KIT</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>604</td>
<td>GLASS BOWL</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>605</td>
<td>Gasket</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>606</td>
<td>Screen</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

CHILTON

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lb. / Oz.</td>
</tr>
<tr>
<td>830</td>
<td>CHILTON FUEL STRAINER ASSEMBLY (Wisconsin No. LP-43)</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>610</td>
<td>BAIL ASSEMBLY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>611</td>
<td>NEEDLE VALVE ASSEMBLY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Includes 830-2 Packing.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>612</td>
<td>COVER</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>LQ-31</td>
<td>REPAIR PARTS KIT</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Consisting of:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>613</td>
<td>GLASS BOWL</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>614</td>
<td>Neoprene Gasket</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>615</td>
<td>Screen</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

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.
**VE-363-A VARIABLE SPEED GOVERNOR CONTROL**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No. Req</th>
<th>Net Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>374</td>
<td>VE-363-A</td>
<td>CONTROL ASSEMBLY COMPLETE</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>375</td>
<td>PC-393-2</td>
<td>PIN for lever support</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>376</td>
<td>PI-121</td>
<td>SCREW for governor spring adjusting</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(engine part, and not considered as part of VE-363-A assembly)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>377</td>
<td>PM-117</td>
<td>SPRING for lever support pin</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>378</td>
<td>TC-301-3</td>
<td>BLOCK for adjusting screw connecting</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>379</td>
<td>VB-112</td>
<td>CONTROL LEVER</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>380</td>
<td>VC-22-C</td>
<td>CONTROL BRACKET</td>
<td>1</td>
<td>12</td>
</tr>
</tbody>
</table>

**STANDARD HARDWARE**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No. Req</th>
<th>Net Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>383</td>
<td>PD-115</td>
<td>NUT, No. 10-32 thread, hexagon steel nut</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For governor spring adjusting screws.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>384</td>
<td>PD-153</td>
<td>NUT, No. 8-32 thread, hexagon steel nut</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket mounting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>385</td>
<td>PE-55</td>
<td>WASHER, 1/4&quot; countersunk everlock lockwasher</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket support screw.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>386</td>
<td>PH-84</td>
<td>WASHER, 1/4&quot; I.D. x 1/2&quot; O.D. x 1/16&quot; thick, plain steel</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For support pin spring.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>387</td>
<td>PH-221</td>
<td>WASHER, 7/32&quot; I.D. x 1/2&quot; O.D. x 1/32&quot; thick, plain lead</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket support screw.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>388</td>
<td>PH-253</td>
<td>WASHER, 5/32&quot; I.D. x 3/8&quot; O.D. x 1/32&quot; thick, plain steel</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>389</td>
<td>XA-6</td>
<td>SCREW, No. 8-32 thread x 5/8&quot; long, round head.</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket support.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>390</td>
<td>XC-14</td>
<td>SCREW, 1/4&quot;-20 thread x 5/8&quot; long, flat head</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For bracket mounting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>391</td>
<td>XI-1</td>
<td>COTTER PIN, 1/16&quot; dia. x 1/2&quot; long, steel</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>For lever support pin.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
NOTE: Engines equipped with a Clutch and Power Take-off Assembly require a special Cylinder-Crankcase, Main Bearing Plate and Crankshaft as follows:

**BG-170-1-S1**  
MAIN BEARING PLATE (not illustrated) consisting of:  
1 PH-254 Retainer  
1 PH-256 Oil seal

**CA-51-6-S3**  
CRANKSHAFT ASSEMBLY (not illustrated) consisting of:  
1 GA-34-A Gear  
2 ME-88-1 Bearing cup  
1 PL-21 Key  
1 HG-182 Bushing  
2 ME-88-2 Bearing cone

THE PART NUMBER OF THE CYLINDER AND CRANKCASE CAN BE FOUND STAMPED ON THE FUEL TANK MOUNTING PAD OF THE CRANKCASE.

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 (5/16-18 NC x 1/2)
X-361 1 Miscellaneous Clutch Parts
        4201C 1 Cone Collar Assembly
               Includes:
               M496  2 Fillister Head Cap Screws (1/4-28 NF x 1-7/8)
               M1930A 2 Hexagon Nuts (1/4-28 NF)
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
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
NOTE: Engines equipped with this reduction unit require a CA-51-66-51 Crankshaft Assembly (13 tooth Spiral Gear) with bearings, gear and key (not illustrated).

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt. Lb. Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>450</td>
<td>BG-177-A-1</td>
<td>MAIN HOUSING and ENGINE BEARING PLATE</td>
<td>1</td>
<td>5 12</td>
</tr>
<tr>
<td>451</td>
<td>BH-125</td>
<td>COVER for housing</td>
<td>1</td>
<td>1 10</td>
</tr>
<tr>
<td>452</td>
<td>GG-87-1</td>
<td>DRIVEN SPIRAL GEAR, 42 teeth</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>453</td>
<td>LO-44</td>
<td>BREATHER</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>454</td>
<td>ME-90</td>
<td>INNER BEARING</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>455</td>
<td>ME-91</td>
<td>OUTER BEARING</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>456</td>
<td>PH-264-A</td>
<td>OIL SEAL for take-off shaft PH-264, replaced by PH-264-A.</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>457</td>
<td>PH-280</td>
<td>OIL SEAL for crankshaft</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>458</td>
<td>PH-333-A</td>
<td>THRUST WASHER for driven gear</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>459</td>
<td>QD-382</td>
<td>GASKET for cover to housing</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>460</td>
<td>SD-79</td>
<td>TAG for oil instructions</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>461</td>
<td>WA-68</td>
<td>TAKE-OFF SHAFT</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt. Lb. Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>462</td>
<td>PE-4</td>
<td>LOCK WASHER, 5/16&quot; Positive</td>
<td>7</td>
<td>1</td>
</tr>
<tr>
<td>463</td>
<td>PH-16-D</td>
<td>WASHER, 5/16&quot; I.D. x 18/32&quot; O.D. x 1/16&quot; thick, plain steel</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>464</td>
<td>PL-16</td>
<td>KEY, No. 11 Woodruff</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>465</td>
<td>XD-16</td>
<td>SCREW, 5/16&quot;-18 thread x 1/8&quot; long, hexagon head for cover mounting</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>466</td>
<td>PA-389</td>
<td>PIN, No. 2 x 3/8&quot; long, half length taper Crook-Pin cover to housing</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>467</td>
<td>XK-2</td>
<td>PLUG, 1/4&quot; square head pipe for oil level and drain</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>468</td>
<td>XK-21</td>
<td>REDUCER BUSHING, 1/4&quot; to 1/8&quot; pipe for breather mounting</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>469</td>
<td>XK-77</td>
<td>STREET ELL, 1/8&quot; x 45° for breather mounting</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

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)
GC-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-B, 2.92 TO 1 CHAIN DRIVE REDUCTION UNIT ASSEMBLY**

**NOTE:** Engines equipped with this reduction unit require a CA-51-14-SI 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 Number** | **Description** | **No. Req.** | **Net Wt. Lb. Oz.**
---|---|---|---|---
WW-45-B | REDUCTION UNIT ASSEMBLY | | 17 |
575 | BG-195-A-2 | MAIN HOUSING and ENGINE BEARING PLATE | 1 | 0 8 |
576 | BN-131-A-2 | COVER for housing | 1 | 2 0 |
577 | GG-129 | DRIVE SPROCKET, 13 teeth | 1 | 9 |
578 | GG-130 | DRIVEN SPROCKET, 30 teeth | 1 | 3 4 |
579 | GJ-10 | CHAIN, 3/8" pitch, 45 pitches long | 1 | 1 |
580 | LD-44 | BREATHER | 1 | 4 |
581 | ME-90 | INNER BEARING | 1 | 1 |
582 | ME-91 | OUTER BEARING | 1 | 2 |
583 | PH-264-A | OIL SEAL for take-off shaft | 1 | 2 |
584 | PH-280 | OIL SEAL for crankshaft | 1 | 2 |
585 | PK-76 | RETAINER RING for drive sprocket | 1 | 1 |
586 | QD-596 | GASKET for cover to housing | 1 | 1 |
587 | SD-79 | TAG for oil instructions | 1 | 1 |
588 | WA-68 | TAKE-OFF SHAFT | 1 | 1 |

---

**Ref. No.** | **Part Number** | **Description** | **No. Req.** | **Net Wt. Lb. Oz.**
---|---|---|---|---
590 | PE-4 | LOCK WASHER, 5/16" Positive | 1 | 1 |
591 | PH-14-D | WASHER, 5/16" I.D. x 1/8" O.D. x 1/16" thick, plain steel | 1 | 1 |
592 | PL-15 | KEY, No. 9 Woodruff | 1 | 1 |
593 | PL-16 | KEY, No. 11 Woodruff | 1 | 1 |
594 | XD-16 | SCREW, 5/16"-18 thread x 3/8" long, hexagon head | 1 | 1 |
595 | PA-289 | PIN, No. 2 x 5/8" long, half length taper Groove pin for cover to housing, replaces KH-41 (not interchangeable) | 1 | 1 |
596 | XK-2 | PLUG, 1/4" square head pipe | 1 | 1 |
597 | XK-21 | REDUCER BUSHING, 1/4" to 1/8" pipe | 1 | 1 |

---

**STANDARD HARDWARE**

**Ref. No.** | **Part Number** | **Description** | **No. Req.** | **Net Wt. Lb. Oz.**
---|---|---|---|---

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.

**MP-480**
**WW-45-C, 2 TO 1 CHAIN DRIVE REDUCTION UNIT ASSEMBLY**

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

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
<th>Lb.</th>
<th>Oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>500</td>
<td>BG-195-A-1</td>
<td>MAIN HOUSING and ENGINE BEARING PLATE</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>501</td>
<td>BH-131-A-1</td>
<td>COVER for housing</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>502</td>
<td>GG-104</td>
<td>DRIVE SPROCKET, 16 teeth</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>503</td>
<td>GG-105</td>
<td>DRIVE SPROCKET, 32 teeth</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>504</td>
<td>GJ-13</td>
<td>CHAIN, 3/8&quot; pitch, 42 pitches long</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>505</td>
<td>LO-44</td>
<td>BREATHER</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>506</td>
<td>ME-90</td>
<td>INNER BEARING</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>507</td>
<td>ME-91</td>
<td>OUTER BEARING</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>508</td>
<td>PH-264-A</td>
<td>OIL SEAL for take-off shaft</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>509</td>
<td>PH-280</td>
<td>OIL SEAL for crankshaft</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>510</td>
<td>PK-76</td>
<td>RETAINER RING for drive sprocket</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>511</td>
<td>QD-596</td>
<td>GASKET for cover to housing</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>512</td>
<td>SD-79</td>
<td>TAG for all instructions</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>513</td>
<td>WA-68</td>
<td>TAKE-OFF SHAFT</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
<th>Lb.</th>
<th>Oz.</th>
</tr>
</thead>
<tbody>
<tr>
<td>515</td>
<td>PE-4</td>
<td>LOCK WASHER, 5/16&quot; Positive</td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>516</td>
<td>PH-14-D</td>
<td>WASHER, 5/16&quot; I.D. x 1/2&quot; O.D. x 1/16&quot; thick, plain steel</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>517</td>
<td>PL-15</td>
<td>KEY, No. 9 Woodruff</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>518</td>
<td>PL-16</td>
<td>KEY, No. 11 Woodruff</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>519</td>
<td>XD-16</td>
<td>SCREW, 5/16-18 thread x 7/8&quot; long, hexagon head</td>
<td></td>
<td>13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>520</td>
<td>PA-289</td>
<td>PIN, No. 2 x 5/8&quot; long, half length taper Green-Pin for cover to housing, replaces XH-41 (not interchangeable)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>XH-41, No. 2 x 3/4&quot; long, taper pin</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>521</td>
<td>XK-2</td>
<td>PLUG, 1/4&quot; square head pipe</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>522</td>
<td>XK-21</td>
<td>REDUCER BUSHER, 1/4&quot; to 1/8&quot; pipe</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:
The reduction unit assembly part number is stamped on the oil instruction tag.

NOTE: On AA, AB, ABS, AX, AKS engines beginning with No. 828394 WW-45-K Spiral Gear Unit replaced WW-45 Spur Gear Unit. The following parts are not interchangeable and must be ordered for WW-45 unit:

CA-51-S-51 Crankshaft Assembly (12 tooth Spur Gear)
GO-90 Driven Gear (66 tooth Spur Gear)

All other parts are interchangeable.

NOTE: Engines equipped with this reduction unit require a
CA-51-63-51 Crankshaft Assembly (13 tooth Spiral Gear) with bearings, gear and key (not illustrated)

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
<th>Unit</th>
<th>Net Wt.</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>WW-45-K</td>
<td>SPIRAL GEAR REDUCTION UNIT</td>
<td>Consisting of:</td>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>475</td>
<td>BG-195-A</td>
<td>MAIN HOUSING and ENGINE BEARING PLATE</td>
<td>1</td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>476</td>
<td>BH-131-A</td>
<td>COVER for housing</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>477</td>
<td>GG-90-8</td>
<td>DRIVEN SPIRAL GEAR, 71 teeth</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>478</td>
<td>LO-44</td>
<td>BREATHER</td>
<td>1</td>
<td></td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>479</td>
<td>ME-90</td>
<td>INNER BEARING</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>480</td>
<td>ME-91</td>
<td>OUTSIDE BEARING</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>481</td>
<td>PH-264-A</td>
<td>OIL SEAL for take-off shaft</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>482</td>
<td>PH-280</td>
<td>OIL SEAL for crankshaft</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>483</td>
<td>PH-333-A</td>
<td>THRUST WASHER for driven gear</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>484</td>
<td>QD-596</td>
<td>GASKET for cover to housing</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>485</td>
<td>SD-79</td>
<td>TAG for oil instructions</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>486</td>
<td>WA-68</td>
<td>TAKE-OFF SHAFT</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part Number</th>
<th>Description</th>
<th>Qty.</th>
<th>Unit</th>
<th>Net Wt.</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>487</td>
<td>PA-289</td>
<td>PIN, No. 2 x 5/8&quot; long, half length taper Groove-Pin cover to housing</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>488</td>
<td>PE-4</td>
<td>LOCK WASHER, 5/16&quot; Positive</td>
<td>1</td>
<td></td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>489</td>
<td>PH-14-D</td>
<td>WASHER, 5/16&quot; I.D. x 1/16&quot; O.D. x 1/16&quot; thick, plain steel</td>
<td>1</td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>490</td>
<td>PL-16</td>
<td>KEY, No. 11 Woodruff</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>491</td>
<td>XD-16</td>
<td>SCREW, 5/16&quot;-18 thread x 1/2&quot; long, hexagon head</td>
<td>11</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>492</td>
<td>XD-17</td>
<td>SCREW, 5/16&quot;-18 thread x 1&quot; long, hexagon head</td>
<td>2</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>493</td>
<td>XK-2</td>
<td>PLUG, 1/4&quot; square head pipe</td>
<td>3</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>494</td>
<td>XK-21</td>
<td>REDUCER BUSHING, 1/4&quot; to 1/8&quot; pipe</td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

STANDARD HARDWARE

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:**

The reduction unit assembly part number is stamped on the oil instruction tag.

**NOTE:**

The following parts are not interchangeable and must be ordered for WW-45-D Unit:

- CA-51-32-S1 Crankshaft Assembly (11 tooth, 22° 38' Angle Spiral Gear)
- GG-90-1 Driven Gear (66 tooth Spiral Gear)

**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)

---

--- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
WW-45-L | GEAR REDUCTION UNIT Consisting of: | 17 |  |  |  |  |  |  |  |
BG-195-A | MAIN HOUSING and BEARING PLATE | 1 | 9 | 8 | 537 | PA-289 | PIN, No. 2 x 5/8" long, half length taper Groove-Pin cover to housing | 2 | 1 |
BH-131-A | COVER for housing | 1 | 2 | 8 | 538 | PE-4 | LOCK WASHER, 5/16" Positive for cover mounting. | 9 | 1 |
CG-90-1 | DRIVEN GEAR, 72 teeth | 1 | 4 | 8 | 539 | PH-14-D | WASHER, 5/16"I.D. x 1 1/16"O.D. x 1/16" thick, plain steel For housing to crankcase mounting. | 4 | 1 |
LO-44 | BREATHER | 1 | 4 |  | 540 | PL-16 | KEY, No. 11 Woodruff For driven gear. | 1 | 1 |
ME-90 | INNER BEARING | 1 | 1 |  | 541 | XD-16 | SCREW, 5/16"-18 thread x 3/8" long, hexagon head 9-for cover mounting. 2-for housing mounting, outer holes. | 11 | 1 |
ME-91 | OUTER BEARING | 1 | 2 |  | 542 | XD-17 | SCREW, 5/16"-18 thread x 1" long, hexagon head For housing mounting, inner holes. | 2 | 1 |
PH-264-A | OIL SEAL for take-off shaft Ph-264, replaced by PH-264-A. | 1 | 2 |  | 543 | XK-2 | PLUG, 1/4" square head pipe For oil level and drain. | 3 | 1 |
PH-280 | OIL SEAL for crankshaft | 1 | 2 |  | 544 | XK-21 | REDUCER BUSHING, 1/4" to 1/8" pipe For breather housing. | 1 | 1 |
PH-333-A | THRUST WASHER for driven gear | 1 | 1 |  |  |  |  |  |  |
QD-596 | GASKET for cover to housing | 1 | 1 |  |  |  |  |  |  |
SD-79 | TAG for oil instructions | 1 | 1 |  |  |  |  |  |  |
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.
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

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

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

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

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>NO. REQ.</th>
<th>NET WEIGHT LBS.</th>
<th>OZ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>559</td>
<td>PH-333</td>
<td>THRUST WASHER—DRIVEN GEAR (not illustrated)</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>560</td>
<td>PK-76</td>
<td>RETAINING RING—DRIVE GEAR</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>561</td>
<td>QD-596</td>
<td>GASKET—COVER TO HOUSING</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>562</td>
<td>SD-79</td>
<td>TAG—OIL INSTRUCTION</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>563</td>
<td>WA-68</td>
<td>TAKE-OFF SHAFT</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>

### STANDARD HARDWARE

<table>
<thead>
<tr>
<th>REF. NO.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
<th>NO. REQ.</th>
<th>NET WEIGHT LBS.</th>
<th>OZ.</th>
</tr>
</thead>
<tbody>
<tr>
<td>565</td>
<td>PE-4</td>
<td>LOCKWASHER, $\frac{3}{16}$&quot; POSITIVE</td>
<td>9</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For cover mounting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>566</td>
<td>PH-14-D</td>
<td>WASHER, $\frac{3}{16}$&quot; I.D. x $\frac{13}{42}$&quot; O.D. x $\frac{1}{16}$&quot; thick</td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For housing to crankcase mounting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>PL-15</td>
<td>KEY, #9 WOODRUFF</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For drive gear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>568</td>
<td>PL-16</td>
<td>KEY, #11 WOODRUFF</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For driven gear</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>569</td>
<td>XD-16</td>
<td>SCREW, $\frac{3}{16}$&quot;—18 thread x $\frac{3}{4}$&quot; long hexagon head</td>
<td>13</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>9—for cover mounting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4—for housing mounting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>XH-41</td>
<td>PIN, $\frac{3}{32}$ x $\frac{3}{4}$&quot; LONG TAPER</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For cover to housing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>571</td>
<td>XK-2</td>
<td>PLUG, $\frac{3}{16}$&quot; SQUARE HEAD PIPE</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For oil level and drain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>572</td>
<td>XK-21</td>
<td>REDUCER BUSHING, $\frac{3}{16}$&quot; to $\frac{3}{8}$&quot; PIPE</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>For breather mounting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

IMPORTANT: Always give Model, Specification and Serial Numbers shown on name plate.
Parts are identified by reference number. See parts list for correct part number.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
<th>Req</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>550</td>
<td>BI-299</td>
<td>BRACKET for mounting starter</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>551</td>
<td>BI-301</td>
<td>CRADLE for mounting generator</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>552</td>
<td>MD-333</td>
<td>PULLEY for generator</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>553</td>
<td>MH-155</td>
<td>DRIVE BELT for generator, Gates 2270</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>554</td>
<td>MC-137F-S1</td>
<td>PLYWHEEL with ring gear</td>
<td>1</td>
<td>1</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>556</td>
<td>PC-454</td>
<td>STUD for mg gen. cradle to bracket</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>557</td>
<td>PG-117</td>
<td>STRAP for mounting generator</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>558</td>
<td>PG-556</td>
<td>CLAMP for mounting coil</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>559</td>
<td>PG-569</td>
<td>ADJUSTING STRAP for generator</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>560</td>
<td>R-114-11</td>
<td>OIL FILLER and GAUGE ASSEMBLY</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>561</td>
<td>RS-306-31</td>
<td>BODY with plate</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>562</td>
<td>SD-109</td>
<td>TAG for ignition switch</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>563</td>
<td>SE-177</td>
<td>COVER for starter Bendix</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>565</td>
<td>TF-102</td>
<td>IGNITION TIMER ASSEMBLY</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>567</td>
<td>1 BH-151</td>
<td>COVER</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>568</td>
<td>1 GH-111</td>
<td>GEAR</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>569</td>
<td>1 PA-313</td>
<td>PIN (n)</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>570</td>
<td>1 PH-329</td>
<td>SEAL</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>571</td>
<td>1 YP-3</td>
<td>LOCKWASHER, for advance lock</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>573</td>
<td>1 TB-116</td>
<td>ADAPTER</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>574</td>
<td>1 XD-4</td>
<td>SCREW, advance arm lock</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>575</td>
<td>1 YP-6A-S1</td>
<td>IGNITION TIMER ASSEMBLY</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>576</td>
<td>VC-39</td>
<td>SUPPORT for generator adjusting strap</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>577</td>
<td>VE-401</td>
<td>CONTROL PANEL</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>580</td>
<td>YA-5-B</td>
<td>ELECTRIC STARTER (6 volt) AUTO-LITE No. MAK-4008</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>581</td>
<td>YD-6-A</td>
<td>GENERATOR (6 volt) AUTO-LITE No. GAS-4103-1</td>
<td>11</td>
<td>1</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>582</td>
<td>YA-6-B</td>
<td>IGNITION SWITCH</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>583</td>
<td>YC-10</td>
<td>STARTING SWITCH</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>584</td>
<td>YE-2</td>
<td>AMMETER</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>585</td>
<td>YF-11</td>
<td>IGNITION COIL (6 volt) AUTO-LITE No. CR-6005</td>
<td>1</td>
<td>1</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>587</td>
<td>JS-5</td>
<td>CIRCUIT BREAKER, AUTO-LITE No. CB-4008</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>590</td>
<td>YL-112</td>
<td>IGNITION WIRE ASSEMBLY, generator</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>591</td>
<td>YL-115</td>
<td>STARTER CABLE ASSEMBLY, starter</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**STANDARD HARDWARE**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Part No.</th>
<th>Description</th>
<th>No.</th>
<th>Net Wt.</th>
<th>Req</th>
<th>Lb</th>
<th>Oz</th>
</tr>
</thead>
<tbody>
<tr>
<td>592</td>
<td>YL-156</td>
<td>IGNITION WIRE ASSEMBLY</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>593</td>
<td>YL-179</td>
<td>IGNITION WIRE ASSEMBLY, ignition</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>594</td>
<td>YL-180</td>
<td>IGNITION WIRE ASSEMBLY, anode to circuit</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>595</td>
<td>YL-181</td>
<td>IGNITION WIRE ASSEMBLY, ignition</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>596</td>
<td>YL-223</td>
<td>IGNITION CABLE ASSEMBLY, cell to sport plug</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

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

For generator cradle stud.

For mounting starting switch.

For generator adjusting strap.

For mounting ignition coil.

For mounting circuit breaker.

For mounting all filler and level gauge.

48
## ELECTRIC AUTO-LITE MAK-4008 STARTING MOTOR PARTS LIST
### WISCONSIN MOTOR PART NUMBER YA-5-B

**Ref. No. 1 FRAME and FIELD ASSEMBLY**

### Diagram

![Diagram of Electric Auto-Lite Starter Motor Assembly](image)

### Table

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MAK-2001</td>
<td>FRAME and FIELD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>MAK-12</td>
<td>BRUSH</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>MAK-28</td>
<td>TERMINAL STUD</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>MAK-30</td>
<td>INSULATION for field coil</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>MAK-49</td>
<td>INSULATING WASHER for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>MAK-51</td>
<td>INSULATING BUSHING for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>MX-38A</td>
<td>SCREW for pole shoe</td>
<td>4</td>
</tr>
<tr>
<td>8</td>
<td>SSA-43</td>
<td>PLAIN WASHER</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>8X-146</td>
<td>NUT for terminal stud, 3/4&quot;-20 thread, hexagon</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>12X-199</td>
<td>LOCK WASHER for terminal stud, 3/4&quot;</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>MAK-30055</td>
<td>FIELD COIL ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>MAK-44</td>
<td>CONNECTOR for field coil</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>MAK-1007</td>
<td>FIELD COIL, U.R.</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>MAK-1008</td>
<td>FIELD COIL, L.R.</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>MAK-1009</td>
<td>FIELD COIL, L.U.</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>MAK-1010</td>
<td>FIELD COIL, U.U.</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>MAK-20</td>
<td>THRU BOLT for frame</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>8X-173</td>
<td>NUT for thru bolt, No. 10-22 thread, hexagon</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>X-196</td>
<td>LOCK WASHER for thru bolt, No. 10</td>
<td>2</td>
</tr>
<tr>
<td>20</td>
<td>MAK-3002</td>
<td>COMMUTATOR END HEAD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>MAK-19</td>
<td>BRUSH SPRING</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>MAK-39</td>
<td>FELT (not illustrated)</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>MAK-10345</td>
<td>GROUNDED BRUSH</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>MAK-54</td>
<td>THRUST WASHER for armature, drive end (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>MAK-55</td>
<td>THRUST WASHER for armature, comm. end</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref No.</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>MAK-2006</td>
<td>ARMATURE</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>EBA-10</td>
<td>BENDIX DRIVE ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>EB-65045</td>
<td>PINION</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>EB-6505</td>
<td>DRIVE SPRING</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>EB-6513</td>
<td>ANTI-DRIFT SPRING</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>EB-6823</td>
<td>THRUST WASHER</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>EB-6824</td>
<td>SUPPORT for drive spring</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>EB-6825</td>
<td>MESSING SPRING</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>EB-6826</td>
<td>SLEAVE for anti-drift spring</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>EB-6827</td>
<td>PINION WASHER</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>EB-6828</td>
<td>CASTELLATED NUT</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>EB-7011</td>
<td>SHAFT</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>EB-7902</td>
<td>DRIVE STOP</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>X-528</td>
<td>COTTER PIN</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>MAK-1048</td>
<td>DRIVE END HEAD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>14X-39</td>
<td>BRONZE BEARING</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>X-386</td>
<td>OILER for bronze bearing (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>GAS-1024F</td>
<td>COVER BAND</td>
<td>1</td>
</tr>
<tr>
<td>44</td>
<td>X-714</td>
<td>SCREW for cover band</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>8X-794</td>
<td>NUT for cover band</td>
<td>1</td>
</tr>
</tbody>
</table>

* BRUSH SET for service, MAK-2012AS.
Parts are identified by reference number. See parts list for correct part number.
<table>
<thead>
<tr>
<th>Ref No</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GAS-2084</td>
<td>FRAME and FIELD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>GAS-40</td>
<td>INSULATING WASHER for terminal stud, inner (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>GAS-41</td>
<td>INSULATING BUSHING for terminal stud, (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>GAS-44</td>
<td>INSULATION for field coil connection</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>GAS-45</td>
<td>HOLDER for field coil</td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td>GAS-81</td>
<td>LEAD ASSEMBLY (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Includes:</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>GFB-36</td>
<td>TERMINAL STUD</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>X-122</td>
<td>TERMINAL (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>GAS-2005A</td>
<td>FIELD COIL ASSEMBLY complete</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>GFB-55</td>
<td>INSULATING WASHER for terminal stud, outer</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>MN-21</td>
<td>DOWEL PIN</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>MZ-36A</td>
<td>POLE SHOE SCREW</td>
<td>2</td>
</tr>
<tr>
<td>13</td>
<td>X-140</td>
<td>NUT for field ground screw</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>X-1274</td>
<td>WASHER for terminal stud</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shakerproof No. 10 (not illustrated)</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>X-1275</td>
<td>WASHER for ground screw</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shakerproof No. 8 (not illustrated)</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>X-1350</td>
<td>FIELD GROUND SCREW, No. 8-32 thread x 7/16&quot; long, flat head (not illustrated)</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>SX-1377</td>
<td>NUT for terminal stud</td>
<td>2</td>
</tr>
<tr>
<td>18</td>
<td>GAS-20A</td>
<td>THRU BOLT for end head mounting</td>
<td>2</td>
</tr>
<tr>
<td>19</td>
<td>12X-196</td>
<td>LOCK WASHER for thru bolt and terminal stud</td>
<td>3</td>
</tr>
<tr>
<td>20</td>
<td>GAS-2077C</td>
<td>COMMUTATOR END HEAD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>GAS-51</td>
<td>SPRING RETAINER for 3rd brush plate</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>GAS-79B</td>
<td>DRIVE END HEAD</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>X-489</td>
<td>OILER</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>SX-35</td>
<td>SCREW for brush plate mounting</td>
<td>9</td>
</tr>
<tr>
<td>25</td>
<td>X-195</td>
<td>LOCK WASHER for plate mounting, No. 8</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>GAS-2021R</td>
<td>MAIN BRUSH PLATE ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>GAS-31</td>
<td>GROUND WIRE with terminals</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>GAS-15</td>
<td>BRUSH HOLDER</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>GAS-17</td>
<td>SPRING for grounded brush</td>
<td>2</td>
</tr>
<tr>
<td>30</td>
<td>GAS-18</td>
<td>SPRING for insulated brush</td>
<td>2</td>
</tr>
<tr>
<td>31</td>
<td>GAS-1021R</td>
<td>MAIN BRUSH PLATE</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>GEM-32</td>
<td>MAIN BRUSH</td>
<td>2</td>
</tr>
<tr>
<td>33</td>
<td>SX-122</td>
<td>SCREW for grounded brush</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>X-195</td>
<td>LOCK WASHER for brush screw, No. 8</td>
<td>2</td>
</tr>
<tr>
<td>35</td>
<td>SX-1496</td>
<td>SCREW for insulated brush</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>GAS-2082RA</td>
<td>3rd BRUSH PLATE ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>GAS-15</td>
<td>BRUSH HOLDER</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>GAS-17</td>
<td>BRUSH SPRING</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>GAS-1022RA</td>
<td>3rd BRUSH PLATE</td>
<td>1</td>
</tr>
<tr>
<td>40</td>
<td>IA-13</td>
<td>3rd BRUSH</td>
<td>1</td>
</tr>
<tr>
<td>41</td>
<td>X-195</td>
<td>LOCK WASHER for 3rd brush screw, No. 8</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>SX-378</td>
<td>SCREW for 3rd brush</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>GAS-49A</td>
<td>COVER for commutator end head</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref No</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>44</td>
<td>GAS-70</td>
<td>GASKET for commutator end cover</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>GAS-71</td>
<td>BEARING RETAINER WASHER</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>GAS-77</td>
<td>FELT WASHER</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>GAS-78</td>
<td>RETAINER for felt washer</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>IA-175</td>
<td>FELT RETAINING WASHER</td>
<td>1</td>
</tr>
<tr>
<td>49</td>
<td>SX-61</td>
<td>SCREW for bearing retainer</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 10-32 thread x 7/16&quot; long, flat head</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>SX-63</td>
<td>SCREW for cover mounting</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 8-32 thread x 3/8&quot; long, flat head</td>
<td></td>
</tr>
<tr>
<td>51</td>
<td>X-292</td>
<td>BALL BEARING, S.A.E. No. 201, commutator end</td>
<td>1</td>
</tr>
<tr>
<td>52</td>
<td>GAS-1075E</td>
<td>DRIVE END HEAD ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>53</td>
<td>DB-13</td>
<td>FLAT RETAINER for felt washer</td>
<td>1</td>
</tr>
<tr>
<td>54</td>
<td>GAS-73</td>
<td>CUPPED RETAINER for felt washer</td>
<td>1</td>
</tr>
<tr>
<td>55</td>
<td>GAS-74</td>
<td>BEARING RETAINER</td>
<td>1</td>
</tr>
<tr>
<td>56</td>
<td>GAS-75B</td>
<td>DRIVE END HEAD</td>
<td>1</td>
</tr>
<tr>
<td>57</td>
<td>IGP-34</td>
<td>FELT WICK</td>
<td>1</td>
</tr>
<tr>
<td>58</td>
<td>SC-127</td>
<td>FELT WASHER</td>
<td>1</td>
</tr>
<tr>
<td>59</td>
<td>SX-55</td>
<td>SCREW for bearing retainer</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 8-32 thread x 3/8&quot; long, round head</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>X-195</td>
<td>LOCK WASHER for retainer screw, No. 8</td>
<td>3</td>
</tr>
<tr>
<td>61</td>
<td>X-294</td>
<td>BALL BEARING, S.A.E. 202, drive end</td>
<td>1</td>
</tr>
<tr>
<td>62</td>
<td>X-489</td>
<td>OILER</td>
<td>1</td>
</tr>
<tr>
<td>63</td>
<td>GAS-2076</td>
<td>ARMATURE ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Includes:</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>GAS-33</td>
<td>SNAP RING, D.E.</td>
<td>1</td>
</tr>
<tr>
<td>65</td>
<td>IA-158</td>
<td>SNAP RING, C.E.</td>
<td>1</td>
</tr>
<tr>
<td>66</td>
<td>SX-160</td>
<td>NUT for armature shaft</td>
<td>1</td>
</tr>
<tr>
<td>67</td>
<td>X-1278</td>
<td>WASHER for armature shaft, 7/16&quot;Shakerproof</td>
<td>1</td>
</tr>
<tr>
<td>68</td>
<td>X-1460A</td>
<td>KEY for drive pulley, No. 212 Woodruff</td>
<td>1</td>
</tr>
<tr>
<td>69</td>
<td>GAS-1024F</td>
<td>DRIVE PULLEY Supplied by Wisconsin Motor Corp. Refer to Electrical Equipment in engine parts list for correct part number</td>
<td>1</td>
</tr>
<tr>
<td>70</td>
<td>GAS-1024F</td>
<td>COVER BAND</td>
<td>1</td>
</tr>
<tr>
<td>71</td>
<td>X-714</td>
<td>SCREW for cover band</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 10-32 thread x 3/8&quot; long, round head</td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>SX-794</td>
<td>NUT for band cover, No. 10-32 thread, square</td>
<td>1</td>
</tr>
</tbody>
</table>

* BRUSH SET for SERVICE GEM-20125
ELECTRIC AUTO-LITE IGW-4179 IGNITION TIMER PARTS LIST
WISCONSIN MOTOR PART NUMBER YF-8A-51

20 SHAFT and GOVERNOR ASSEMBLY

<table>
<thead>
<tr>
<th>Ref No</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CB-140</td>
<td>INSULATING BUSHING for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>IB-33</td>
<td>LOCKNUT for contact screw</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>IG-90</td>
<td>THRUST WASHER for drive shaft</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>IG-475</td>
<td>FELT WICK for cam sleeve</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>IG-816A</td>
<td>THRUST WASHER for advance cam</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>IG-1860A-1</td>
<td>ADVANCE ARM</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>IGB-21</td>
<td>INSULATION for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>IGB-22</td>
<td>INSULATING WASHER for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>IGB-1007</td>
<td>CLAMP SPRING and HINGE for cap</td>
<td>2</td>
</tr>
<tr>
<td>10</td>
<td>IGB-1010</td>
<td>BREAKER PLATE</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>IGB-1025</td>
<td>CONDENSER</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>IGB-2176</td>
<td>BASE ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>IG-579A</td>
<td>BRONZE BEARING (not illustrated)</td>
<td>2</td>
</tr>
<tr>
<td>14</td>
<td>IG-104</td>
<td>THRUST WASHER for drive shaft, upper</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>IGW-38</td>
<td>INSULATING WASHER for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>IGW-39</td>
<td>TERMINAL STUD</td>
<td>1</td>
</tr>
<tr>
<td>17</td>
<td>IGW-54</td>
<td>WASHER for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>IGW-188</td>
<td>FELT WICK for oiler (not illustrated)</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ref No</th>
<th>Auto-Lite Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>IGW-30265</td>
<td>BREAKER CONTACT SET</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>IGW-3103LA</td>
<td>SHAFT and GOVERNOR ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>IGB-3015</td>
<td>Cam retaining spring</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>IGW-37</td>
<td>CAM RETAINING SPRING</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>IGW-92</td>
<td>CAM SPACER</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>IGW-1014L8</td>
<td>GOVERNOR WEIGHT</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>IGW-2100LAD</td>
<td>CAM and STOP PLATE</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>IGW-2103L</td>
<td>DRIVE SHAFT</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>8X-39</td>
<td>SCREW for condenser mounting</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 8-32 thread x 3/16&quot; long, round head</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>8X-173</td>
<td>NUT for terminal stud</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 10-32 thread, hexagon</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>8X-183A</td>
<td>WASHER for terminal stud, No. 10 plain</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>12X-195</td>
<td>LOCK WASHER for breaker plate, No. 8</td>
<td>3</td>
</tr>
<tr>
<td>31</td>
<td>12X-196</td>
<td>LOCK WASHER for terminal stud, No. 10</td>
<td>2</td>
</tr>
<tr>
<td>32</td>
<td>8X-364</td>
<td>SCREW for breaker plate mounting</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No. 8-32 thread x 5/16&quot; long, round head</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>X-479A</td>
<td>OILER</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>X-1270</td>
<td>WASHER for terminal stud</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shakeproof No. 10</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>X-1276</td>
<td>WASHER for condenser mounting</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shakeproof No. 8</td>
<td></td>
</tr>
</tbody>
</table>
GENERAL DESCRIPTION

The one cylinder magneto whose parts are listed in this instruction sheet were built specifically for application on Wisconsin single cylinder engines. The variations of the Type FM-XIA7 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 magneto 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 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 of...
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.

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 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.

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

Magneto 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 Radio Shielded Flange Mounting Magnetos

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>T1496</td>
<td>Fulcrum Pin Snap Ring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>V1496</td>
<td>Ground Switch Snap Ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1496B</td>
<td>Rotor Drive End Bearing Snap Ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1496D</td>
<td>Rotor Drive End Shaft Snap Ring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2303</td>
<td>Oil Slinger Baffle Disc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R2425</td>
<td>Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z2425</td>
<td>Frame</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2428</td>
<td>Impulse Coupling Housing Cupped Washer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2430</td>
<td>End Cap</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>B2430</td>
<td>End Cap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J2430A</td>
<td>End Cap</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AX-M-R2433</td>
<td>Condenser – Bracket in &quot;R&quot; Position</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>W2437</td>
<td>Breaker Arm, Support Bracket and Points CW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X2437</td>
<td>Breaker Arm, Support Bracket and Points CCW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2437A</td>
<td>Breaker Arm, Support Bracket and Points CW</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2437A</td>
<td>Ground Switch Insulating Bushing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D2438</td>
<td>Contact Support Locking Screw Plate Washer No. 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P2474</td>
<td>Cable Outlet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z2477C</td>
<td>Coll</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2477C</td>
<td>Coll</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25SS14A</td>
<td>Coll Bridge Setscrew – 1/4-20x7/8&quot;</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>D2480</td>
<td>Magnetic Rotor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2480</td>
<td>Magnetic Rotor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2492A</td>
<td>Rotor Drive End Seal Outer Washer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A2492C</td>
<td>Rotor Drive End Seal Inner Washer</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2498</td>
<td>End Cap to Frame Gasket</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2498</td>
<td>End Cap to Frame Gasket (lead)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Order by Part No.</td>
<td>Name of Part</td>
<td>FM-XIA7</td>
<td>FM-XIA7E</td>
<td>FM-XDB7E</td>
<td>FM-XDB7E</td>
<td>FM-XED1BP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>----------</td>
<td>----------</td>
<td>----------</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J2499A</td>
<td>Ground Switch Wire Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E2502</td>
<td>Impulse Coupling Outer Shell Plate Washer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2513A</td>
<td>Ground Switch Button Spring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D2514</td>
<td>Ground Switch Insulated Lever</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2514</td>
<td>Ground Switch Button</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2514C</td>
<td>Primary Ground Switch</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CX2514C</td>
<td>Push Button Ground Switch</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W2563</td>
<td>Coupling Hub Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LX2563</td>
<td>Coupling Hub Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YX2563</td>
<td>Coupling Hub Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ZX2563</td>
<td>Coupling Hub Assembly</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W2563C</td>
<td>Impulse Coupling Complete – Type UCL-1 – CCW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MX2563C</td>
<td>Impulse Coupling Complete – Type UC-3 – CW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EZ2563C</td>
<td>Impulse Coupling Complete – Type UC-1 – CW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WY2563C</td>
<td>Impulse Coupling Complete – Type UCL-1 – CCW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D2568</td>
<td>Impulse Coupling Drive Spring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2568</td>
<td>Impulse Coupling Pawl Stop Pin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S2568</td>
<td>Impulse Coupling Pawl Stop Pin</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K2570</td>
<td>Impulse Coupling Nut</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M2570</td>
<td>Impulse Coupling Nut</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2572</td>
<td>Impulse Coupling Bushing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2723</td>
<td>Rotor Thrust Bearing Shim – As needed</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B2735A</td>
<td>Cable Outlet Nut</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2744</td>
<td>Ground Switch Bushing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G2788</td>
<td>Cam Wick and Holder</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2788</td>
<td>Cam Wick and Holder</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L2788</td>
<td>Breaker Arm Wick</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G3861</td>
<td>Rotor Shaft Seal</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D4373</td>
<td>Ground Switch Bushing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V4631</td>
<td>Bearing Support – CW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W4631</td>
<td>Bearing Support – CCW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5931A</td>
<td>Impulse Coupling Nut Lockwire</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5931B</td>
<td>Impulse Coupling Nut Lockwasher</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C5949</td>
<td>Rotor Drive End Bearing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A5950A</td>
<td>Rotor Cam End Bearing</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R5957</td>
<td>Impulse Coupling Shell – CCW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Z5957</td>
<td>Impulse Coupling Shell – CW</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D5963</td>
<td>Impulse Coupling Pawl Spring</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D5966</td>
<td>Impulse Coupling Outer Shell Felt Washer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B5969</td>
<td>Contact Support Locking Screw Plate Washer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B5969</td>
<td>Ground Switch Plate Washer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C6018</td>
<td>Ground Switch Insulating Washer</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6030A</td>
<td>Vent Cover</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C6032B</td>
<td>Vent Screen</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6120</td>
<td>Coil Clip</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6120</td>
<td>Coil Clip</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B6222</td>
<td>Impulse Coupling Cupped Washer Screw</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K1</td>
<td>Key – Rotor Shaft to Impulse Coupling</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FAIRBANKS, MORSE & CO.

MAGNETO DIVISION - BELOIT, WISCONSIN

Printed in U.S.A. 358489-045720M-WP
MARVEL-SCHEBLER CARBURETER

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 a 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-D) and VH-63 (Wis. No. L-52-G) on above listed Wisconsin engines. Models VII-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 fully opened 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. As the passage is provided to carry sufficient air and fuel to the engine side of the throttle 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 body.

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 to 1.2 to 1.7 to 3 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 set 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 choke 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 3 to 3.5 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 “ leaned.” 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.

Printed by Wisconsin Motor Corp. in U.S.A.
## SERVICE PARTS LIST

<table>
<thead>
<tr>
<th>Marvel-Schebler Part Numbers</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CARBURETOR ASSEMBLY</strong> — Complete</td>
<td></td>
</tr>
<tr>
<td><strong>CARBURETOR BODY ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>THROTTLE SHAFT ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>THROTTLE FLY (12°)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>THROTTLE FLY (10°)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SCREW — No. 6-32 x 1/2&quot; Fillister Head (Throttle Adj.)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SCREW — No. 4-40 x 1/4&quot; Sems (Throttle Fly)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SCREW — No. 4-40 x 3/16&quot; Sems (Throttle Fly)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SCREW — No. 4-40 x 3/16&quot; Sems (Choke Shaft — 2)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET — Float Valve Seat</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET — Bowl Nut to Bowl</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET — Body to Bowl</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET — Nozzle</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET ASSORTMENT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>STOP — Throttle</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SPRING — Choke Lever Friction</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SPRING — Throttle Adjusting Screw</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SPRING — Idle Adjusting Needle</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CHOKE SHAFT ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CHOKE FLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FLOAT and LEVER ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SHAFT — Float Lever</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NEEDLE — Idle Adjusting</strong></td>
<td></td>
</tr>
<tr>
<td><strong>MAIN ADJUSTING NEEDLE, PACKING NUT and RETAINER ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PACKING — Main Adjusting Needle</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PACKING (2) — Throttle Shaft</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NOZZLE</strong></td>
<td></td>
</tr>
<tr>
<td><strong>RETAILER — Main Adjusting Needle Packing</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PIN — Choke Stop</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FLOAT BOWL</strong></td>
<td></td>
</tr>
<tr>
<td><strong>LOCKWASHER — Throttle Shaft (No. 8 Screw)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>NUT — No. 8-32 — Throttle Shaft</strong></td>
<td></td>
</tr>
<tr>
<td><strong>BOWL NUT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>BOWL RETAINER and NOZZLE PLUG</strong> (Not illustrated)</td>
<td></td>
</tr>
<tr>
<td><strong>FLOAT VALVE, SEAT and GASKET ASSEMBLY</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GASKET — Fuel Overflow Fitting</strong> (Not illustrated)</td>
<td></td>
</tr>
<tr>
<td><strong>FITTING — Gas Overflow</strong> (Not illustrated)</td>
<td></td>
</tr>
<tr>
<td><strong>LOCKNUT — 1/8&quot; Pipe</strong> — (Not illustrated)</td>
<td></td>
</tr>
<tr>
<td><strong>FUEL BAFFLE</strong> (Not illustrated)</td>
<td></td>
</tr>
<tr>
<td><strong>REPAIR KIT</strong> — Service</td>
<td></td>
</tr>
</tbody>
</table>
Zenith Model 87

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 makes 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 sides 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 pilot 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 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 sputtering from being overheated, 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 (counterclockwise) to decrease the engine speed.

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

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**

(a) 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**

(a) 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**

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

D. **Disassemble Fuel Bowl**

(a) Remove the main jet adjustment (34) and fibre washer (33), using a 9/16” open end wrench.

(b) Remove the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.

(c) Remove the idle jet (29), using a small screwdriver.

(d) Remove the bowl drain plug (35).

E. **Disassemble Throttle Body**

(a) Remove the float axle (26) by pressing against the end with the blade of a screwdriver.

(b) Remove the float (27).

(c) Remove the fuel valve needle (25), using the fingers.

(d) Remove the fuel bowl to throttle body gasket (28).

(e) Remove the main discharge jet (23), using a small screwdriver.

(f) Remove the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.

(g) Remove the idle adjusting needle (11) and spring (10).

**Clean and Inspect Parts**

A. **Clean Parts**

(a) Clean all metal parts thoroughly with cleaning solution and rinse in solvent.

(b) 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**

(a) **Floor 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.

(b) **Floor Axle.** Replace if any wear can be visually detected on the bearing surface.

(c) **Fuel Valve Seat & Needle Assembly.** Replace fuel valve seat and needle because both parts wear and may cause improper float level.

(d) **Idle Adjusting Needle and Spring.** Inspect point of needle. This must be smooth and free of ridges.

(e) **Gaskets and Fibre Washers.** Replace all gaskets and fibre washers every time the carburetor is disassembled.

(f) **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**

(a) Install the fuel valve seat (25) and fibre washer (24), using Zenith Tool No. C161-85.

(b) Install the main discharge jet (23), using a small screwdriver.

(c) 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.

(d) **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.

(e) 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 to the float bowl. This measurement should be 61/64”, plus or minus 1/32”.

(f) **Bending Floor 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”.

![REMOVE GASKET. HOLD FLOAT SO THAT LEVER CONTACTS HEAD OF PIN WITHOUT PRESSURE.](image)

**Float Setting**

(a) Install throttle body to fuel bowl assembly gasket (29) on machined surface of throttle body (9).

(b) Install the idle adjusting needle (11) and spring (10).

B. **Reassemble Fuel Bowl**

(a) Install the main jet (32) and fibre washer (31), using Zenith Tool No. C161-83 main jet wrench.

(b) Install the main jet adjustment (34) and fibre washer (33), using a 9/16” open end wrench.

(c) Install the idle jet (29), using a small screwdriver.

(d) Install the bowl drain plug (35).

C. **Reassemble Carburetor Bodies**

(a) 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:

# SERVICE PARTS LIST for ZENITH 87 Series CARBURETOR

<table>
<thead>
<tr>
<th>Item No</th>
<th>Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>93-T1858-10</td>
<td>SCREW—STOP LEVER</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>93-C111-10</td>
<td>SPRING—STOP SCREW</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>93-C29-721</td>
<td>SHAFT &amp; LEVER—THROTTLE for 4, 7</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>93-C29-1120</td>
<td>SHAFT &amp; LEVER—THROTTLE for 2, 3, 5, 8A, 6, 8A, 9, 10</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>93-C29-1313</td>
<td>SHAFT &amp; LEVER—THROTTLE for 1, 7, 9, 11</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>93-C29-1439</td>
<td>SHAFT &amp; LEVER—THROTTLE for 12</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>93-C21-157</td>
<td>PLATE—THROTTLE for 1, 4, 9, 11</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>93-C21-159</td>
<td>PLATE—THROTTLE for 2, 3</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>93-C21-182</td>
<td>PLATE—THROTTLE for 5, 5A, 6, 6A, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>93-C134-1</td>
<td>SCREW—THROTTLE PLATE for 4</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>93-T31555-3</td>
<td>SCREW—THROTTLE PLATE for 1, 2, 3, 5, 5A, 6, 6A, 7, 8, 9, 10, 11, 12</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item No</th>
<th>Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>93-C111-135</td>
<td>SPRING—ADJUSTMENT NEEDLE</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>93-C46-49</td>
<td>NEEDLE—IDLE ADJUSTMENT</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>93-T10-11</td>
<td>SCREW—CHOKE LEVER SET for 2, 3, 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>93-C106-132</td>
<td>LEVER—CHOKE for 2, 3, 5A, 6A</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>93-C106-182</td>
<td>LEVER—CHOKE for 5, 6, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>93-C105-208</td>
<td>Shaft—choke for 2, 3, 5A, 6A</td>
<td>1</td>
</tr>
<tr>
<td>16</td>
<td>93-C140-47</td>
<td>SCREW—CHOKE PLATE, with L.W.</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>93-C103-97</td>
<td>PLATE—CHOKE for 1, 2, 3, 4, 7, 11</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>93-C102-104</td>
<td>PLATE—CHOKE for 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>93-C63-140</td>
<td>TUBE—BOWL VENT</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>93-T10-10</td>
<td>SCREW—VENT TUBE SET</td>
<td>1</td>
</tr>
</tbody>
</table>

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**

<table>
<thead>
<tr>
<th>Item No</th>
<th>Part Number</th>
<th>Description</th>
<th>No Req</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>93-C25-120</td>
<td>LEVER-THROTTLE for 2, 3</td>
<td>1</td>
</tr>
<tr>
<td>21</td>
<td>93-C25-148</td>
<td>LEVER-THROTTLE for 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>22</td>
<td>93-C25-120</td>
<td>LOCK WASHER-SHAFT NUT for 2, 3, 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>23</td>
<td>93-C66-91-26</td>
<td>JET-DISCHARGE for 1, 4, 7, 11</td>
<td>1</td>
</tr>
<tr>
<td>24</td>
<td>93-T56-20</td>
<td>WASHER-FUEL VALVE SEAT</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>93-C81-17-35</td>
<td>VALVE and SEAT-FUEL for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>93-C120-18</td>
<td>AXLE-FLOAT</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>93-C85-97</td>
<td>FLOAT</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>93-C142-55</td>
<td>GASKET-BOWL</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>93-C52-2-11</td>
<td>JET-IDLE for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>93-B9-98</td>
<td>BOWL-FUEL ASSEMBLY</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>93-T56-24</td>
<td>WASHER-MAIN JET</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>93-C52-7-20</td>
<td>JET-MAIN for 8</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>93-T56-23</td>
<td>WASHER-MAIN PASSAGE</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>93-C138-23</td>
<td>PLUG-MAIN PASSAGE for 4</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>93-T91-1</td>
<td>PLUG-BOWL DRAIN</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>93-T30158-9</td>
<td>SCREW-BOWL to BODY (short)</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>93-T30158-14</td>
<td>SCREW-BOWL to BODY (long)</td>
<td>2</td>
</tr>
<tr>
<td>38</td>
<td>QC-S3</td>
<td>GASKET-FLANGE</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>93-T48-7</td>
<td>SEAL-THROTTLE SHAFT</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>93-T52-13</td>
<td>RETAINER-SHAFT SEAL</td>
<td>2</td>
</tr>
<tr>
<td>41</td>
<td>93-T10-11</td>
<td>SCREW-THRUST COLLAR SET for 1, 4, 7, 11</td>
<td>1</td>
</tr>
<tr>
<td>42</td>
<td>93-C130-29</td>
<td>COLLAR-SHAFT THRUST for 1, 4, 7, 11</td>
<td>1</td>
</tr>
<tr>
<td>43</td>
<td>93-C106-92</td>
<td>SHAFT and LEVER-CHOKE for 1, 7</td>
<td>1</td>
</tr>
<tr>
<td>44</td>
<td>93-C106-113</td>
<td>SHAFT and LEVER-CHOKE for 4</td>
<td>1</td>
</tr>
<tr>
<td>45</td>
<td>93-C106-124</td>
<td>SHAFT and LEVER-CHOKE for 9</td>
<td>1</td>
</tr>
<tr>
<td>46</td>
<td>93-C106-127</td>
<td>SHAFT and LEVER-CHOKE for 5, 6, 8, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>47</td>
<td>93-C106-244</td>
<td>SHAFT and LEVER-CHOKE for 11</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>93-C117-55</td>
<td>SPRING-CHOKE LEVER for 1, 4, 7</td>
<td>1</td>
</tr>
<tr>
<td>49</td>
<td>93-T856-6</td>
<td>SCREW-SWIVEL for 1, 4, 7, 11</td>
<td>1</td>
</tr>
<tr>
<td>50</td>
<td>93-T75-3</td>
<td>SEAL-CHOKE SHAFT (not illus.) for 9</td>
<td>2</td>
</tr>
<tr>
<td>51</td>
<td>93-C81-296</td>
<td>GASKET KIT</td>
<td>1</td>
</tr>
<tr>
<td>52</td>
<td>LQ-35</td>
<td>KIT-REPAIR PARTS for 1, 2, 3, 4, 5, 5A, 6, 6A, 8, 9, 10, 12</td>
<td>1</td>
</tr>
<tr>
<td>53</td>
<td>LQ-34</td>
<td>KIT-REPAIR PARTS for 7, 11</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note: The Venturi, Idle Air Vent and Well Vent are calibrated parts of the Throttle Body (item 9) and are not readily removable.*
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 placing 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 MODEL XH-1 FLANGE MOUNTED MAGNETO

|----------------|------------|------------|------------|---------|---------|---------|---------|---------|---------|

* When replacing a complete magnet use XH-1295D Wiz. No. Y-68A


---

### Ref. No. / Wico Part No. / Description / No Req.

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Wico Part No.</th>
<th>Description</th>
<th>No Req.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M-34X</td>
<td>SPACING WASHER for ground stud (insul.)</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>M-35X</td>
<td>WASHER for ground stud (insul.)</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>M-42X</td>
<td>SPACING WASHER for drive flange</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>M-55X</td>
<td>LOCK WASHER for ground stud</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>A-179X</td>
<td>TRIP ARM</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>15-186</td>
<td>DRIVE SPRING</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>A-243X</td>
<td>SNAP RING</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>IA-234</td>
<td>WASHER for ground stud (steel)</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>IA-383</td>
<td>SPACING WASHER for drive cup</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>2040</td>
<td>DRIVE CUP</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>2122</td>
<td>DRIVEN FLANGE SPACER</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>X226</td>
<td>DRIVEN FLANGE GROUP</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>2288</td>
<td>RETAINER for drive spring</td>
<td>1</td>
</tr>
<tr>
<td>14</td>
<td>S219</td>
<td>PIVOT WASHER for breaker arm</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>S200</td>
<td>NUT for ground stud</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>S201</td>
<td>INSULATING LOCK for ground stud</td>
<td>2</td>
</tr>
<tr>
<td>17</td>
<td>S202</td>
<td>STUD</td>
<td>1</td>
</tr>
<tr>
<td>18</td>
<td>4210</td>
<td>BREAKER ARM LOCK</td>
<td>1</td>
</tr>
<tr>
<td>19</td>
<td>5077</td>
<td>CAM WIPER FELT</td>
<td>1</td>
</tr>
<tr>
<td>20</td>
<td>5250</td>
<td>SCREW for name plate</td>
<td>2</td>
</tr>
<tr>
<td>21</td>
<td>S411</td>
<td>CLAMP SCREW for coil core (Sema)</td>
<td>2</td>
</tr>
<tr>
<td>22</td>
<td>S412</td>
<td>CLAMP SCREW for condenser (Sema)</td>
<td>2</td>
</tr>
<tr>
<td>23</td>
<td>S516</td>
<td>RETAINING RING for rotor bearing</td>
<td>2</td>
</tr>
<tr>
<td>24</td>
<td>S517</td>
<td>ROTOR BEARING</td>
<td>1</td>
</tr>
<tr>
<td>25</td>
<td>S518</td>
<td>IMPULSE SPACER</td>
<td>1</td>
</tr>
<tr>
<td>26</td>
<td>S519</td>
<td>GASKET for impulse stop</td>
<td>1</td>
</tr>
<tr>
<td>27</td>
<td>S520</td>
<td>SPACER for bearing cage group</td>
<td>1</td>
</tr>
<tr>
<td>28</td>
<td>X5521</td>
<td>BEARING CAGE GROUP</td>
<td>1</td>
</tr>
<tr>
<td>29</td>
<td>X5524</td>
<td>COIL CORE GROUP</td>
<td>1</td>
</tr>
<tr>
<td>30</td>
<td>6924</td>
<td>CONDENSER CLAMP (XH-1295D, XH-1295S)</td>
<td>1</td>
</tr>
<tr>
<td>31</td>
<td>S532</td>
<td>CONDENSER CLAMP (XH-1295, XX-1295B, XH-1295C, XH-1295S, XH-1995)</td>
<td>1</td>
</tr>
<tr>
<td>32</td>
<td>X5349</td>
<td>IMPULSE STOP GROUP</td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>S667</td>
<td>BEARING CAGE</td>
<td>1</td>
</tr>
<tr>
<td>34</td>
<td>S610</td>
<td>BUSHING for breaker plate</td>
<td>1</td>
</tr>
<tr>
<td>35</td>
<td>X6416</td>
<td>CONDENSER ASSEMBLY (XH-1295D, XH-1295S)</td>
<td>1</td>
</tr>
<tr>
<td>36</td>
<td>X6414</td>
<td>CONDENSER (XH-1295, XH-1295B, XH-1295C, XH-1295S, XH-1995)</td>
<td>1</td>
</tr>
<tr>
<td>37</td>
<td>S618</td>
<td>COVER GASKET</td>
<td>1</td>
</tr>
<tr>
<td>38</td>
<td>S622</td>
<td>SCREW for distributor cap (Sema)</td>
<td>1</td>
</tr>
<tr>
<td>39</td>
<td>S632</td>
<td>STOP BUTTON GROUP</td>
<td>1</td>
</tr>
</tbody>
</table>

---

1. Y7054 Rotor can be used in place of Y7054, but new Condenser X6916 and Clamp 6924 must also be used.
2. ** (Not Illustrated)
# 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 magneto 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 magneto 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 cam 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 varieties are equipped with dependable, single pole 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 magneto 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 and 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

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

Instructions No. 2864B
February 1, 1947
Ignition spark is observed, no dismantle of the magneto take place and that cable, terminals and spark plug be thoroughly inspected.

Figure 3 - End View Of Type FM-J 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 brackets 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 a 0.020" gap is obtained. This gap should be 0.020" at full speed. The 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 magneto is in the field is unnecessary and inevitable. 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 bearings in the breaker plate, at which time its oil reservoir should be replenished. The grease-packed ball bearing of the drive and 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 magneto 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 retarded to prevent backfiring. The magneto furnished for one cylinder engines are equipped with single pawl couplings.

10. Gear Drive
Flange mounting Type FM-JB7 magneto 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.

11. Radio-Shielded Units
Applications which require complete radio shielding of the ignition system are furnished with the Types FM-JE17 and FM-JE1B7 magneto. These magneto 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
Magneto 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 magneto. 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-11A7 Magnetos

<table>
<thead>
<tr>
<th>Order By Part No.</th>
<th>Name of Part</th>
<th>No. Used</th>
<th>Order By Part No.</th>
<th>Name of Part</th>
<th>No. Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2736</td>
<td>Condenser (Inc. A4361)</td>
<td>1</td>
<td>D2456</td>
<td>Coupling Drive Spring</td>
<td>1</td>
</tr>
<tr>
<td>B2768</td>
<td>Rotor Bearing Snap Ring</td>
<td>1</td>
<td>D2457</td>
<td>Coupling Pawl Stop Pin</td>
<td>1</td>
</tr>
<tr>
<td>B2768</td>
<td>Rotor Shaft Snap Ring</td>
<td>1</td>
<td>D2458</td>
<td>Coupling Nut</td>
<td>1</td>
</tr>
<tr>
<td>Z2425</td>
<td>Frame (or Housing)</td>
<td>4</td>
<td>D2459</td>
<td>Thrust Bearing Shim</td>
<td>2</td>
</tr>
<tr>
<td>E2425</td>
<td>End Cap</td>
<td>1</td>
<td>B4466</td>
<td>Primary Lead Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>A2430</td>
<td>Cplg. Hsg. Cupped Washer</td>
<td>1</td>
<td>E2668</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>H2454</td>
<td>Condenser (Inc. A4361)</td>
<td>1</td>
<td>E2773</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>D2545</td>
<td>Rotor Bearing Snap Ring</td>
<td>1</td>
<td>E2778</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>G2433</td>
<td>Rotor Bearing Snap Ring</td>
<td>1</td>
<td>E2788</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>G6503</td>
<td>Rotor Shaft Snap Ring</td>
<td>1</td>
<td>E2789</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>A4361</td>
<td>Frame (or Housing)</td>
<td>4</td>
<td>E2790</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>J4631</td>
<td>Cplg. Hsg. Cupped Washer</td>
<td>1</td>
<td>E2791</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>S2437</td>
<td>Frame (or Housing)</td>
<td>4</td>
<td>E2792</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>A5950A</td>
<td>End Cap</td>
<td>1</td>
<td>E2793</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2455</td>
<td>Stationary Bracket &amp; Points</td>
<td>1</td>
<td>E2794</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>E2428</td>
<td>Brkr. Pt. Adj. Screw</td>
<td>2</td>
<td>E2795</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>A2430</td>
<td>Prf. Grd. Insulating Bushing</td>
<td>1</td>
<td>E2796</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>H2454</td>
<td>Prf. Grd. Flat Washer</td>
<td>1</td>
<td>E2797</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>G2433</td>
<td>Condenser (Inc. A4361)</td>
<td>1</td>
<td>E2798</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>L2477</td>
<td>Coil Assembly (Inc. E2736, A4361)</td>
<td>1</td>
<td>E2799</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>G2440</td>
<td>Magnetic Motor</td>
<td>1</td>
<td>E2800</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Inner Retaining Washer</td>
<td>1</td>
<td>E2801</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>L2477</td>
<td>Coil Assembly (Inc. E2736, A4361)</td>
<td>1</td>
<td>E2802</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>G2440</td>
<td>Magnetic Motor</td>
<td>1</td>
<td>E2803</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Inner Retaining Washer</td>
<td>1</td>
<td>E2804</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Outer Retaining Washer</td>
<td>1</td>
<td>E2805</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2806</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2807</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2808</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2809</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2810</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2811</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2812</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2813</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2814</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2815</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2816</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2817</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2818</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2819</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2820</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2821</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>Rotor Bearing Insulating Washer</td>
<td>1</td>
<td>E2822</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>C2492</td>
<td>End Cap to Frame Gasket</td>
<td>1</td>
<td>E2823</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
</tbody>
</table>

Obtain Repair Parts From Authorized Fairbanks-Morse Magneto Service Stations
## Repair Chart & List - Type FM-J1B7 Magneto

<table>
<thead>
<tr>
<th>Order By Part No.</th>
<th>Name of Part</th>
<th>No. Used</th>
<th>Order By Part No.</th>
<th>Name of Part</th>
<th>No. Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1493B</td>
<td>Rotor Bearing Snap Ring</td>
<td>1</td>
<td>D2565</td>
<td>Coupling Drive Spring</td>
<td>1</td>
</tr>
<tr>
<td>B1493D</td>
<td>Rotor Shaft Snap Washer</td>
<td></td>
<td>R2568</td>
<td>Coupling Pawl Stop Pan</td>
<td></td>
</tr>
<tr>
<td>B2276B</td>
<td>End Cap Screw Flat Washer</td>
<td>1</td>
<td>R2569</td>
<td>Coupling Nut</td>
<td></td>
</tr>
<tr>
<td>E2303</td>
<td>Oil Slinger Disc - Std. Flange</td>
<td></td>
<td>A2372</td>
<td>Coupling Gear Bushing</td>
<td></td>
</tr>
<tr>
<td>E2425</td>
<td>Frame (or Housing)</td>
<td></td>
<td>G2723</td>
<td>Thrust Bearing Shim</td>
<td>2</td>
</tr>
<tr>
<td>AX2430</td>
<td>End Cap</td>
<td></td>
<td>E2736</td>
<td>Primary Lead Wire Tube</td>
<td></td>
</tr>
<tr>
<td>M2433</td>
<td>Condenser (Inc. A2361)</td>
<td></td>
<td>E2736B</td>
<td>Primary Ground Wire Tube</td>
<td>1</td>
</tr>
<tr>
<td>E2437</td>
<td>Bkr. Pt. Set (Inc. E2446, E2788)</td>
<td></td>
<td>E2785</td>
<td>Cam Felt Wick</td>
<td></td>
</tr>
<tr>
<td>E2455</td>
<td>Stationary Bracket &amp; Pointer</td>
<td></td>
<td>E282L</td>
<td>Rotor Bearing Insulating Strip</td>
<td>1</td>
</tr>
<tr>
<td>E2457A</td>
<td>Bkr. Pt. Adjustment Screw</td>
<td></td>
<td>A2892</td>
<td>Cam Felt Wick Spacer</td>
<td></td>
</tr>
<tr>
<td>D2458</td>
<td>Pri. Ord. Insulating Bushing</td>
<td></td>
<td>Q2861</td>
<td>Bearing Seal Rubber Washer</td>
<td></td>
</tr>
<tr>
<td>L2457</td>
<td>Coll Assembly (Inc. E2736, A2361)</td>
<td></td>
<td>A2361</td>
<td>Lead Wire Terminal (#6)</td>
<td>1</td>
</tr>
<tr>
<td>JX4260</td>
<td>Magnetic Rotor</td>
<td>1</td>
<td>A2361A</td>
<td>Lead Wire Terminal (#6)</td>
<td></td>
</tr>
<tr>
<td>C2492</td>
<td>Inner Retaining Washer</td>
<td></td>
<td>B2466</td>
<td>Ground Screw End Nut</td>
<td></td>
</tr>
<tr>
<td>C2493</td>
<td>Bearing Insulating Washer</td>
<td>2</td>
<td>A3933A</td>
<td>Coupling Nut Lockwire</td>
<td></td>
</tr>
<tr>
<td>H2498</td>
<td>End Cap to Frame Gasket</td>
<td></td>
<td>C5949</td>
<td>Rotor Ball Bearing</td>
<td></td>
</tr>
<tr>
<td>B2499A</td>
<td>Primary Ord. Wire (Inc. E2736B, A361, A361A)</td>
<td>1</td>
<td>B950A</td>
<td>Rotor Sleeve Bearing</td>
<td></td>
</tr>
<tr>
<td>A2513A</td>
<td>Switch Button Spring</td>
<td></td>
<td>E2997</td>
<td>Coupling Shell</td>
<td></td>
</tr>
<tr>
<td>E2514</td>
<td>Switch Push Button</td>
<td></td>
<td>B9569</td>
<td>Sta'ly Contact Flat Washer</td>
<td></td>
</tr>
<tr>
<td>V2563</td>
<td>Coupling Hub Assembly</td>
<td></td>
<td>C6503</td>
<td>Cam Felt Wick Holding Washer</td>
<td></td>
</tr>
<tr>
<td>MX2563C</td>
<td>Coupling Complete (Inc. V2563, D2565, B3957)</td>
<td>1</td>
<td>G2492</td>
<td>Complete Gasket Kit (Inc. A2362A, E2498, G3661)</td>
<td></td>
</tr>
</tbody>
</table>

Obtain Repair Parts From Authorized Fairbanks-Morse Magneto Service Stations

329336-02/7/29-E2H
Printed in U.S.A
STROMBERG OH-5/8 CARBURETOR
FOR STROMBERG NUMBER, CODE NUMBER, WISCONSIN SYMBOL NUMBER, ENGINE MODELS
AND BORE AND STROKE SPECIFICATIONS SEE PARTS PAGE
SIZE: 8/8" HORIZONTAL S.A.E. 1-13/16" FLANGE CENTERS

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 Fuelurum Pin Clip
9. Float Needle Valve
10. Float Fuelurum 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.
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