

Magneto Ignition Assemblies By Engine Model

| MODEL | WIS. NO. | VENDOR NO. | OBSOLETE/ REPLACEMENT | DRIVE GEAR |
|----------------|----------|------------|--------------------------|----------------|
| AA, AB, AK | Y35 | FMJ1B7 | Y109S1 | |
| ABN, AKN | Y57 | XH1295 | Y68AS1 | |
| ABN, AKN | Y68A | XH1295D | Y109S5 | |
| ABN, AKN | Y109 | FMXD1B7S | obsolete | GD87C |
| ABN, AKN | Y73B | FMXD1B7 | NLA; no replacement | GD113 |
| ACN, BKN | Y35 | FMJ1B7 | Y109S1 | |
| ACN, BKN | Y57 | XH1295 | Y68AS1 | |
| ACN, BKN | Y68A | XH1295D | Y109S5 | |
| ACN, BKN | Y109 | FMXD1B7S | obsolete | GD87C |
| ACN, BKN | Y109A | FMXD1B7T | Y109S1 | |
| ACN, BKN | Y109B | FMXD1B7S3 | Y109S1 | |
| ACN, BKN | Y110S1 | FMPE1B7 | | Radio shielded |
| ACN, BKN | Y110A | FMPE1B7A | NLA; no replacement | |
| ACN, BKN | Y110B | FMPE1B7AE | NLA; no replacement | |
| ACN, BKN | Y110CS1 | FMXDE1B7S1 | | Radio shielded |
| ACN, BKN | Y111 | XH2477B | Y109S1 | |
| ACN, BKN | Y135A | FMS1B7S1 | Y109S4 | GD87B |
| ACN, BKN | Y112A | FMXE2B7C1 | | Radio shielded |
| ACN, BKN | Y135 | FMS1B7 | Y109S1 | GD87C |
| AEH, AEHS, AFH | Y34 | FMJ1A7 | Y72 | |
| AEH, AEHS, AFH | Y58 | XH150C | Y72 | |
| AEH, AEHS, AFH | Y72 | FMX1A7 | | Base mounted |
| AEH, AEHS, AFH | Y84 | FMXE1A7F | NLA; no replacement | Base mounted |
| AFH, AGH, AHH | Y34 | FMJ1A7 | Y72 | |
| AFH, AGH, AHH | Y58 | XH150C | Y72 | |
| AFH, AGH, AHH | Y72 | FMX1A7 | | |
| AFH, AGH, AHH | Y84 | FMXE1A7F | NLA; no replacement | |
| AEN, AENL | Y62 | XH1995 | NLA; no replacement | |
| AEN, AENL | Y73B | FMXD1B7 | Y117S1 | |
| AEN, AENL | Y76 | FMX1B7E | Y117S1 | |
| AEN, AENL | Y83A | FMXDE1B7P | Y119AS3 | |

Magneto Ignition Assemblies By Engine Model (cont.)

| MODEL | WIS. NO. | VENDOR NO. | OBSOLETE/ REPLACEMENT | DRIVE GEAR |
|--------------|----------|-------------|--------------------------|----------------|
| AEN, AENL | Y118 | XH2504 | Y117S1 | |
| AEN, AENL | Y117 | FMXD1B7U | | GD113 |
| AEN, AENL | Y117A | FMXD1B7U1 | Y117S1 | |
| AEN, AENL | Y117B | FMXD1B7U2 | Y117S1 | |
| AEN, AENL | Y117C | FMXD1B7U3 | Y117S1 | |
| AEN, AENL | Y117D | FMXD137U4 | Y117S1 | |
| AEN, AENL | Y119S1 | FMXDE1B7U | Y119AS3 | |
| AEN, AENL | Y119AS1 | FMXDE1B7U2 | | |
| AEN, AENL | Y135B | FMS1B7SU | Y117S1 | |
| AGND | Y107A | FMXD1B7R | NLA | GD125 |
| AGND | Y107BS1 | FMXD1B7R1 | | GD125 |
| AGND | Y108B | XH2523B | Y107B | |
| AGND | Y121 | FMPE1B7R | obsolete | Radio shielded |
| AGND | Y121A | FMPE1B7R1 | obsolete | Radio shielded |
| MACND, MBKND | Y110S1 | FMPE1B7 | | Radio shielded |
| MACND, MBKND | Y110A | FMPE1B7A | NLA | Radio shielded |
| MACND, MBKND | Y110B | FMPE1B7A3 | NLA | Radio shielded |
| MACND, MBKND | Y110CS1 | FMXDE1B7S1 | | Radio shielded |
| MACND, MBKND | Y112A | FMXE2B7C1 | | Radio shielded |
| MAENLD | Y119-1 | FMXDE1B7U | Y119AS3 | |
| MTHD | Y93CS1 | FMPE1-2B7E2 | | Radio shielded |
| MVE4D, MVF4D | Y86 | FMZVE4B7 | NLA | Radio shielded |
| MVG4D | Y98CS1 | FMXZE4B7-4 | | GD103-1 |
| MVH4D | Y98CS2 | FMXZE4B7-4 | | GD93C4 |
| TE, TF | Y67 | XH1961 | Y80S1 | |
| TE, TF | Y67A | XH1961C | Y80S1 | GD93C1 |
| TE, TF | Y80S1 | FMX1-2B71 | | GD93C1 |
| TH, THD | Y67 | XH1961 | Y80S1 | |
| TH, THD | Y67A | XH1961C | Y80S1 | |
| TH, THD | Y80S2 | FMX1-2B7-1 | | GD93C3 |
| TH, THD | Y93CS1 | FMPE1-2B7E2 | | Radio shielded |
| TJD | Y79A | FMX2B7D | Y79B | |
| TJD | Y79BS1 | FMX2B7E | | |
| TJD | Y134 | FMXE2B7E | Y136 | |
| TJD | Y134A | FMXE2B7F | Y136 | |
| TJD | Y136 | FMXE2B7H | | Radio shielded |
| VE4D, VF4D | Y54 | XH1343B | Y106S1 | |

Magneto Ignition Assemblies By Engine Model (cont.)

| MODEL | WIS. NO. | VENDOR NO. | OBSOLETE/ REPLACEMENT | DRIVE GEAR |
|--------------|----------|------------|-----------------------|----------------|
| VE4D, VF4D | Y79 | FMX2B7A | Y79C | |
| VE4D, VF4D | Y86 | FMZVE4B7 | NLA | Radio shielded |
| VE4D, VF4D | Y106S1 | FMZV4B7 | | GD93C5 |
| VG4D | Y79 | FMX2B7A | Y79CS1 | |
| VG4D | Y95S1 | XH2207 | Y97S1 | |
| VG4D | Y97S1 | FMX4B7A | | GD103-1 |
| VG4D | Y98CS1 | FMXZE4B7-4 | | GD103-1 |
| VH4D | Y95S2 | XH2207 | Y97S2 | |
| VH4D | Y97S2 | FMX4B7A | | GD93C4 |
| VH4D | Y98CS2 | FMXZE4B7-4 | | GD93C4 |
| VP4D | Y54 | XH1343B | Y106S1 | |
| VP4D | Y106-1S1 | FMZV4B7 | | GD103 |
| VR4D | Y94 | FMX4A7B | NLA | |
| V461D, V465D | Y127S1 | FMXZF4B7C | | GD103A |
| V461D, V465D | Y128S1 | FMX4B71 | | GD103A |
| W2-880 | Y79BS1 | FMX2B7E | | |
| W4-1770 | Y97S2 | FMX4B7A | | GD93C4 |

Magneto Ignition Mounting And Hardware By Engine Model

| MODEL | DESCRIPTION | PART NO. |
|---------------|---------------------------------------|----------|
| TJD | Radio shielded magneto assembly | EYC104 |
| TRA12D | Radio shielded magneto assembly | EYC134 |
| V465D | Radio shielded magneto assembly | EYC137 |
| VG4D | Magneto ignition assembly | EYC108 |
| VG4D, VH4D | Radio shielded magneto assembly | EYC130 |
| VH4D, W4-1770 | Magneto ignition assembly | EYC109 |

Magneto Ignition Assemblies By Part Number

| WIS. NO. | VENDOR NO. | STATUS | REPLACEMENT/ DRIVE GEAR | MODEL |
|----------|-------------|----------|--|--------------------------------|
| Y34 | FMJ1A7 | Obsolete | Replacement Y72 | AEH, AEHS, AFH, AGH, AHH |
| Y35 | FMJ1B7 | Obsolete | Replacement Y109S1 | AA, AB, AK, ACN, BKN |
| Y54 | XH1343B | Obsolete | Replacement Y106S1 | VE4, VF4, VP4D |
| Y57 | XH1295 | Obsolete | Replacement Y68AS1 | ABN, ACN, AKN, BKN |
| Y62 | XH1995 | Obsolete | | AEN |
| Y68A | XH1295D | Obsolete | Replacement Y109S5 | ACN, ABN, AKN, BKN |
| Y58 | XH150C | Obsolete | Replacement Y72 | ADH, AE, AEH, AFH, AGH, AHH |
| Y67 | XH1961 | Obsolete | Replacement Y80S1 | TE, TF, TH |
| Y67A | XH1961C | Obsolete | Replacement Y80S1 | TE, TF, TH |
| Y72 | FMX1A7 | | Base mounted | AHH, AEH, AFH, AGH, ADH |
| Y73B | FMXD1B7 | Obsolete | GD113 Drive gear Replacement Y117 (AENL) | ABN, AEN, AKN, AENL |
| Y76 | FMX1B7E | Obsolete | Flange mounted Replacement Y117S1 | AEN, AENL |
| Y83A | FMXDE1B7P | Obsolete | Replacement Y119AS3 | AEN |
| Y84 | FMXE1A7F | Obsolete | Base mounted | AHH, AEH, AFH, AGH |
| Y79 | FMX2B7A | Obsolete | Replacement Y79C | VEF4, VG4D |
| Y79A | FMX2B7D | Obsolete | Replacement Y79B | TJD |
| Y79BS1 | FMX2B7E | | Flange mounted | TJD, W2-880 |
| Y79C | FMX2B7F | | | |
| Y80S1 | FMX1-2B7-1 | | Flange mounted GD93C1 Drive gear | TE, TF |
| Y80S2 | FMX1-2B7-1 | | Flange mounted GD93C3 Drive gear | TH, THD |
| Y86 | FMZVE4B7 | Obsolete | Radio shielded | VE4D, VF4D, MVE4D, MVF4D |
| Y93CS1 | FMPE1-2B7E2 | | Radio shielded | TH, THD, MTHD |
| Y94 | FMX4A7B | Obsolete | | VR4D |
| Y95S1 | XH2207 | Obsolete | GD103-1 Drive gear Replacement Y97S1 | VG4D |
| Y95S2 | XH2207 | Obsolete | GD93C4 Drive gear Replacement Y97S2 | VH4D |
| Y97S1 | FMX4B7A | | GD103-1 Drive gear | VG4D |

Magneto Ignition Assemblies By Part Number (cont.)

| WIS. NO. | VENDOR NO. | STATUS | REPLACEMENT/ DRIVE GEAR | MODEL |
|----------|------------|----------|---------------------------------------|----------------------|
| Y97S2 | FMX4B7A | | GD93C4 Drive gear | VH4D |
| Y98CS1 | FMXZE4B7-4 | | GD103-1 Drive gear Radio shielded | VG4D, MVG4D |
| Y98CS2 | FMXZE4B7-4 | | GD93C4 Drive gear Radio shielded | VH4D, MVH4D |
| Y106S1 | FMZV4B7 | | GD93C5 Drive gear | VE4D, VF4D |
| Y106-1S1 | FMZV4B7 | | GD103 Drive gear | VP4D |
| Y107AS1 | FMXD1B7R | Obsolete | GD125 Drive gear | AGND |
| Y107BS1 | FMXD1B7R1 | | GD125 Gear | AGND |
| Y108B | XH2523B | Obsolete | Replacement Y107B | AGND |
| Y118 | XH2504 | Obsolete | Replacement Y117S1 | AENL |
| Y109 | FMXD1B7S | | GD87C Gear | ACN, BKN |
| Y109A | FMXD1B7T | Obsolete | Replacement Y109S1 | ACN, BKN |
| Y109B | FMXD1B7S3 | Obsolete | Replacement Y109S1 | ACN, BKN |
| Y110S1 | FMPE1B7 | | Radio shielded | ACN, BKN, MACN, MBKN |
| Y110A | FMPE1B7A | Obsolete | | ACN, BKN, MACN, MBKN |
| Y110B | FMPE1B7A3 | Obsolete | | ACN, BKN, MACN, MBKN |
| Y110CS1 | FMXDE1B7S1 | | Radio shielded | ACN, BKN, MACN, MBKN |
| Y111 | XH2477B | Obsolete | Replacement Y109S1 | ACN, BKN |
| Y112A | FMXE2B7C1 | | 2-cylinders Radio shielded | ACND, BKND, MBKND |
| Y117 | FMXD1B7U | | GD113 Gear | AEN, AENL |
| Y117A | FMXD1B7U1 | Obsolete | Replacement Y117S1 | AENLDG |
| Y117B | FMXD1B7U2 | Obsolete | Replacement Y117S1 | AENL |
| Y117C | FMXD1B7U3 | Obsolete | Replacement Y117S1 | AENL |
| Y117D | FMXD1B7U4 | Obsolete | Replacement Y117S1 | AENL |
| Y119S1 | FMXDE1B7U | Obsolete | Replacement Y119AS3 | AENL |
| Y119-1 | FMXDE1B7U | Obsolete | Replacement Y119AS3 | MAENLD |
| Y119AS1 | FMXDE1B7U2 | | | AENL, MAENLD |
| Y121 | FMPE1B7R | Obsolete | Radio shielded | AGND |
| Y121A | FMPE1B7R1 | Obsolete | Radio shielded | AGND |
| Y121B | FMPE1B7R2 | Obsolete | Radio shielded | AGND |
| Y127S1 | FMXZF4B7C | | GD103AGR Drive gear Radio shielded | V465D |
| Y128S1 | FMX4B7D | | GD103A Gear | V461D, V465D |
| Y134 | FMXE2B7E | | Radio shielded Replacement Y136 | TJD |

Magneto Ignition Assemblies By Part Number (cont.)

| WIS. NO. | VENDOR NO. | STATUS | REPLACEMENT/ DRIVE GEAR | MODEL |
|----------|------------|----------|---------------------------------------|--------------------------|
| Y134A | FMXE2B7F | | Radio shielded Replacement Y136 | TJD |
| Y135 | FMS1B7 | | With GD87C Gear Replacement Y109S1 | ACN, BKN (STD) |
| Y135A | FMS1B7S1 | Obsolete | With GD87B Gear Replacement Y109S4 | ACN, BKN (28° spark adv) |
| Y135B | FMS1B7SU | Obsolete | Replacement Y117 | AENL |
| Y136 | FMXE2B7H | | Radio shielded | TJD |

Magneto Ignition Mounting And Hardware By Part Number

| PART NO. | DESCRIPTION | MODEL |
|----------|---------------------------------------|---------------|
| EYC104 | Radio shielded magneto assembly | TJD |
| EYC108 | Magneto ignition assembly | VG4D |
| EYC109 | Magneto ignition assembly | VH4D, W4-1770 |
| EYC130 | Radio shielded magneto assembly | VG4D, VH4D |
| EYC134 | Radio shielded magneto assembly | TRA12D |
| EYC137 | Radio shielded magneto assembly | V465D |

Magnetos Reference Sheet

| | |
|--------------------------------|--|
| Y34, Y35 Series | (YF34) AEH, AEHS, AFH, AGH, AHH (YF35) ACN, BKN |
| Y54 Series | VE4, VF4, VP4D |
| Y57, Y62, Y68 Series | ABN, ACN, AKN, BKN, AEN |
| Y58 Series | ADH, AE, AEH, AFH, AGH, AHH |
| Y67 Series | TE, TF, TH |
| Y72, Y73, Y76, Y83, Y84 Series | ACN, BKN, AEN, AENL, AEH, AFH, AGH, AHH |
| Y79 Series | TJD, VEF4D |
| Y80, Y93 Series | TE, TF, TH, THD |
| Y86 Series | VE4D, VF4D, MVE4D, MVF4D |
| Y93 Series | TH, THD, MTHD |
| Y94 Series | VR4D |
| Y95 Series | VG4D, VH4D |
| Y97 Series | VG4D, VH4D |
| Y98 Series | VG4D, VH4D |
| Y106 Series | VE4D, VF4D, VP4D |
| Y107 Series | AGND |
| Y108, Y118 Series | AGN, AENL |
| Y109 Series | ACN, BKN |
| Y110 Series | MACND, MBKND |
| Y111 Series | ACN, BKN |
| Y112A Series | ACN, BKN, MBKND |
| Y117 Series | AENL |
| Y118 Series | AENL |
| Y119 Series | AENL, MAENLD |
| Y121 Series | AGND |
| Y127 Series | V465D |
| Y128 Series | V461D, V465D |
| Y134 Series | TJD |
| Y135 Series | ACN, BKN, AENL |
| Y136 Series | TJD |

Y34 Fairbanks-Morse Magneto (Replaced By Y72) (Type FMJ1A7)

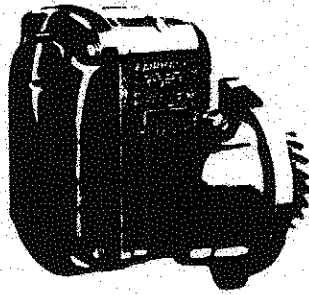


Fig. 1 - Type FM-J1B7 Magneto

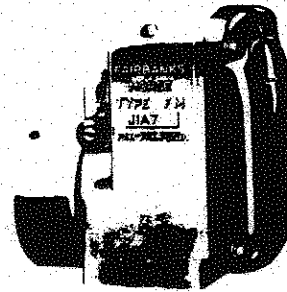


Fig. 2 - Type FM-J1A7 Magneto

Field Service and Adjustment Information

1. General Description

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

2. Application

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

3. Service Procedure

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

4. Testing the Ignition Spark

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

5. Testing The Magneto Spark

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

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

Y34 Fairbanks-Morse Magneto (Replaced By Y72) (Type FMJ1A7) (Cont.)

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

6. Adjustment of Breaker Points

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

7. Lubrication and Bearings

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

8. Reassembly & Sealing

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

9. Impulse Couplings

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

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

10. Gear Drive

Flange mounting Type FM-JLB7 magnetos require a drive gear assembled to the impulse coupling by means of an extended rotor shaft. To engage the slotted drive gear correctly with the drive lugs of the coupling, the magneto rotor should be turned by hand until the coupling pawl engages the stop pin in the flange, the coupling drive lugs then being in the position shown by A of Figure 4. The drive gear should then be fitted to the coupling so that the marked tooth is on the upper edge of the gear as shown in B of Figure 4.

11. Radio-Shielded Units

Applications which require complete radio shielding of the ignition system are furnished with the Types FM-JELA7 and FM-JELB7 magnetos. These magnetos are similar to standard models except that the plastic end cap is replaced by an all-metal cover through which the high tension lead is conducted by means of a special insulated socket. Detailed information covering these units can be obtained upon inquiry to the factory.

12. Ground Switches

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

13. Service Facilities

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

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.

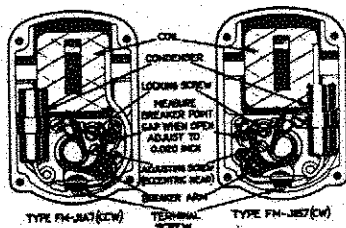


Figure 3 - End Views of Type FM-JI Magneto.

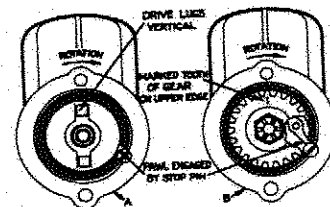
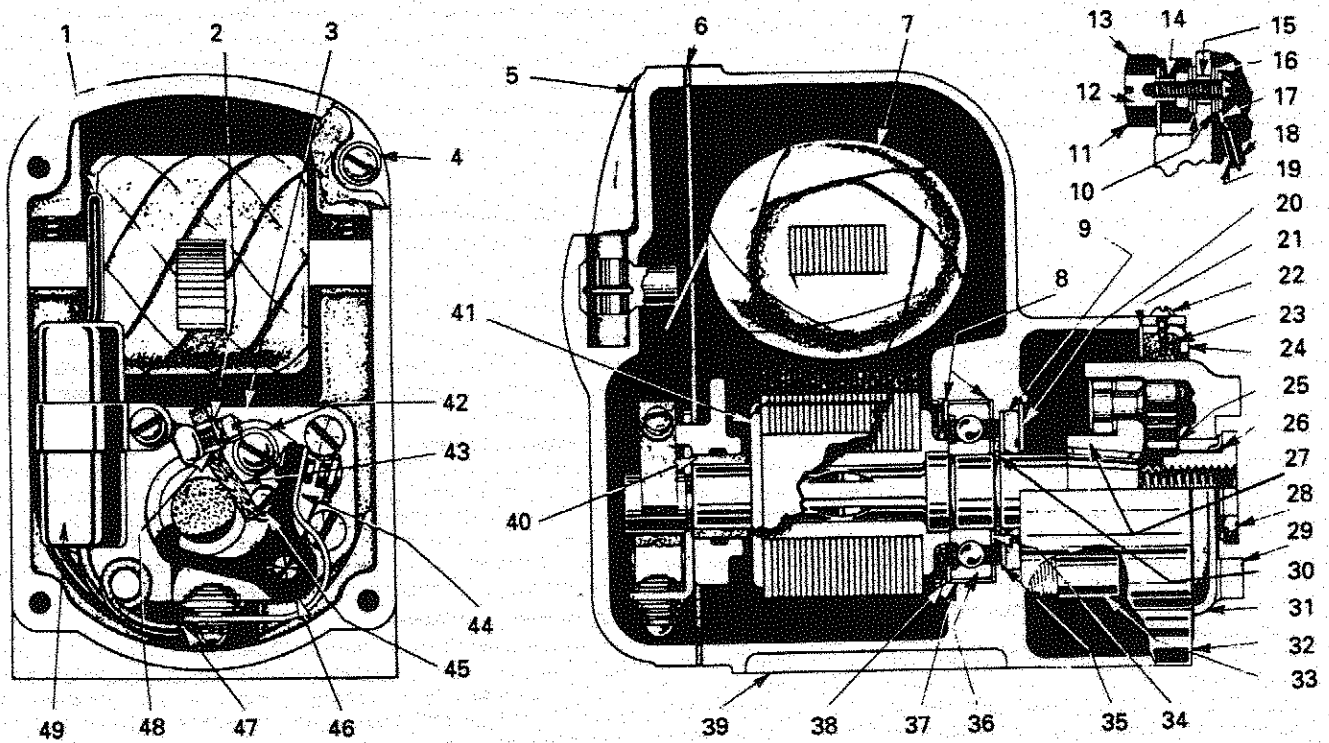


Figure 4 - Mounting Drive Gear

Y34 Fairbanks-Morse Magneto (Replaced By Y72) (Type FMJ1A7)

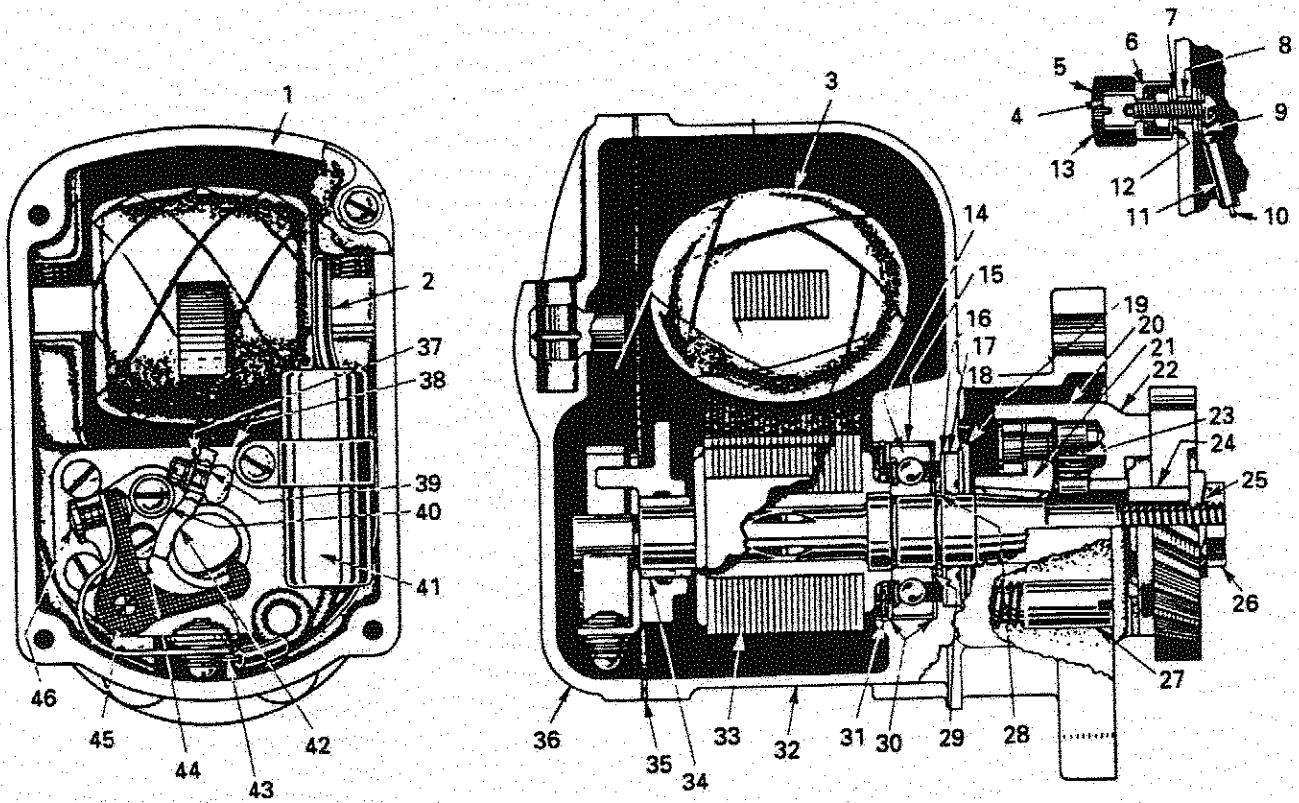


Y34 Fairbanks-Morse Magneto (Replaced By Y72)

USE WITH MODELS AEH, AEHS, AFH, AGH, AHH (see pg. 3)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--|-----|------|------------|---|-----|
| 1 | 31E2736 | Primary lead wire tube | 1 | 27 | 31W2563 | Coupling hub assembly | 1 |
| 2 | 31C6503 | Washer | 1 | 28 | 31K2570 | Coupling nut | 1 |
| 3 | 31J4631 | Bearing plate (includes 2, 40, 43, 48) | 1 | 29 | 31R5957 | Coupling shell | 1 |
| 4 | 31B2276B | Washer | 4 | 30 | 31B1498B | Snap ring | 1 |
| 5 | 31BZ2430 | End cap | 1 | 31 | 31W2563C | Complete coupling (includes 25-27, 29) | 1 |
| 6 | 31H2498 | End cap to frame gasket | 1 | 32 | 31D4591 | Stop pin | 1 |
| 7 | 31L2477 | Coil assembly (includes 1, 47) | 1 | 33 | 31F2568 | Thrust bearing shim | 2 |
| 8 | 31C2493 | Washer | 2 | 34 | 31C2723 | Washer | 1 |
| 9 | 31G3861 | Washer | 1 | 35 | 31A2492C | Rotor ball bearing | 1 |
| 10 | 31B6018 | Washer | 2 | 36 | 31C5949 | Insulating strip | 1 |
| 11 | 31F2514 | Switch turn button | 1 | 37 | 31B2824 | Snap ring | 1 |
| 12 | 31B4466 | Ground screw end nut | 1 | 38 | 31B1498D | Frame | 1 |
| 13 | 31A2514E | Switch group (includes 10-12, 14-17) | 1 | 39 | 31ZX2425 | Rotor sleeve bearing | 1 |
| 14 | 31A2513A | Switch button spring | 1 | 40 | 31B5950A | Magnetic rotor | 1 |
| 15 | 31E2457A | Bushing | 1 | 41 | 31GX2480 | Washer | 1 |
| 16 | 31D2458 | Washer | 2 | 42 | 31B5969 | Cam felt wick | 1 |
| 17 | 31A4361A | Lead wire terminal, no. 6 | 1 | 43 | 31E2788 | Stationary bracket and point | 1 |
| 18 | 31G2736B | Primary ground wire tube | 1 | 44 | 31H2454 | Adjustment screw | 1 |
| 19 | 31D2499A | Primary ground wire (includes 17, 18, 47) | 1 | 45 | 31C2455 | Breaker point set (includes 43, 44) | 1 |
| 20 | 31A2492A | Washer | 1 | 46 | 31S2437 | Lead wire terminal, no. 8 | 3 |
| 21 | 31E2502 | Washer | 1 | 47 | 31A4361 | Cam felt wick spacer | 1 |
| 22 | 31B6222 | Screw | 2 | 48 | 31A2982 | Condenser (includes item 47) | 1 |
| 23 | 31D5968 | Washer | 1 | 49 | 31AXMR2433 | Gasket kit (includes 6, 9, 20) | 1 |
| 24 | 31E2428 | Washer | 1 | 50 | 31GK16 | | |
| 25 | 31D2565 | Coupling drive spring | 1 | | | | |
| 26 | 31A5931B | Lock washer | 1 | | | | |

Y35 Fairbanks-Morse Magneto (Replaced By Y109S1) (Type FMJ1B7)



Y35 Fairbanks-Morse Magneto (Replaced By Y109S1)

USE WITH MODELS ACN, BKN (see pg. 5)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-------------|---|-----|------|------------|--|-----|
| 1 | 31B2276B | Washer | 4 | 25 | 31A5931A | Coupling nut lock wire | 1 |
| 2 | 31E2736 | Primary lead wire tube | 1 | 26 | 31M2570 | Coupling nut | 1 |
| 3 | 31L2477 | Coil assembly (includes 2, 43) | 1 | 27 | 31K2568 | Coupling pawl stop pin | 1 |
| 4 | 31B4466 | End nut | 1 | 28 | 31B1498D | Rotor shaft snap ring | 1 |
| 5 | 31A2514D | Switch group (includes 4, 6-9, 12, 13) | 1 | 29 | 31C2723 | Thrust bearing shim | 2 |
| 6 | 31A2513A | Switch button spring | 1 | 30 | 31C2493 | Washer | 2 |
| 7 | 31B6018 | Washer | 2 | 31 | 31B1498B | Rotor bearing snap ring | 1 |
| 8 | 31E2457A | Bushing | 1 | 32 | 31RX2425 | Frame | 1 |
| 9 | 31A4361A | Lead wire terminal, no. 6 | 1 | 33 | 31JX2480 | Magnetic rotor | 1 |
| 10 | 31B2499A | Primary ground wire (includes 9, 11, 43) | 1 | 34 | 31B5950A | Rotor sleeve bearing | 1 |
| 11 | 31E2736B | Primary ground wire tube | 1 | 35 | 31H2498 | End cap to frame gasket | 1 |
| 12 | 31D2458 | Washer | 2 | 36 | 31BZ2430 | End cap | 1 |
| 13 | 31E2514 | Switch push button | 1 | 37 | 31C6503 | Washer | 1 |
| 14 | 31C5949 | Rotor ball bearing | 1 | 38 | 31H4631 | Bearing plate (includes 34, 37, 39, 42) | 1 |
| 15 | 31B2824 | Insulating strip | 1 | 39 | 31A2982 | Cam felt wick spacer | 1 |
| 16 | 31A2492C | Inner retaining washer | 1 | 40 | 31B5969 | Washer | 1 |
| 17 | 31G3861 | Rubber washer | 1 | 41 | 31AXMR2433 | Condenser (includes item 43) | 1 |
| 18 | 31A2492A | Outer retaining washer | 1 | 42 | 31E2788 | Cam felt wick | 1 |
| 19 | 31E2303 | Oil slinger disc, | 1 | 43 | 31A4361 | Lead wire terminal, no. 8 | 3 |
| | | standard flange | 1 | 44 | 31C2455 | Adjustment screw | 1 |
| 20 | 31Z5957 | Coupling shell | 1 | 45 | 31R2437 | Breaker point set (includes 42, 46) | 1 |
| 21 | 31V2563 | Coupling hub assembly | 1 | 46 | 31G2454 | Stationary bracket and point | 1 |
| 22 | 31MX2563C30 | Complete coupling (includes 20, 21, 23) | 1 | 47 | 31GK16 | Gasket kit (includes 17, 18, 35) | 1 |
| 23 | 31D2565 | Coupling drive spring | 1 | | | | |
| 24 | 31F2572 | Coupling gear bushing | 1 | | | | |

Y54 Magneto (Replaced By Y106S1) (WICO Model XH4, No. XH1343B)

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. 18). 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.

DISTRIBUTOR CAP AND ARM

The distributor cap (Ref. No. 42) may be removed by loosening the three screws (Ref. No. 38) which hold it in place. The distributor arm (Ref. No. 29) can then be removed from the shaft. When replacing the distributor arm be sure that the flat inside of the arm is lined up with the flat on the cam.

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. 44) enough so that the contact plate can be moved.

Insert the end of a small screwdriver 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. 48), the breaker arm lock (Ref. No. 17) and washer (Ref. No. 13). Then lift the breaker

arm from its pivot. Remove the spacing washer, 5717, and the two breaker plate clamp screws (Ref. No. 44). 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. 46).

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 S5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

CONDENSER

To remove the condenser (Ref. No. 36) first disconnect the condenser lead by removing the breaker arm spring screw (Ref. No. 48), then remove the two condenser clamp screws (Ref. No. 20) and the condenser clamp (Ref. No. 30). When replacing the condenser make sure it is properly placed between the two locating bosses and that the clamp screws are securely tightened.

COIL AND COIL CORE

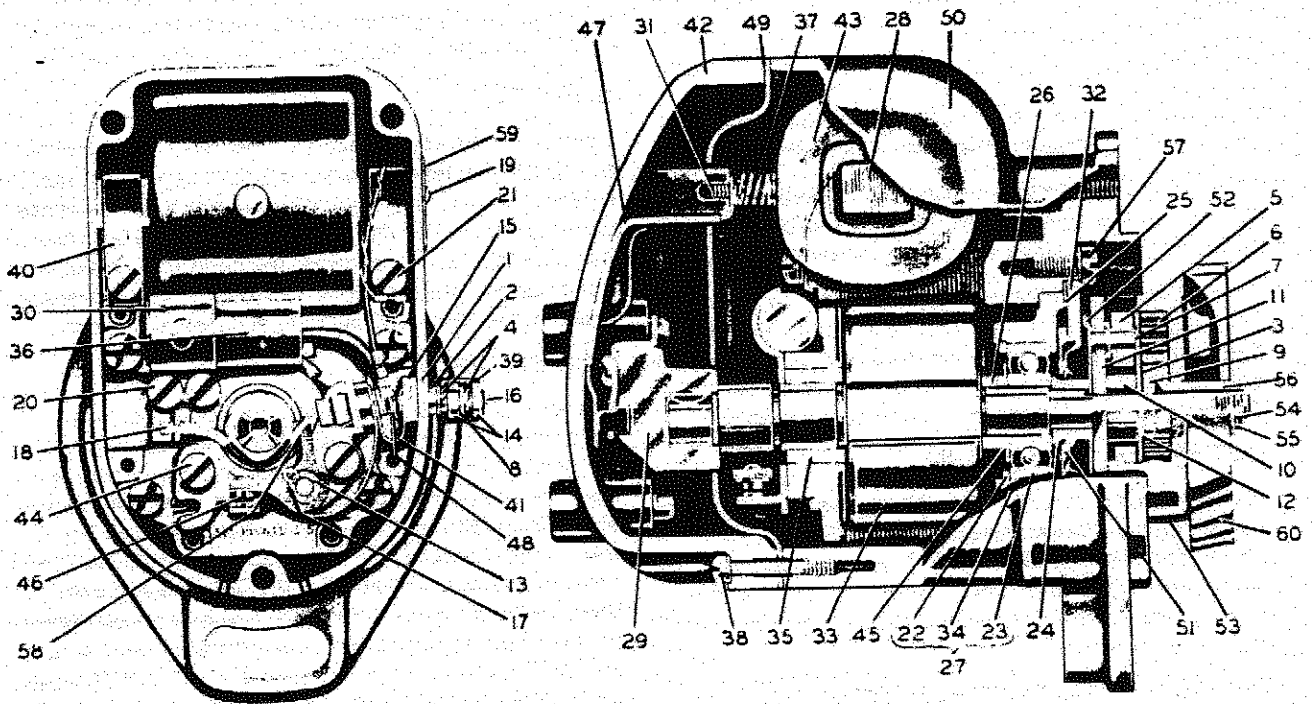
The coil and coil core must be removed from the magneto housing as a unit. After the distributor cap, distributor arm, and breaker shield have been removed and the primary wire disconnected from the breaker arm spring terminal by removing screw (Ref. No. 48), take out the two coil core clamp screws (Ref. No. 21) and remove the clamps (Ref. No. 40). 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. 43) is held tight on the core (Ref. No. 28) 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.

**Y54 Magneto (Replaced By Y106S1)
(WICO Model XH4, No. XH1343B)**



Y54 Magneto (Replaced By Y106S1)

USE WITH MODELS VE4, VF4, VP4D (see pg. 8)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|-----------------------------|-----|------|-------------|---|-----|
| 1 | 90M34X | Spacing washer | 2 | 41 | FXH9 | Ground connector | 1 |
| 2 | 90M35X | Ground stud washer | 1 | 42 | 90FXH2002A2 | Distributor cap unit | 1 |
| 3 | 90M42XA | Spacing washer | 1 | — | 90FXH1009 | Ground connection unit (includes 1, 2, 4, 8, 14-16, 41) (not illustrated) | 1 |
| 4 | 90M55XA | Lock washer | 2 | | | | |
| 5 | 90FXH125A | Trip arm | 2 | 43 | 90FXH2403 | Coil group | 1 |
| 6 | 90FXH55 | Drive spring | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 7 | 90A243X | Snap ring | 2 | 44 | 90-5900 | Screw | 2 |
| 8 | 90IXA256 | Washer | 1 | 45 | 90-5926 | Ball bearing shield | 1 |
| 9 | 90IVA583 | Spacing washer | 1 | 46 | 90FXH2100A | Breaker contact set | 1 |
| 10 | 90-2122 | Spacer | 1 | 47 | 90X6000 | Secondary interlead group | 1 |
| 11 | 90X2286 | Driven flange group | 1 | 48 | 90-6017 | Clamp screw | 1 |
| 12 | 90-2288 | Drive spring retainer | 1 | 49 | 90FXH262 | Gasket | 1 |
| 13 | 90-3219 | Pivot washer | 1 | 50 | 90X6150 | Main housing replacement group | 1 |
| 14 | 90-3230 | Ground stud nut | 2 | 51 | 90XA1393 | Oil seal (replaces A33X) | 1 |
| 15 | 90-11874 | Insulating lock | 1 | 52 | 90FXH27 | Oil slinger | 1 |
| 16 | 90-3945 | Ground stud | 1 | 53 | 90-6310 | Drive cup (replaces 3870) | 1 |
| 17 | 90-4210 | Breaker arm lock | 1 | 54 | 90-6424 | Snap ring | 1 |
| 18 | 90-5077 | Cam wiper felt | 1 | 55 | 90-6425 | Thrust washer | 1 |
| 19 | 90-5250 | Screw | 2 | 56 | 90K6444 | Impulse lock nut kit (replaces 6009 below serial no. 15431) | 1 |
| 20 | 90-5411 | Clamp screw | 2 | — | 90K6445 | Impulse lock nut kit (replaces 6227 above serial no. 15430) | 1 |
| 21 | 90-5411 | Clamp screw | 2 | — | 90FXH3400E | Impulse coupling unit (includes 3, 5-7, 9-12, 53, 56) (not illustrated) | 1 |
| 22 | 90-5516 | Retaining ring | 1 | 57 | 90-6465 | Clamp screw | 4 |
| 23 | 90-5517 | Rotor bearing | 1 | 58 | 90-6468 | Breaker arm felt | 1 |
| 24 | 90-5518 | Impulse spacer | 1 | 59 | 90-8792 | Name plate | 1 |
| 25 | 90X5259 | Gasket | 1 | — | 90-10383 | Coil wedge (not illustrated) | 1 |
| 26 | 90-5520 | Spacer | 1 | — | 90-10407 | Aligning washer (not illustrated) | 1 |
| 27 | 90FXH1007A | Bearing cage group | 1 | 60 | 90GD93C5 | Drive gear, 24 teeth (VE4D, VF4D) | 1 |
| 28 | 90FXH1611A | Coil core | 1 | — | 90GD103 | Drive gear, 27 teeth (VP4D) | 1 |
| 29 | 90FXH1008 | Distributor arm group | 1 | | | | |
| 30 | 90-6924 | Condenser clamp | 1 | | | | |
| 31 | 90-5536 | Coil contact screw | 1 | | | | |
| 32 | 90FXH410S | Impulse stop group | 1 | | | | |
| 33 | 90FXH1006A | Rotor | 1 | | | | |
| 34 | 90-5567 | Bearing cage | 1 | | | | |
| 35 | 90FXH31 | Bushing | 1 | | | | |
| 36 | 90FXH2024 | Condenser assembly | 1 | | | | |
| 37 | 90-5620 | Coil contact spring | 1 | | | | |
| 38 | 90-53X5185 | Screw | 3 | | | | |
| 39 | 90FXH1019 | Stop button group | 1 | | | | |
| 40 | 90FXH223 | Coil core clamp | 2 | | | | |

Y57 (WICO Spec. No. 1295) (Obsolete), Y57C (WICO Spec. No. XH1295Y) (Obsolete), Y62 (WICO Spec. No. XH1995B, XH1995) (Obsolete), Y68 (WICO Spec. No. XH1295B) (Obsolete), Y68A (WICO Spec. No. XH1295D, XH1295C) (Replaced By Y109S5) Magnetos (WICO Model XH1)

TIMING

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

LUBRICATION

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

IMPORTANT

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

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

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

MAGNETO COVER

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

BREAKER CONTACTS - REPLACEMENT AND ADJUSTMENT

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

Insert the end of a small screwdriver 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 S5449, 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 between the two locating bosses and that the clamp screws are securely tightened.

COIL AND COIL CORE

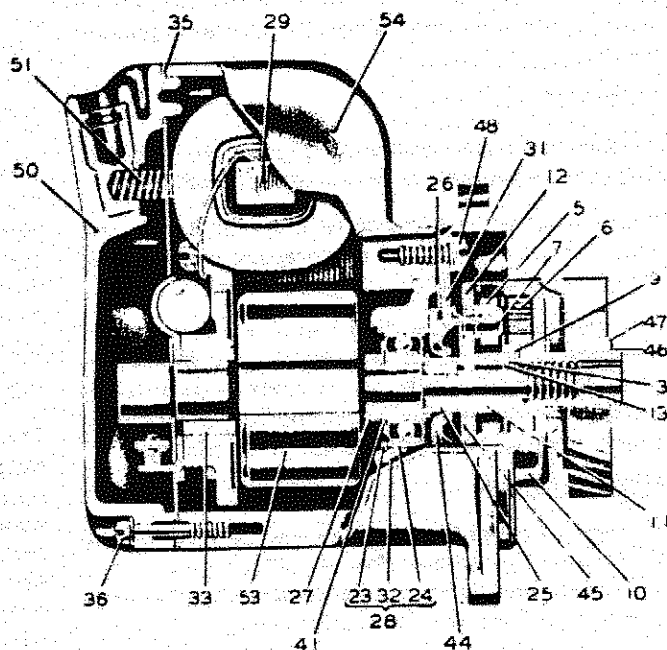
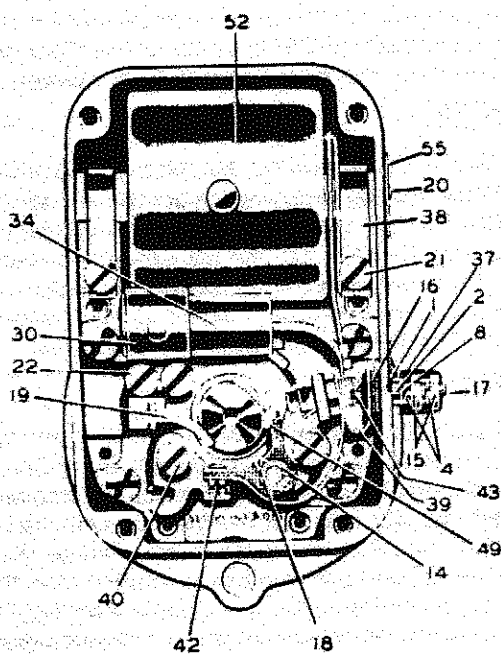
The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw (Ref. No. 43), take out the two coil core clamp screws (Ref. No. 21) and remove the clamps (Ref. No. 38). The coil and core can then be pulled 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.

Y57 (WICO Spec. No. 1295) (Obsolete), Y57C (WICO Spec. No. XH1295Y) (Obsolete), Y62 (WICO Spec. No. XH1995B, XH1995) (Obsolete), Y68 (WICO Spec. No. XH1295B) (Obsolete), Y68A (WICO Spec. No. XH1295D, XH1295C) (Replaced By Y109S5) Magnetos (WICO Model XH1)



**Y57 (Obsolete), Y57C (Obsolete), Y62 (Obsolete),
Y68 (Obsolete), Y68A (Replaced By Y109S5) Magnetos**

USE WITH MODELS ABN, ACN, AKN, BKN (see pg. 11)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|-------------|---|-----|
| 1 | 90M34X | Spacing washer | 2 | 35 | 90FXH162 | Cover gasket | 1 |
| 2 | 90M35X | Washer | 1 | 36 | 90-53X5185 | Screw | 4 |
| 3 | 90M42XA | Spacing washer | 1 | 37 | 90FXH1019 | Stop button group | 1 |
| 4 | 90M55XA | Lock washer | 2 | 38 | 90FXH223 | Coil core clamp | 2 |
| 5 | 90FXH125A | Trip arm | 1 | 39 | 90FXH9 | Ground connector (all XH1295) | 1 |
| 6 | 90FXH55 | Drive spring | 1 | — | 90X5757 | Ground lead group (all XH1995) | 1 |
| 7 | 90A243X | Snap ring | 1 | — | 90X5654 | Ground connection unit (all XH1295) (includes 1, 2, 4, 8, 15-17, 39) (not illustrated) | 1 |
| 8 | 90IXA256 | Washer | 1 | — | 90X5750 | Ground connection unit (all XH1995) (includes 1, 2, 4, 8, 15-17, 39) (not illustrated) | 1 |
| 9 | 90IVA583 | Spacing washer | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 10 | 90-2040 | Drive cup | 1 | 40 | 90-5900 | Clamp screw | 2 |
| 11 | 90-2122 | Driven flange spacer | 1 | 41 | 90-5926 | Ball bearing shield | 1 |
| 12 | 90X2286 | Driven flange group | 1 | 42 | 90FXH2100B | Breaker contact set | 1 |
| 13 | 90-2288 | Retainer | 1 | 43 | 90-6017 | Clamp screw | 1 |
| 14 | 90-3219 | Pivot washer | 1 | 44 | 90XA1393 | Oil seal | 1 |
| 15 | 90-3230 | Nut | 2 | 45 | 90FXH27 | Oil slinger (NLA) | 1 |
| 16 | 90-3539 | Insulating lock | 2 | 46 | 90X5261 | Impulse lock ring | 1 |
| 17 | 90-3945 | Ground stud | 1 | 47 | 90-6425 | Thrust washer | 1 |
| 18 | 90-4210 | Breaker arm lock | 1 | — | 90K6445 | Impulse lock nut kit (includes 46, 47; includes nut) (not illustrated) | 1 |
| 19 | 90-5077 | Cam wiper felt | 1 | — | 90X6459 | Impulse coupling unit (includes 3, 5-7, 9-13, 46, 47; includes nut) (not illustrated) | 1 |
| 20 | 90-5250 | Screw | 2 | 48 | 90-6465 | Clamp screw | 4 |
| 21 | 90-5411 | Clamp screw | 2 | 49 | 90-6468 | Breaker arm felt | 1 |
| 22 | 90-5411 | Clamp screw | 2 | 50 | 90FXH2312A2 | Cover unit (XH1295, XH1295B, XH1295C, XH1295D, XH1995, XH1995B) | 1 |
| 23 | 90-5516 | Retaining ring | 1 | — | 90X7114 | Cover unit (XH1295Y) | 1 |
| 24 | 90-5517 | Rotor bearing | 1 | 51 | 90-6732 | Coil contact spring | 1 |
| 25 | 90-5518 | Impulse spacer | 1 | | | | |
| 26 | 90X5259 | Gasket | 1 | | | | |
| 27 | 90-5520 | Spacer | 1 | | | | |
| 28 | 90FXH1007A | Bearing cage group | 1 | | | | |
| 29 | 90FXH1611A | Coil core group | 1 | | | | |
| 30 | 90-6924 | Condenser clamp (XH1295D, XH1995B) | 1 | | | | |
| — | 90-5532 | Condenser clamp (XH1295, XX1295B, XH1295C, XH1295Y, XH1995) | 1 | | | | |
| 31 | 90X5549 | Impulse stop group | 1 | | | | |
| 32 | 90-5567 | Bearing cage | 1 | | | | |
| 33 | 90FXH31 | Bushing | 1 | | | | |
| 34 | 90FXH2024 | Condenser assembly (XH1295D, XH1995B) | 1 | | | | |
| — | 90FXH2224 | Condenser (XH1295, XH1295B, XH1295C, XH1295Y, XH1995) | 1 | | | | |

(continued on page 13)

**Y57 (Obsolete), Y57C (Obsolete), Y62 (Obsolete),
Y68 (Obsolete), Y68A (Replaced By Y109S5) Magnetos (Cont.)**

USE WITH MODELS ABN, ACN, AKN, BKN (see pg. 11)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|--|-----|--|----------|---|-----|
| 52 | 90FXH2403 | Coil group (XH1295, XH1295Y) | 1 | — | 90X6174 | Main housing group (XH1295, XH1295B, XH1295Y) | 1 |
| — | 90X6762 | Coil group (XH1295B, XH1295C, XH1295D, XH1995, XH1995B) | 1 | 55 | 90-8792 | Name plate | 1 |
| 53 | 90Y7569 | Rotor (XH1295D, XH1995B) | 1 | — | 90-10407 | Washer (not illustrated) | 1 |
| — | † 90Y7054 | Rotor (XH1295C, XH1995) | 1 | † Y7569 rotor can be used in place of Y7054, but new condenser X6916 and clamp 6924 must also be used. | | | |
| — | 90Y6606B | Rotor (XH1295B) | 1 | | | | |
| — | 90Y6606 | Rotor (XH1295, XH1295Y) | 1 | | | | |
| 54 | 90FXH3501 | Main housing group (XH1295C, XH1295D, XH1995, XH1995B) (NLA) | 1 | | | | |

Y58 Magneto (Replaced By Y72) (WICO Model XH1; WICO Spec. No. XH150C, Replaces XH150, XH150B)

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. 22). 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. 52), can be removed by loosening the four screws (Ref. No. 40) which hold it in place. When replacing the cover be sure that the cover gasket (Ref. No. 39) 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. 44) enough so that the contact plate can be moved.

Insert the end of a small screwdriver 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. 47), the breaker arm lock (Ref. No. 20) and washer (Ref. No. 18) and then lift the breaker

arm from its pivot. Remove the aligning washer, 5717, and the two fixed contact clamp screws (Ref. No. 44). 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. 46).

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 S5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

CONDENSER

To remove the condenser (Ref. No. 38) first disconnect the condenser lead by removing the breaker arm spring screw (Ref. No. 47), then remove the two condenser clamp screws (Ref. No. 26) and the condenser clamp (Ref. No. 34). When replacing the condenser make sure it is properly placed between the two locating bosses and that the clamp screws are securely tightened.

COIL AND COIL CORE

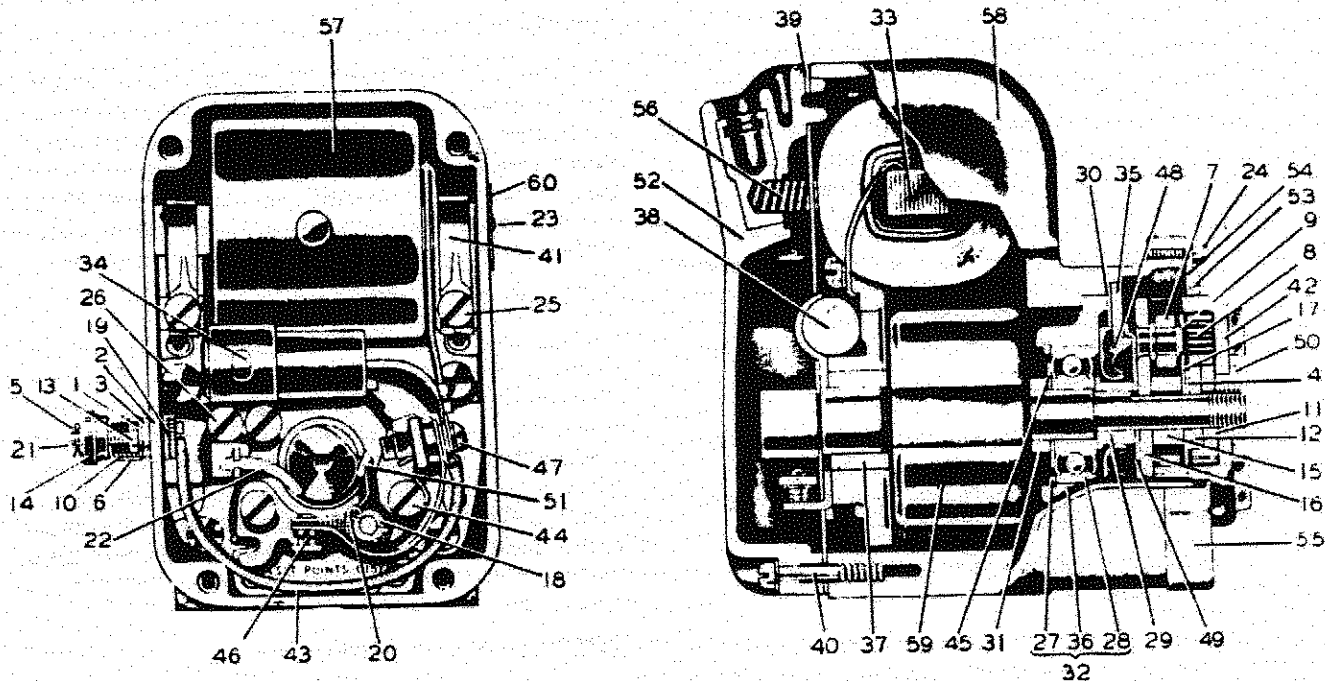
The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw (Ref. No. 47), take out the two coil core clamp screws (Ref. No. 25) and remove the clamps (Ref. No. 41). The coil and core can then be pulled 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. 57) is held tight on the core (Ref. No. 33) 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.

**Y58 Magneto (Replaced By Y72) (WICO Model XH1;
WICO Spec. No. XH150C, Replaces XH150, XH150B)**



Y58 Magneto (Replaced By Y72)

USE WITH MODELS ADH, AE, AEH, AFH, AGH, AHH (see pg. 15)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|---|-----|------|-------------|--|-----|
| 1 | 90M33X | Washer | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 2 | 90M34X | Washer | 2 | — | 90X5747 | Impulse coupling unit (includes 4, 7-9, 11, 12, 15-17, 42, 50) (not illustrated) | 1 |
| 3 | 90M35X | Washer | 1 | 43 | 90X5757 | Ground lead group | 1 |
| 4 | 90M42XA | Spacing washer | 1 | — | 90X5766 | Ground connection unit (includes 1-3, 5, 6, 10, 13, 14, 19, 21, 43) (not illustrated) | 1 |
| 5 | 90M95X | Cotter pin | 1 | 44 | 90-5900 | Clamp screw | 2 |
| 6 | 90A170X | Grounding sleeve | 1 | 45 | 90-5926 | Ball bearing shield | 1 |
| 7 | 90FXH125A | Trip arm | 1 | 46 | 90FXH2100B | Breaker contact set | 1 |
| 8 | 90FXH55 | Drive spring | 1 | 47 | 90-6017 | Clamp screw | 1 |
| 9 | 90A243X | Snap ring | 1 | 48 | 90XA1393 | Oil seal | 1 |
| 10 | 90-16-369 | Spring | 1 | 49 | 90FXH27 | Oil slinger (NLA) | 1 |
| 11 | 90-16-583 | Spacing washer | 1 | 50 | 90-6230 | Impulse lock nut | 1 |
| 12 | 90IVA583 | Spacing washer | 1 | — | 90-6465 | Clamp screw (not illustrated) | 4 |
| 13 | 90-1991 | Nut | 1 | 51 | 90-6468 | Breaker arm felt | 1 |
| 14 | 90-1992B | Stop nut | 1 | 52 | 90FXH2312A2 | Cover unit | 1 |
| 15 | 90-2122 | Spacer | 1 | 53 | 90FXH130 | Gasket | 1 |
| 16 | 90X2287 | Driven flange group | 1 | 54 | 90-6694 | Ring | 1 |
| 17 | 90-2288 | Retainer | 1 | 55 | 90-6695 | Impulse dust cover | 1 |
| 18 | 90-3219 | Pivot washer | 1 | 56 | 90-6732 | Coil contact spring | 1 |
| 19 | 90-3539 | Insulating lock | 2 | 57 | 90X6762 | Coil group (XH150C, XH150B) | 1 |
| 20 | 90-4210 | Breaker arm lock | 1 | — | 90FXH2403 | Coil group (XH150) | 1 |
| 21 | 90-4631 | Ground stud | 1 | — | 90X6768 | Dust cover unit (includes 53-55) (not illustrated) | 1 |
| 22 | 90-5077 | Cam wiper felt | 1 | 58 | 90X7257 | Main housing group (XH150C, XH150B) | 1 |
| 23 | 90-5250 | Screw | 2 | — | 90X6195 | Main housing group (XH150) | 1 |
| 24 | 90-5411 | Screw | 1 | 59 | 90FXH2106B | Rotor (XH150C) | 1 |
| 25 | 90-5411 | Clamp screw | 2 | — | † 90Y7267 | Rotor (XH150B) | 1 |
| 26 | 90-5411 | Clamp screw | 2 | — | 90Y6605 | Rotor (XH150) | 1 |
| 27 | 90-5516 | Retaining ring | 1 | 60 | 90-8792 | Name plate | 1 |
| 28 | 90-5517 | Rotor bearing | 1 | — | 90-10383 | Coil wedge (not illustrated) | 2 |
| 29 | 90FXH162 | Impulse spacer | 1 | — | 90-10407 | Aligning washer (not illustrated) | 1 |
| 30 | 90X5259 | Gasket | 1 | | | | |
| 31 | 90-5520 | Spacer | 1 | | | | |
| 32 | 90FXH1007A | Bearing cage group | 1 | | | | |
| 33 | 90FXH1611A | Coil core group | 1 | | | | |
| 34 | 90-6924 | Condenser clamp (XH150C) ... | 1 | | | | |
| — | 90-5532 | Condenser clamp (XH150B, XH150) | 1 | | | | |
| 35 | 90X5549 | Impulse stop group | 1 | | | | |
| 36 | 90-5567 | Bearing cage | 1 | | | | |
| 37 | 90FXH31 | Bushing | 1 | | | | |
| 38 | 90FXH2024 | Condenser assembly (XH150C) | 1 | | | | |
| — | 90FXH2224 | Condenser assembly (XH150, XH150B) | 1 | | | | |
| 39 | 90FXH162 | Gasket | 1 | | | | |
| 40 | 90-53X5185 | Screw | 4 | | | | |
| 41 | 90FXH223 | Coil core clamp | 2 | | | | |
| 42 | 90-5671 | Drive cup | 1 | | | | |

† Y8538 rotor can be used in place of Y7267, but new condenser X6916 and clamp 6924 must also be used.

**Y67 Magneto (Replaced By Y80) (WICO Model XH2D;
WICO Spec. No. XH1961C, Replaces XH1961),
Y67A Magneto (Replaced By Y80S1) (WICO Model XH2D;
WICO Spec. No. XH2531C, Replaces XH2531, XH1961C)**

TIMING

The magneto is properly timed to the engine at the factory. If it becomes necessary to retune 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. 17). 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. 53), can be removed by loosening the four screws (Ref. No. 33) which hold it in place. When replacing the cover be sure that the cover gasket (Ref. No. 32) 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. 37) enough so that the contact plate can be moved.

Insert the end of a small screwdriver 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. 40), the breaker arm lock (Ref. No. 16) and washer (Ref. No. 12). Then lift the breaker arm from its pivot. Remove the aligning washer, 5717, and the two fixed contact clamp screws (Ref. No. 37). 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. 39).

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 S5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

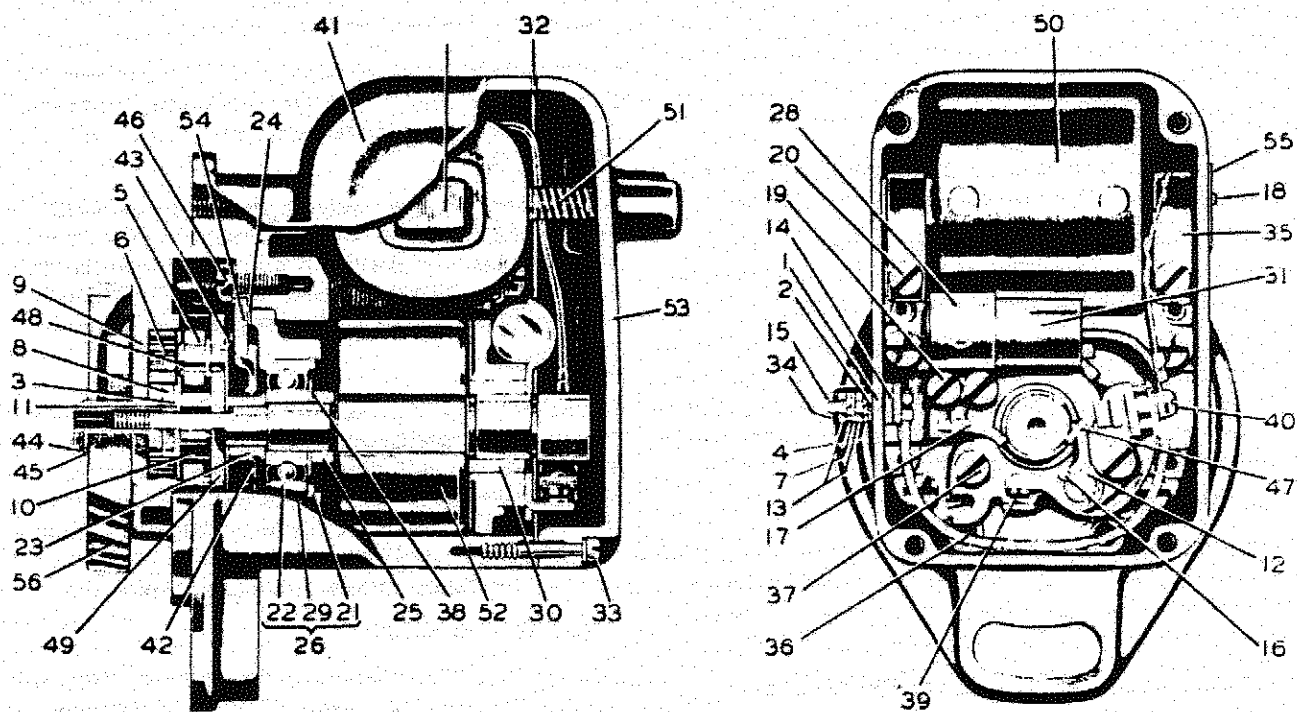
CONDENSER

To remove the condenser (Ref. No. 31) first disconnect the condenser lead by removing the breaker arm spring screw (Ref. No. 40), then remove the two condenser clamp screws (Ref. No. 19) and the condenser clamp (Ref. No. 28). When replacing the condenser make sure it is properly placed between the two locating bosses 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. 40), take out the two coil core clamp screws (Ref. No. 20) and remove the clamps (Ref. No. 35). 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.

**Y67 Magneto (Replaced By Y80) (WICO Model XH2D;
WICO Spec. No. XH1961C, Replaces XH1961), Y67A Magneto
(Replaced By Y80S1) (WICO Model XH2D; WICO Spec. No. XH2531C,
Replaces XH2531, XH1961C)**



**Y67 Magneto (Replaced By Y80), Y67A Magneto
(Replaced By Y80S1)**

USE WITH MODELS TE, TF, TH (see pg. 18)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|------------|---|-----|
| 1 | 90-11874 | Insulating washer | 2 | 31 | 90FXH2024 | Condenser assembly (XH1961C, XH2531, XH2531C) | 1 |
| 2 | 90-11874 | Insulating washer | 1 | | | | |
| 3 | 90X42XA | Spacing washer | 1 | | | | |
| 4 | 90M55XA | Lock washer | 2 | — | 90FXH2224 | Condenser assembly (XH1961) | 1 |
| 5 | 90FXH125A | Trip arm | 1 | | | | |
| 6 | 90FXH55 | Drive spring | 1 | 32 | 90FXH162 | Cover gasket | 1 |
| 7 | 90IXA256 | Washer | 1 | 33 | 90-53X5185 | Cover screw | 4 |
| 8 | 90IVA583 | Spacing washer | 1 | 34 | 90FXH1019 | Stop button group | 1 |
| 9 | 90-2061A | Drive cup | 1 | 35 | 90FXH223 | Coil core clamp | 2 |
| 10 | 90-2122 | Driven flange spacer | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 11 | 90-2288 | Drive spring retainer | 1 | | | | |
| 12 | 90-3219 | Pivot washer | 1 | — | 90X5750 | Ground connection unit (includes 1, 2, 4, 7, 13-15, 36) (not illustrated) | 1 |
| 13 | 90-3230 | Nut | 2 | | | | |
| 14 | 90-9820 | Insulating lock | 2 | | | | |
| 15 | 90-3945 | Ground stud | 1 | 36 | 90X5757 | Ground lead group | 1 |
| 16 | 90-4210 | Breaker arm lock | 1 | 37 | 90-5900 | Clamp screw | 2 |
| — | 90-4589 | Nut (XH1961, XH1961C, XH2531) (not illustrated) | 1 | 38 | 90-5926 | Ball bearing shield | 1 |
| | | | | 39 | 90FXH2100B | Breaker contact set | 1 |
| 17 | 90-5077 | Cam wiper felt | 1 | 40 | 90-5431 | Clamp screw | 1 |
| 18 | 90-5250 | Name plate screw | 2 | 41 | 90X7262 | Main housing replacement assembly (XH2531C) | 1 |
| 19 | 90-5411 | Clamp screw | 2 | — | 90X8553 | Main housing replacement assembly (XH1961, XH1961C, XH2531) | 1 |
| 20 | 90-5411 | Clamp screw | 2 | | | | |
| 21 | 90-5516 | Retaining ring | 1 | 42 | 90XA1393 | Oil seal | 1 |
| 22 | 90-5517 | Rotor bearing | 1 | 43 | 90FXH27 | Oil slinger (NLA) | 1 |
| 23 | 90-5518 | Impulse spacer | 1 | 44 | 90X5261 | Impulse lock ring | 1 |
| 24 | 90X5259 | Gasket | 1 | 45 | 90-6425 | Thrust washer | 1 |
| 25 | 90-5520 | Spacer | 1 | — | 90-6412 | Impulse lock nut (not illustrated) | 1 |
| 26 | 90FXH1007A | Bearing cage group (includes 21, 22, 29) | 1 | 46 | 90-6465 | Clamp screw | 4 |
| 28 | 90-6924 | Condenser clamp (XH1961C, XH2531, XH2531C) | 1 | 47 | 90-7644 | Breaker arm felt | 1 |
| — | 90-5532 | Condenser clamp (XH1961) ... | 1 | 48 | 90FXH642 | Trip arm spring | 1 |
| 29 | 90-5567 | Bearing cage | 1 | | | | |
| 30 | 90FXH31 | Bushing | 1 | | | | |

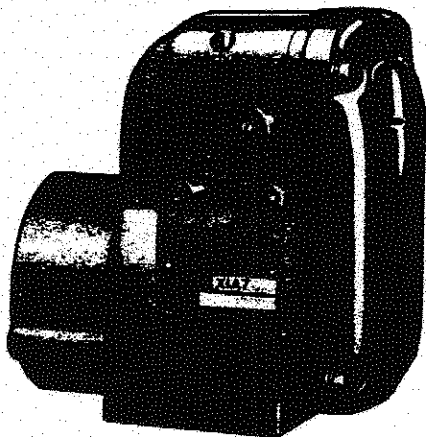
(continued on page 20)

**Y67 Magneto (Replaced By Y80), Y67A Magneto
(Replaced By Y80S1) (Cont.)**

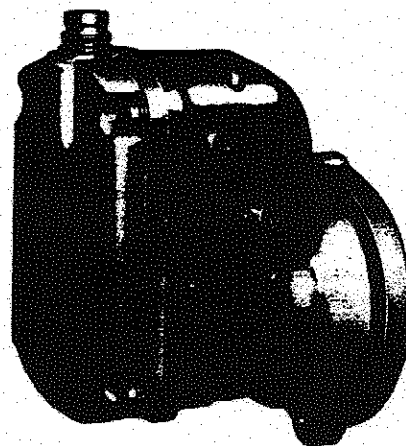
USE WITH MODELS TE, TF, TH (see pg. 18)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-------------|--|-----|--|----------|--|-----|
| 49 | 90X6586 | Driven flange group | 1 | — | 90X5549 | Impulse stop group (XH2531C) | 1 |
| 50 | 90FXH2203 | Coil group | 1 | 55 | 90-8792 | Name plate | 1 |
| 51 | 90-6882 | Coil contact spring | 1 | — | 90-10407 | Aligning washer (not illustrated) | 1 |
| 52 | 90Y7569 | Rotor (XH1961C, XH2531, XH2531C) | 1 | 56 | * — — — | Drive gear (Wis. motor no. GD93C1) (TE, TF) | 1 |
| — | † 90Y7054 | Rotor (XH1961) | 1 | — | * — — — | Drive gear (Wis. motor no. GD93C3) (TH) | 1 |
| 53 | 90FXH2212-2 | Cover unit (includes 32, 33, 51) | 1 | * Not serviced separately. | | | |
| — | 90FHX3300A | Impulse coupling unit (includes 3, 5, 6, 8-11, 44, 45, 48, 49) (not illustrated) | 1 | | | | |
| — | 90-8511 | Impulse set screw (XH1961, XH1961C, XH2531) (not illustrated) | 1 | † Y7569 rotor can be used in place of Y7054, but new condenser X6916 and clamp 6924 must also be used. | | | |
| 54 | 90X8555 | Impulse stop group (XH1961, XH1961C, XH2531) | 1 | | | | |

**Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119),
Y84 Fairbanks-Morse Magnetos (One-Cylinder)**



BASE MOUNTING



FLANGE MOUNTING

Service and Adjustment Information

GENERAL DESCRIPTION

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

SERVICE PROCEDURE

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

TESTING THE IGNITION SPARK

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

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

TESTING THE MAGNETO SPARK

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

SERVICE OF BREAKER POINTS

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

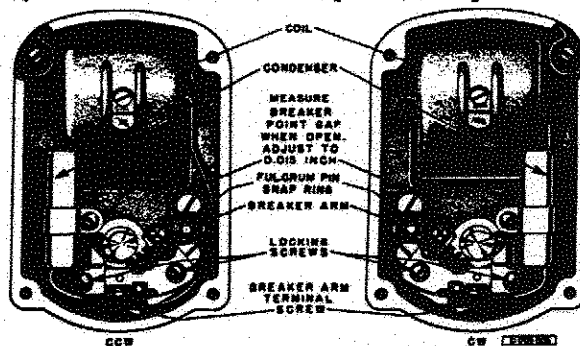


Fig. 1. End View of Type FM-X Magneto

Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119), Y84 Fairbanks-Morse Magnetos (One-Cylinder) (Cont.)

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

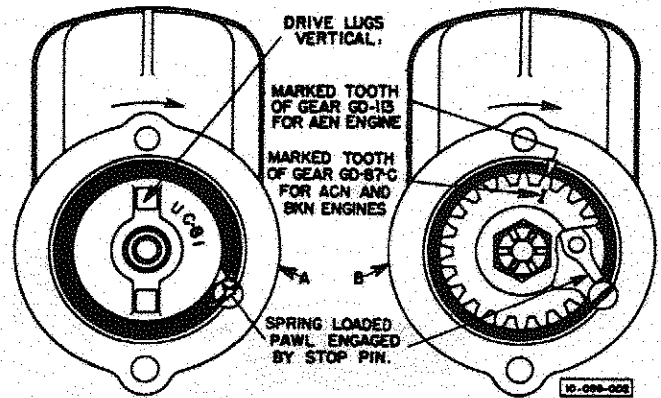


Fig. 2. Mounting Drive Gear

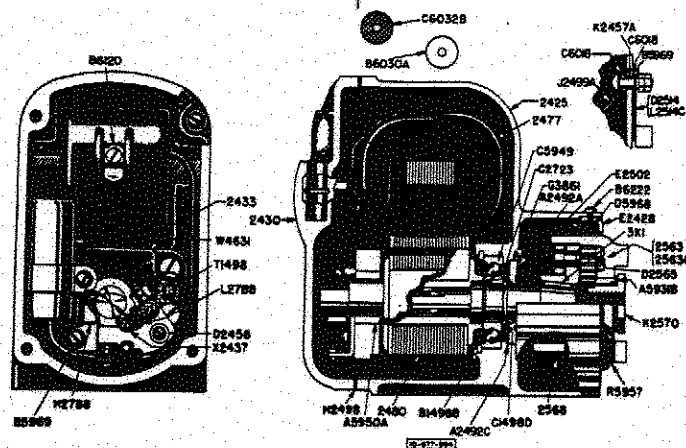
just to the right of the uppermost tooth on the gear. See drawing B of Fig. 2. The tooth on gear GD-113, used on AEN engines, is marked with an X on the outer edge of the tooth and on gear GD-87-C for ACN and BKN engines an I is stamped on the face of the tooth.

RADIO-SHIELDED MAGNETOS

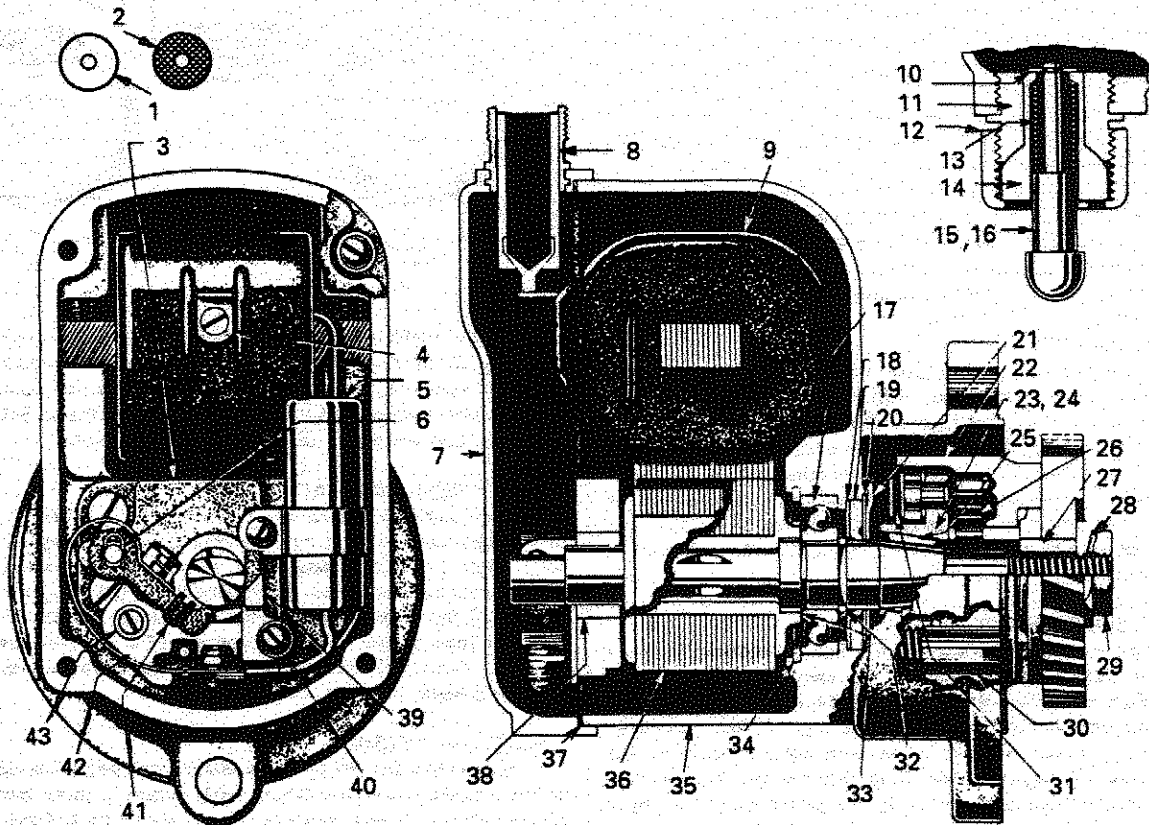
Applications which require complete radio shielding of the ignition system are equipped with a Type FM-XE or a Type FM-XDE magneto. These magnetos are similar to standard models except that the plastic end cap is replaced by an all-metal cover through which the high-tension lead is conducted by means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

GROUND SWITCHES

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



**Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119),
Y84 Fairbanks-Morse Magnetos (One-Cylinder)**



**Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119),
Y84 Fairbanks-Morse Magnetos (One-Cylinder)**

USE WITH MODELS ACN, BKN, AEN, AENL, AEH, AFH, AGH, AHH (see pg. 23)

| ITEM | PART NO. | DESCRIPTION | AHH AEH AFH AGH | AHH AEH AFH AGH | AEN AENS | AEN ABN AKN AENL | AEN |
|------|-----------|--|--------------------------|--------------------------|----------------|---------------------------------------|--|
| | | | Y72 FMX1A7 | Y84 FMXE1A7F | Y76 FMX1B7E | Y117 (Replaces Y73B) FMXD1B7 | Y119 (Replaces Y83A1) FMXDE1B7P |
| 1 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 | 2 |
| 2 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 | 2 |
| 3 | 31V4631 | Bearing support - CW | - | - | 1 | 1 | 1 |
| — | 31W4631 | Bearing support - CW | 1 | 1 | - | - | - |
| 4 | 31D6120 | Coil clip | - | 1 | - | - | 1 |
| — | 31B6120 | Coil clip | 1 | - | 1 | 1 | - |
| 5 | 31-2433 | | | | | | |
| 6 | 31B1498D | Fulcrum pin snap ring | 1 | 1 | 1 | 1 | 1 |
| 7 | 31AX2430 | End cap | 1 | - | - | - | - |
| — | 31BZ2430 | End cap | - | - | 1 | 1 | - |
| — | 31J2430A | End cap | - | 1 | - | - | 1 |
| 8 | 31P2474 | Cable outlet | - | 1 | - | - | 1 |
| 9 | 31-2477 | | | | | | |
| 10 | 31V1498 | Ground switch snap ring | - | 1 | - | - | 1 |
| 11 | 31C2744 | Ground switch bushing | - | 1 | - | - | 1 |
| 12 | 31B2735A | Cable outlet nut | - | 1 | - | - | 1 |
| 13 | 31C2513A | Ground switch button spring | - | 1 | - | - | 1 |
| — | 31D2514 | Ground switch insulated lever | 1 | - | 1 | 1 | - |
| 14 | 31D4373 | Ground switch bushing | - | 1 | - | - | 1 |
| 15 | 31S2514 | Ground switch button | - | 1 | - | - | 1 |
| — | 31L2514C | Primary ground switch | 1 | - | 1 | 1 | - |
| 16 | 31CX2514C | Push button ground switch | - | 1 | - | - | 1 |
| 17 | 31C5949 | Rotor drive end bearing | 1 | 1 | 1 | 1 | 1 |
| 18 | 31A2492C | Rotor drive end seal inner washer | 1 | 1 | 1 | 1 | 1 |
| 19 | 31G3861 | Rotor shaft seal | 1 | 1 | 1 | 1 | 1 |
| 20 | 31A2492A | Rotor drive end seal outer washer | 1 | 1 | 1 | 1 | 1 |
| 21 | 31E2303 | Oil slinger baffle disc | - | - | 1 | 1 | 1 |
| 22 | 31Z5957 | Impulse coupling shell - CW | - | - | 1 | 1 | 1 |
| — | 31R5957 | Impulse coupling shell - CCW | 1 | 1 | - | - | - |
| 23 | 31W2563 | Coupling hub assembly | 1 | - | - | - | - |
| — | 31LX2563 | Coupling hub assembly | - | - | - | - | 1 |
| — | 31YX2563 | Coupling hub assembly | - | 1 | - | - | - |
| — | 31ZX2563 | Coupling hub assembly | - | - | 1 | 1 | - |

(continued on page 25)

Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119), Y84 Fairbanks-Morse Magnetos (One-Cylinder) (Cont.)

USE WITH MODELS ACN, BKN, AEN, AENL, AEH, AFH, AGH, AHH (see pg. 23)

| ITEM | PART NO. | DESCRIPTION | AHH | AEH | AFH | AGH | AHH | AEH | AFH | AGH | AEN | AENS | AEN | ABN | AKN | AENL | AEN |
|------|-------------|--|--------|----------|---------|-------------------------|----------------------------|-----|-----|-----|-----|------|-----|-----|-----|------|-----|
| | | | Y72 | Y84 | Y76 | Y117 | Y119 | | | | | | | | | | |
| | | | FMX1A7 | FMXE1A7F | FMX1B7E | (Replaces Y73B) FMXD1B7 | (Replaces Y83A1) FMXDE1B7P | | | | | | | | | | |
| 24 | 31W2563C | Impulse coupling complete - Type UCL-1 - CCW | 1 | - | - | 1 | - | | | | | | | | | | |
| — | 31MX2563C30 | Impulse coupling complete - Type UC-8 - CW | - | - | 1 | - | - | | | | | | | | | | |
| — | 31EY2563C | Impulse coupling complete - Type UC-1 - CW | - | - | - | - | 1 | | | | | | | | | | |
| — | 31WY2563C | Impulse coupling complete - Type UCL-1 - CCW | - | 1 | - | - | - | | | | | | | | | | |
| 25 | 31-3K1 | Key - rotor shaft to impulse coupling | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| 26 | 31D2565 | Impulse coupling drive spring | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| 27 | 31F2572 | Impulse coupling bushing | - | - | 1 | 1 | 1 | | | | | | | | | | |
| 28 | 31A5931A | Impulse coupling nut lock wire | - | - | 1 | 1 | 1 | | | | | | | | | | |
| — | 31A5931B | Impulse coupling nut lock washer | 1 | 1 | - | - | - | | | | | | | | | | |
| 29 | 31M2570 | Impulse coupling nut | - | - | 1 | 1 | 1 | | | | | | | | | | |
| — | 31K2570 | Impulse coupling nut | 1 | 1 | - | - | - | | | | | | | | | | |
| 30 | 31F2568 | Impulse coupling pawl stop pin | 1 | 1 | - | - | - | | | | | | | | | | |
| — | 31S2568 | Impulse coupling pawl stop pin | - | - | 1 | 1 | 1 | | | | | | | | | | |
| 31 | 31D5963 | Impulse coupling pawl spring | - | 1 | - | - | 1 | | | | | | | | | | |
| 32 | 31C1498D | Rotor drive end shaft snap ring | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| 33 | 31C2723 | Rotor thrust bearing shim | 2 | 2 | 2 | 2 | 2 | | | | | | | | | | |
| 34 | 31B1498B | Rotor drive end bearing snap ring | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| 35 | 31RX2425 | Frame | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |
| — | 31ZX2425 | Frame | 1 | 1 | - | - | - | | | | | | | | | | |
| 36 | 31DW2480 | Magnetic rotor | - | - | - | 1 | 1 | | | | | | | | | | |
| — | 31JZ2480 | Magnetic rotor | 1 | 1 | - | - | - | | | | | | | | | | |
| — | 31KZ2480 | Magnetic rotor | - | - | 1 | - | - | | | | | | | | | | |
| 37 | 31K2498 | End cap to frame gasket | - | 1 | - | - | 1 | | | | | | | | | | |
| — | 31H2498 | End cap to frame gasket | 1 | - | 1 | 1 | - | | | | | | | | | | |
| 38 | 31A5950A | Rotor cam end bearing | 1 | 1 | 1 | 1 | 1 | | | | | | | | | | |

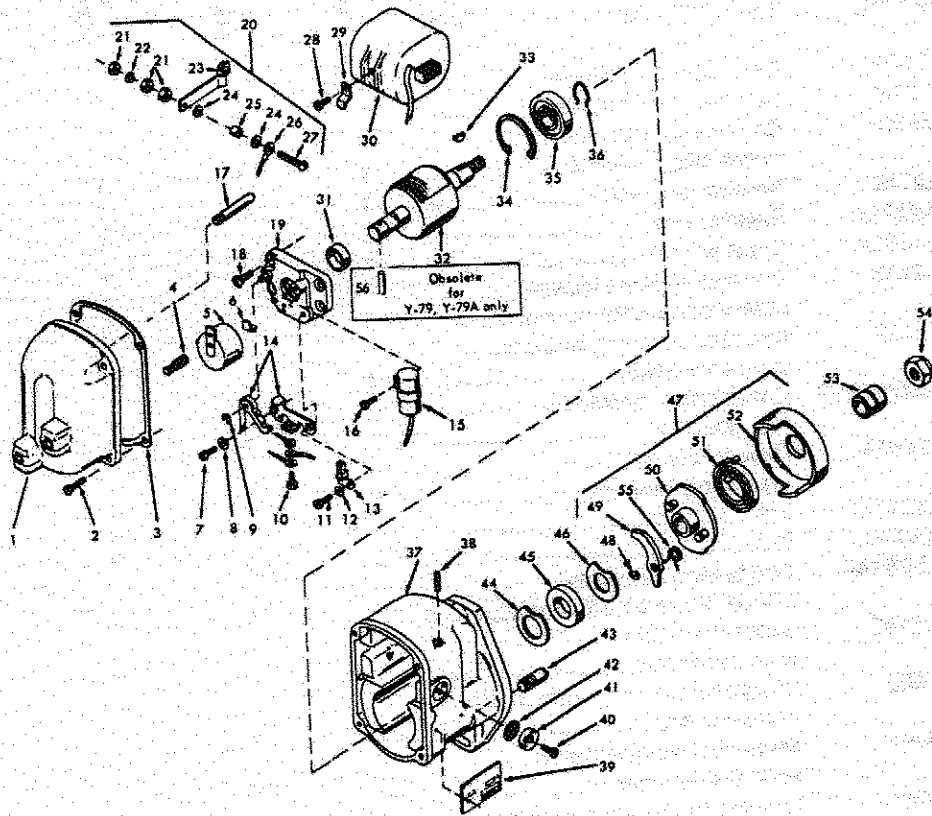
(continued on page 26)

Y72, Y73B (Replaced By Y117), Y76, Y83A1 (Replaced By Y119), Y84 Fairbanks-Morse Magnetos (One-Cylinder) (Cont.)

USE WITH MODELS ACN, BKN, AEN, AENL, AEH, AFH, AGH, AHH (see pg. 23)

| ITEM | PART NO. | DESCRIPTION | QTY | AHH | AHH | AEN | AEN | AEN |
|------|------------|---|-----|--------|----------|---------|-------------------------------|----------------------------------|
| | | | | AEH | AEH | AEN | ABN | AENL |
| | | | | AFH | AFH | AENS | AKN | AEN |
| | | | | AGH | AGH | | AENL | |
| | | | | Y72 | Y84 | Y76 | Y117 | Y119 |
| | | | | FMX1A7 | FMXE1A7F | FMX1B7E | (Replaces Y73B) FMXD1B7 | (Replaces Y83A1) FMXDE1B7P |
| 39 | 31G2788 | Cam wick and holder | - | - | - | 1 | - | - |
| - | 31H2788 | Cam wick and holder | - | - | - | - | 1 | 1 |
| 40 | 31B5969 | Contact support locking screw plate washer | 1 | 1 | - | - | - | - |
| 41 | 31L2788 | Breaker arm wick | 1 | 1 | 1 | 1 | 1 | 1 |
| 42 | 31A2437A | Breaker arm | 1 | 1 | 1 | 1 | 1 | 1 |
| - | 31B2437A | Breaker arm | - | - | - | 1 | 1 | 1 |
| 43 | 31D2458 | Contact support locking screw plate washer, no. 6 | 1 | 1 | - | - | - | - |
| - | 31E2428 | Impulse coupling housing cupped washer | 1 | 1 | 1 | 1 | 1 | 1 |
| - | 31AXMR2433 | Condenser - bracket in "R" position | 1 | 1 | - | - | - | - |
| - | 31K2457A | Ground switch insulating bushing | 1 | 1 | 1 | 1 | 1 | 1 |
| - | 31QS2477C | Coil | 1 | - | 1 | 1 | 1 | - |
| - | 31T2477C | Coil | - | - | - | - | 1 | 1 |
| - | 31-25SS14A | Coil bridge set screw - 1/4"-20 thread x 7/8" long | 1 | 1 | 1 | - | - | - |
| - | 31L2514C | Ground switch wire assembly | 1 | 1 | 1 | 1 | 1 | 1 |
| - | 31E2502 | Impulse coupling outer shell plate washer | 1 | - | 1 | 1 | 1 | - |
| - | 31D5968 | Impulse coupling outer shell felt washer | 1 | 1 | - | - | - | - |
| - | 31B5969 | Ground switch plate washer | 1 | 1 | - | - | - | - |
| - | 31C6018 | Ground switch insulating washer | 1 | - | 1 | 1 | 1 | - |
| - | 31B6222 | Impulse coupling cupped washer screw | 2 | 2 | - | - | - | - |

Y79 Series Magneto (Type FMX2B7)



PRODUCT INFORMATION



Subject : TJD Wisconsin Engine Replacement Magneto
Date : December 15, 1998

Y79D Wico brand magnetos are the service replacement for **Y79B** F.M. (Fairbanks Morse) brand magnetos.

Y79DS1 - For use on TJD engines. Includes GD93C3 drive gear.

General Service Information:

Position of #1 terminal changed on Y79D compared to Y79B. Note markings for #1 position on magneto cap.

General Parts Information:

The following service parts are available for the magneto.

| Description | Part number |
|------------------------------------|-------------|
| Overhaul Kit | YQ2 |
| Magneto end cap (includes gasket) | 90FXH2202-2 |
| Cap Gasket | 90FXH162 |
| Distributor rotor | 90FXH1008 |
| Contact point set | 90FXH2100B |
| Condensor | 90FXH2024 |
| Condensor bracket | 90FXH344 |
| Coil | 90FXH2403 |
| Oil seal | 90XA1393 |
| Magnetic rotor | 90FXH1006D |
| Drive gear lock ring | 90X5261 |

The above service parts are available from your authorized Wis-Con Total Power distributors and service centers.

ATTN. DAN

585-924-4334


WIS-CON
TOTAL POWER CORP.
PRODUCT INFORMATION

Subject : TJD Wisconsin Engine Replacement Magneto
Date : December 15, 1998

Y79D Wico brand magnetos are the service replacement for **Y79B F.M.** (Fairbanks Morse) brand magnetos.

Y79DS1 - For use on TJD engines. Includes GD93C3 drive gear.

General Service Information:

Position of #1 terminal changed on Y79D compared to Y79B. Note markings for #1 position on magneto cap.

General Parts Information:

The following service parts are available for the magneto.

| Description | Part number |
|------------------------------------|--------------------|
| Overhaul Kit | YQ2 |
| Magneto end cap (includes gasket) | 90FXH2202-2 |
| Cap Gasket | 90FXH162 |
| Distributor rotor | 90FXH1008 |
| Contact point set | 90FXH2100B |
| Condensor | 90FXH2024 |
| Condensor bracket | 90FXH344 |
| Coil | 90FXH2403 |
| Oil seal | 90XA1393 |
| Magnetic rotor | 90FXH1006D |
| Drive gear lock ring | 90X5261 |

The above service parts are available from your authorized Wis-Con Total Power distributors and service centers.

Y79 Series Magneto

USE WITH MODELS TJD, VEF4 (see pg. 27)

| ITEM | PART NO. | DESCRIPTION | W2-880 | W2-880 | Schramm | Schramm |
|------|------------|---|--------|-------------------------------|---------|------------------------------|
| | | | TJD | TJD | | |
| | | | Y72 | Y79B | Y76 | Y79C |
| | | | FMX1A7 | (Replaces Y79A) FMX2B7D | FMX1B7E | (Replaces Y79) FMX2B7A |
| 1 | 31WZ2430 | Cap (replaces FZ2430) | 1 | 1 | - | - |
| - | 31LX2430 | Cap | - | - | - | - |
| - | 31LX2430A | Cap | - | - | - | 1 |
| 2 | 31-10S14D | Screw, no. 10-24 thread x 7-8" long | - | - | 1 | - |
| 3 | 31H2498 | Gasket | 4 | 4 | 4 | 4 |
| 4 | 31E2460B | Brush and spring | 1 | 1 | 1 | 1 |
| 5 | 31FY2765 | Rotor | 1 | 1 | 1 | 1 |
| - | 31R2765 | Rotor <i>Push</i> | 1 | - | 1 | - |
| 6 | 31A2766 | Clip | - | 1 | - | 1 |
| 7 | 31-6S6U | Screw, no. 6-32 thread x 3/8" long | 1 | - | 1 | - |
| 8 | 31D2458 | Washer, no. 6 | 1 | 1 | 1 | 1 |
| 9 | 31C1498G | Snap ring | 1 | 1 | 1 | 1 |
| 10 | 31-6S6Z | Screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 11 | 31-8S6U | Screw, no. 8-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 12 | 31B5969 | Washer, no. 8 | 1 | 1 | 1 | 1 |
| 13 | 31G2788 | Wick and holder | 1 | 1 | 1 | 1 |
| 14 | 31A2437A | Point set | 1 | 1 | 1 | 1 |
| 15 | 31AXMR2433 | Condenser | 1 | 1 | 1 | 1 |
| - | 31SXY2433 | Condenser | - | - | - | 1 |
| 16 | 31-8S5NA | Screw, no. 8-32 thread x 5/8" long | 1 | 1 | 1 | - |
| 17 | 31JX983A | Rod | 1 | 1 | 1 | 1 |
| 18 | 31-8S6G | Screw, no. 8-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 19 | 31V4631 | Support | 4 | 4 | 4 | 4 |
| 20 | 31L2514C | Switch | 1 | 1 | 1 | 1 |
| 21 | 31-8N1 | Nut | 1 | 1 | 1 | 1 |
| 22 | 31-BLW5 | Lock washer | 3 | 3 | 3 | 3 |
| 23 | 31M2514 | Lever | 1 | 1 | 1 | 1 |
| 24 | 31C6018 | Washer | 1 | 1 | 1 | 1 |
| 25 | 31K2457A | Bushing | 2 | 2 | 1 | 2 |
| 26 | 31L2514C | Wire assembly | 1 | 1 | 1 | 1 |
| 27 | 31-8S14N | Screw, no. 8-32 thread x 7/8" long | 1 | 1 | 1 | 1 |
| 28 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 1 | 1 | 1 | 1 |
| 29 | 31D6120 | Clip | 1 | 1 | 1 | 1 |
| 30 | 31R2477C | Coil | 1 | 1 | 1 | 1 |
| 31 | 31A5950A | Bearing | 1 | 1 | 1 | 1 |
| 32 | 31PP2480 | Magnetic rotor | 1 | 1 | 1 | 1 |
| - | 31M2765 | Magnetic rotor | - | 1 | - | 1 |
| | | | 1 | - | 1 | - |

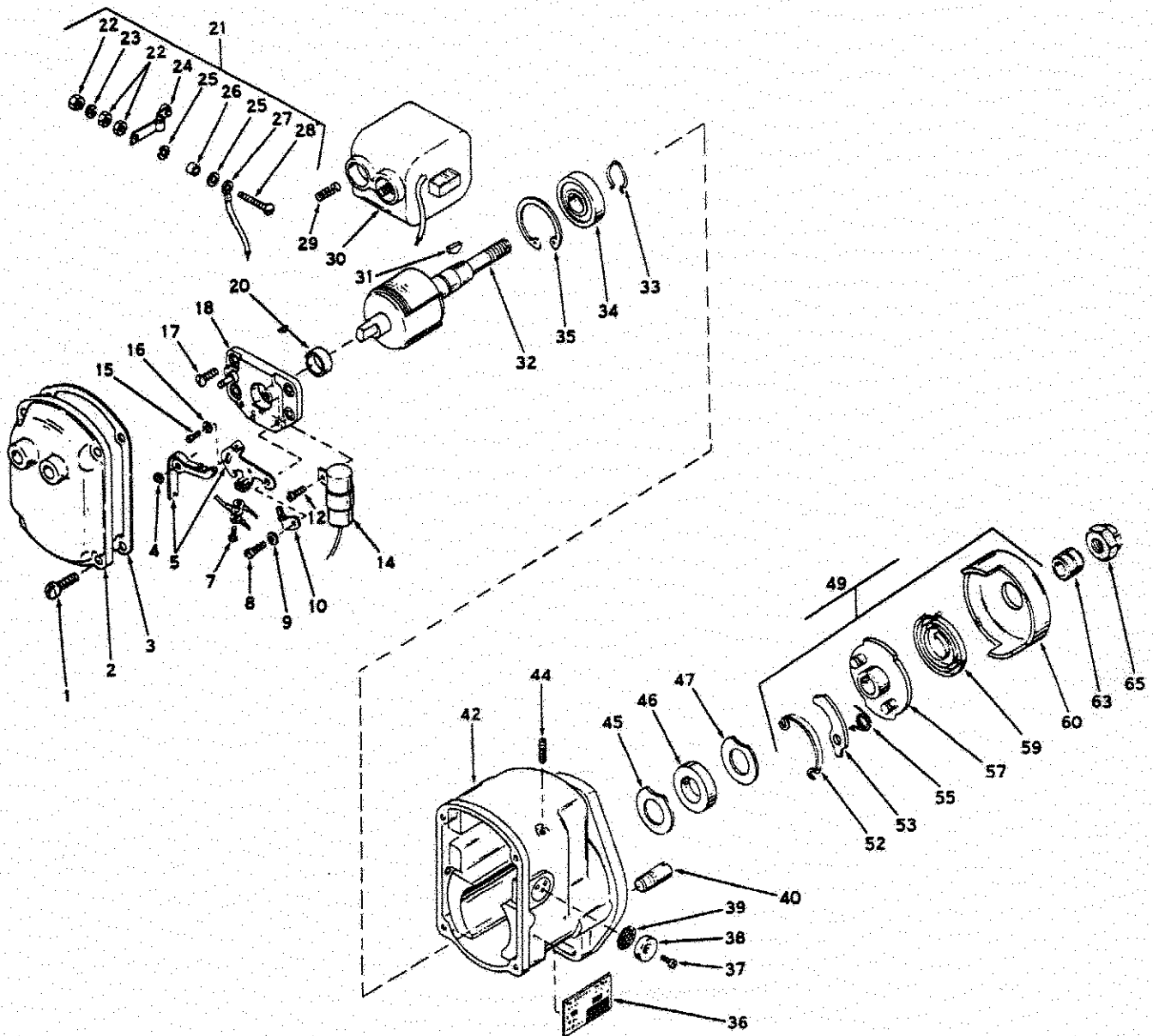
(continued on page 29)

Y79 Series Magneto (Cont.)

USE WITH MODELS TJD, VEF4 (see pg. 27)

| ITEM | PART NO. | DESCRIPTION | W2-880 | W2-880 | Schramm | Schramm |
|------|-------------|---|--------|-------------------------------|---------|------------------------------|
| | | | TJD | TJD | | |
| | | | Y72 | Y79B | Y76 | Y79C |
| | | | FMX1A7 | (Replaces Y79A) FMX2B7D | FMX1B7E | (Replaces Y79) FMX2B7A |
| 33 | 31-3K1 | Key | 1 | 1 | 1 | 1 |
| 34 | 31B1498B | Snap ring | 1 | 1 | 1 | 1 |
| 35 | 31C5949 | Bearing | 1 | 1 | 1 | 1 |
| 36 | 31B1498D | Snap ring | 1 | 1 | 1 | 1 |
| 37 | 31TZ2425 | Housing | 1 | 1 | 1 | 1 |
| 38 | 31-31SS14A | Screw, 5/16-24 thread x 7/8" long | 2 | 2 | 2 | 2 |
| 39 | 31N195 | Name plate | 1 | 1 | 1 | - |
| — | 31A195 | Name plate | - | - | - | 1 |
| 40 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 2 | 2 | 2 | 2 |
| 41 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 |
| 42 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 |
| 43 | 31S2568 | Stop pin | 1 | 1 | 1 | 1 |
| 44 | 31A2492C | Washer | 1 | 1 | 1 | 1 |
| 45 | 31G3861 | End seal | 1 | 1 | 1 | 1 |
| 46 | 31A2492A | Washer | 1 | 1 | 1 | 1 |
| 47 | 31AR2563C15 | Impulse coupling | 1 | 1 | - | - |
| — | 31BW2563C30 | Impulse coupling | - | - | 1 | 1 |
| 48 | 31A1498J | Pawl lock | - | - | 1 | - |
| — | 31D1498J | Pawl lock | 2 | 2 | - | 1 |
| 49 | 31H2566 | Coupling pawl | - | - | - | 1 |
| — | 31Q2566 | Coupling pawl | 2 | 2 | 2 | - |
| 50 | 31-2563-30 | Hub assembly | - | - | 1 | 1 |
| — | 31S2563-15 | Hub assembly | 1 | 1 | - | - |
| 51 | 31D2565 | Drive spring | 1 | - | - | 1 |
| — | 31E2565 | Drive spring | - | 1 | 1 | - |
| 52 | 31GW5957 | Coupling shell | 1 | 1 | - | - |
| — | 31Y5957 | Coupling shell | - | - | 1 | - |
| — | 31Z5957 | Coupling shell | - | - | - | 1 |
| 53 | 31F2572 | Bushing | 1 | 1 | 1 | 1 |
| 54 | 31M2570 | Coupling nut | 1 | 1 | 1 | 1 |
| 55 | 31T5963 | Pawl spring | 2 | 2 | 2 | - |
| 56 | 31A2669 | Rotor pin | - | 1 | - | 1 |
| — | YQ18 | Points and condenser kit (not illustrated) | 1 | 1 | - | - |
| — | YQ17A | Overhaul kit (not illustrated) | 1 | - | - | - |
| — | YQ17 | Overhaul kit (not illustrated) | - | 1 | - | - |

Y80S1, Y80S2 Magnetos (Type FMX1-2B7-1)



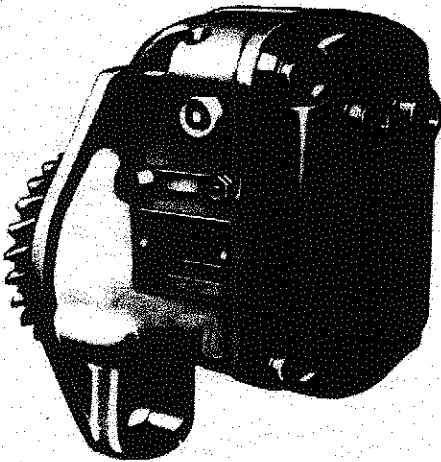
Y80S1, Y80S2 Magnetos

USE MODELS TE, TF WITH GD93C1 DRIVE GEAR, TH, THD WITH GD93C3 DRIVE GEAR (see pg. 30)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|--|-----|------|-------------|---|-----|
| 1 | 31-10S12D | Screw, no. 10-24 thread x 3/4" long | 4 | 30 | 31Q2477C | Coil | 1 |
| 2 | 31BY2430 | End cap | 1 | 31 | 31-3K1 | Key | 1 |
| 3 | 31H2498 | Gasket | 1 | 32 | 31FV2480 | Rotor | 1 |
| 4 | 31C1498G | Snap ring | 1 | 33 | 31B1498D | Snap ring | 1 |
| 5 | 31A2437A | Point set | 1 | 34 | 31C5949 | Bearing | 1 |
| 7 | 31-6S6Z | Screw, no. 6-32 thread x 3/8" long | 1 | 35 | 31B1498B | Snap ring | 1 |
| 8 | 31-8S6U | Screw, no. 8-32 thread x 3/8" long | 1 | 36 | 31A195 | Name plate | 1 |
| 9 | 31B5969 | Washer | 1 | 37 | 31-6S4U | Vent screw, no. 6-32 thread x 1/4" long | 2 |
| 10 | 31G2788 | Cam wick | 1 | 38 | 31B6030A | Vent cover | 2 |
| 12 | 31-8S4U | Screw, no. 8-32 thread x 1/4" long | 1 | 39 | 31C6032B | Vent screen | 2 |
| 14 | 31SXY2433 | Condenser | 1 | 40 | 31S2568 | Stop pin | 1 |
| 15 | 31-6S6U | Screw, no. 6-32 thread x 3/8" long | 1 | 42 | 31DY2425 | Housing | 1 |
| 16 | 31D2458 | Washer, no. 6 | 1 | 44 | 31-31SS14A | Set screw, no. 5/16-24 thread x 7/8" long | 2 |
| 17 | 31-8S6G | Screw, no. 8-32 thread x 3/8" long | 4 | 45 | 31A2492C | Washer | 1 |
| 18 | 31V4631 | Bearing support | 1 | 46 | 31G3861 | Shaft seal | 1 |
| 20 | 31A5950A | Bearing | 1 | 47 | 31A2492A | Washer | 1 |
| 21 | 31L2514C | Switch assembly | 1 | 49 | 31ZV2563C20 | Coupling | 1 |
| 22 | 31BN1 | Screw nut | 3 | 52 | 31A1498J | Lock spring | 1 |
| 23 | 31BLW5 | Screw lock washer | 1 | 53 | 31Q2566 | Coupling pawl | 1 |
| 24 | 31M2514 | Lever | 1 | 55 | 31T5963 | Pawl spring | 1 |
| 25 | 31C6018 | Insulating washer | 2 | 57 | 31GY2563-30 | Hub assembly | 1 |
| 26 | 31K2457A | Switch bushing | 1 | 59 | 31D2565 | Coupling spring | 1 |
| 27 | 31L2514C | Wire assembly | 1 | 60 | 31AZ5957 | Coupling shell | 1 |
| 28 | 31-8S14N | Screw, no. 8-32 thread x 7/8" long | 1 | 63 | 31F2572 | Coupling bushing | 1 |
| 29 | 31B3967 | Spring | 2 | 65 | 31M2570 | Coupling nut | 1 |
| | | | | — | YQ6 | Points and condenser kit (not illustrated) | 1 |
| | | | | — | YQ3 | Overhaul kit (not illustrated) | 1 |

Y80S1, Y80S2 Magnetos (Type FMX1-2B7-1)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

Type FM-X1-2B7-1 magneto is adapted to Models TE, TF TH and THD engines manufactured by Wisconsin Motor Corporation. The magneto is of a split-coil design in that there isn't any distributor, but instead two sparks are provided simultaneously every 360° of rotation. The magneto is flange mounted, clockwise in rotation, and has a lag angle of 20° provided by a special impulse coupling.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine difficulty arising from other sources, such as a flooded carburetor, insufficient fuel or air, loose ignition connections, or a defective spark plug. A brief engine inspection will often locate the trouble before the magneto is reached, and prevent maladjustment of parts in good condition. The magneto should be opened only when it is certain that the ignition spark produced is unsatisfactory. This condition may be determined by an ignition spark test, as explained in engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance which is 0.015 inch at full separation.

The adjustment of breaker points is made in the following manner: Lightly loosen the two contact support locking screws, identified in Fig. 1. Then, with the points at full separation, move the contact support until the proper breaker point clearance is obtained. This is accomplished by means of a screwdriver inserted in the slot at the bottom of the contact support and pivoted between the two small bosses on the bearing support. Lock assembly in place by tightening locking screws, and take a final measurement of breaker point gap after the locking screws are tightened.

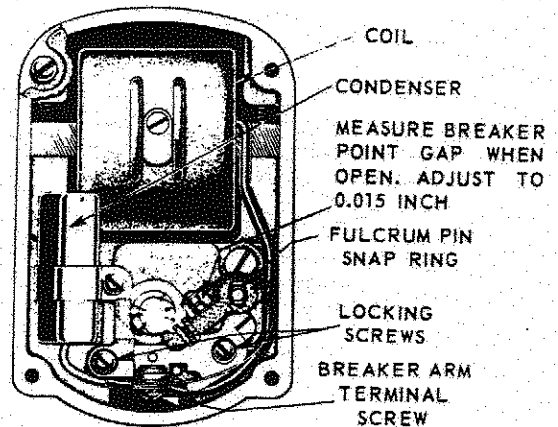


Fig. 1 END VIEW OF MAGNETO.

SEALING MAGNETO

Before replacing end cap on the magneto frame, clean the contact surfaces between cap and frame. Then coat the end cap contact surface with Fairbanks-Morse FMCO2 Gasket Varnish, place a new cork gasket in the joint, mount the end cap on the frame, and tighten the four screws securely.

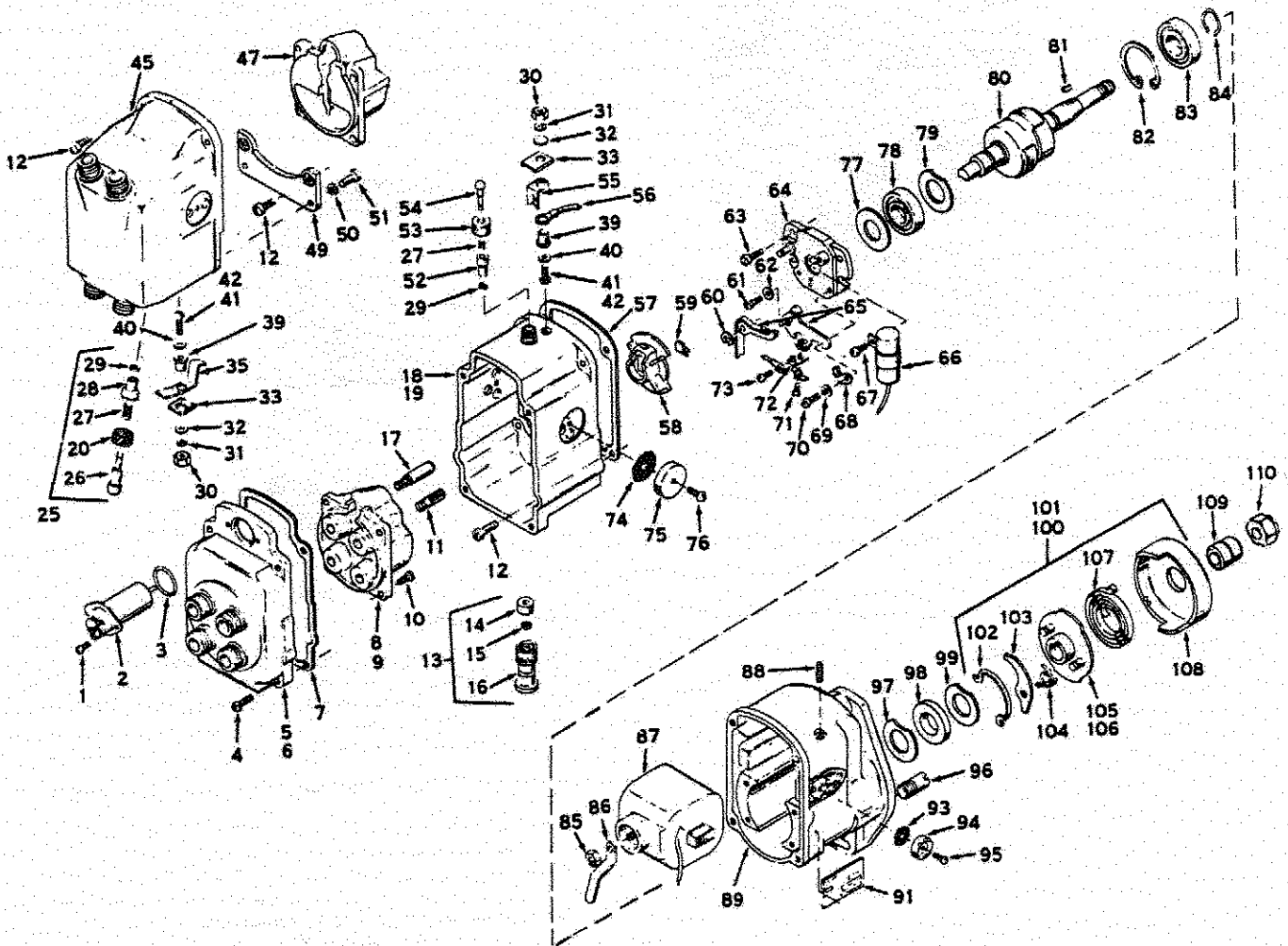
FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, magneto does not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Magneto Service Center. Coil and condenser replacements, while simple, are not recommended unless test equipment is available.

TIMING MAGNETO TO ENGINE

Ignition timing is accomplished by correctly mounting magneto to the crankcase. Refer to 'MAGNETO TIMING' in engine INSTRUCTION MANUAL for assembly procedure.

Y86A, Y86B, Y86C, Y86D Magnetos (Type FMZVE4B7) (Obsolete)



Y86A, Y86B, Y86C, Y86D Magnetos (Obsolete)

USE WITH MODELS VE4D, VF4D, MVE4D, MVF4D

(Drive Gear Part Numbers GD93C2 for Military Engines, GD93C5 for Commercial Engines) (see pg. 33)

| ITEM | PART NO. | DESCRIPTION | Y86D FMZVE4B7-4 | Y86C FMZVE4B7-2 | Y86B FMZVE4B7G | Y86A FMZVE4B7 |
|------|-----------|---|--------------------|--------------------|-------------------|------------------|
| 1 | 31-6S6D | Condenser screw, no. 6-32 thread x 3/8" long | 2 | 2 | - | 2 |
| 2 | 31EX2433 | Condenser feed thru | 1 | 1 | - | 1 |
| 3 | 31P2473 | Condenser "O" ring seal | 1 | 1 | - | 1 |
| 4 | 31-8S10D | Cover screw, no. 8-32 thread x 5/8" long | 4 | 4 | - | 4 |
| 5 | 31E800A | End cap cover | - | 1 | - | 1 |
| 6 | 31L800A | End cap cover | 1 | - | - | 1 |
| 7 | 31E682A | Cover gasket | 1 | 1 | - | 1 |
| 8 | 31L2474E | Distributor block | 1 | - | - | - |
| 9 | 31G2474E | Distributor block | - | 1 | - | 1 |
| 10 | 31-8S8D | Block screw, no. 8-32 thread x 1/2" long | 4 | 4 | 4 | 4 |
| 11 | 31E2460B | Brush and spring | 1 | 1 | 1 | 1 |
| 12 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 4 | 4 | 4 | 4 |
| 13 | 31KX2514C | Switch complete | 1 | - | - | - |
| 14 | 31F4373 | "O" ring seal | 1 | - | - | - |
| 15 | 31E2513A | Button spring | 1 | - | - | - |
| 16 | 31FW2514 | Plunger and nut assembly | 1 | - | - | - |
| 17 | 31A983B | Lead road | 1 | 1 | 1 | 1 |
| 18 | 31P2430C | End cap | - | 1 | - | 1 |
| 19 | 31AA2430C | End cap | 1 | - | - | - |
| 20 | 31B2735A | Ground switch nut | - | - | 1 | - |
| 25 | 31CX2514C | Switch complete | - | - | 1 | - |
| 26 | 31S2514 | Switch push button | - | - | 1 | - |
| 27 | 31C2513A | Switch spring | - | 1 | 1 | 1 |
| 28 | 31D4373 | "O" ring seal | - | - | 1 | - |
| 29 | 31V1498 | Switch snap ring | - | 1 | 1 | 1 |
| 30 | 31-6N1 | Screw nut | 1 | 1 | 1 | 1 |
| 31 | 31-6LW1 | Screw lock washer | - | - | 1 | 1 |
| 32 | 31D2458 | Ground strip washer, no. 6 | 1 | 1 | 1 | 1 |
| 33 | 31B1355 | Strip guide | 1 | 1 | 1 | 1 |
| 35 | 31R2514 | Ground strip | - | - | 1 | - |
| 39 | 31H2457A | Switch screw bushing | 1 | 1 | 1 | 1 |
| 40 | 31C6503 | Terminal washer | 1 | 1 | 1 | 1 |
| 41 | 31-6S9N | Switch screw, no. 6-32 thread x 9/16" long | - | 1 | - | 1 |
| 42 | 31-6S8N | Switch screw, no. 6-32 thread x 1/2" long | 1 | - | 1 | - |

(continued on page 35)

Y86A, Y86B, Y86C, Y86D Magnetos (Obsolete) (Cont.)

USE WITH MODELS VE4D, VF4D, MVE4D, MVF4D

(Drive Gear Part Numbers GD93C2 for Military Engines, GD93C5 for Commercial Engines) (see pg. 33)

| ITEM | PART NO. | DESCRIPTION | Y86D FMZVE4B7-4 | Y86C FMZVE4B7-2 | Y86B FMZVE4B7G | Y86A FMZVE4B7 |
|------|-----------|---|--------------------|--------------------|-------------------|------------------|
| 45 | 31C2430A | End cap | 1 | 1 | 1 | 1 |
| 47 | 31C2474E | Distributor block | 1 | 1 | 1 | 1 |
| 49 | 31A2636 | End cap plate | 1 | 1 | 1 | 1 |
| 50 | 31-10LW2 | Screw lock washer | 1 | 1 | 2 | 1 |
| 51 | 31-10S6G | Plate screw, no. 10-24 thread x 3/8" long | 1 | 1 | 2 | 1 |
| 52 | 31C4373 | Switch bushing | 1 | 1 | 1 | 1 |
| 53 | 31A2735A | Cable outlet nut | 1 | 1 | 1 | 1 |
| 54 | 31M2514C | Switch complete | 1 | 1 | 1 | 1 |
| 55 | 31K2513 | Condenser contact | 1 | 1 | 1 | 1 |
| 56 | 31H2499A | Wire assembly | 1 | 1 | 1 | 1 |
| 57 | 31K2498 | End cap gasket | 1 | 1 | 1 | 1 |
| 58 | 31M2765 | Distributor rotor | 1 | 1 | 1 | 1 |
| 59 | 31A2766 | Rotor spring clip | 1 | 1 | 1 | 1 |
| 60 | 31C1498G | Fulcrum pin snap ring | 1 | 1 | 1 | 1 |
| 61 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 62 | 31D2458 | Support screw washer, no. 6 | 1 | 1 | 1 | 1 |
| 63 | 31-8S6D | Support screw, no. 8-32 thread x 3/8" long | 4 | 4 | 4 | 4 |
| 64 | 31SX4631 | Bearing support | 1 | 1 | 1 | 1 |
| 65 | 31A2437A | Point set | 1 | 1 | 1 | 1 |
| 66 | 31SXY2433 | Condenser | 1 | 1 | 1 | 1 |
| 67 | 31-8S6D | Condenser screw, no. 8-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 68 | 31G2788 | Cam wick | 1 | 1 | 1 | 1 |
| 69 | 31B5969 | Support screw washer, no. 8 | 1 | 1 | 1 | 1 |
| 70 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 71 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 72 | 31A6804 | Lead wire clip | 1 | 1 | 1 | 1 |
| 73 | 31-6S4D | Clip screw, no. 6-32 thread x 1/4" long | 1 | 1 | 1 | 1 |
| 74 | 31A6032A | Vent screen | 2 | 2 | 2 | 2 |
| 75 | 31A1232 | Vent cover | 2 | 2 | 2 | 2 |
| 76 | 31-6S6N | Cover screw, no. 6-32 thread x 3/8" long | 2 | 2 | 2 | 2 |
| 77 | 31E2493 | Outer grease retaining washer | 1 | 1 | 1 | 1 |
| 78 | 31D5949A | Cam end bearing | 1 | 1 | 1 | 1 |
| 79 | 31A2492C | Inner grease retaining washer | 1 | 1 | 1 | 1 |
| 80 | 31RT2480 | Rotor | 1 | 1 | 1 | 1 |
| 81 | 31-3K1 | Key | 1 | 1 | 1 | 1 |

(continued on page 36)

Y86A, Y86B, Y86C, Y86D Magnetos (Obsolete) (Cont.)

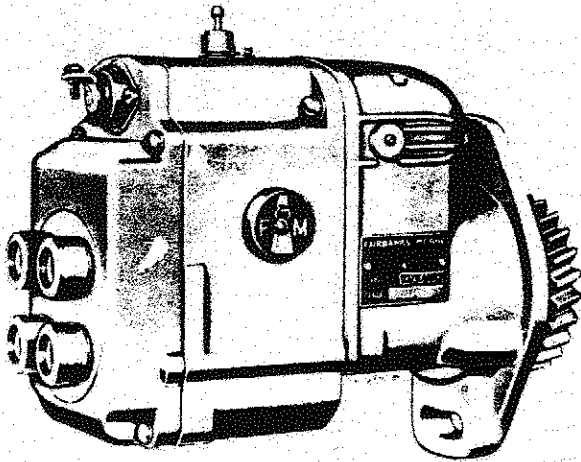
USE WITH MODELS VE4D, VF4D, MVE4D, MVF4D

(Drive Gear Part Numbers GD93C2 for Military Engines, GD93C5 for Commercial Engines) (see pg. 33)

| ITEM | PART NO. | DESCRIPTION | Y86D FMZVE4B7-4 | Y86C FMZVE4B7-2 | Y86B FMZVE4B7G | Y86A FMZVE4B7 |
|------|-----------|---|--------------------|--------------------|-------------------|------------------|
| 82 | 31B1498B | Bearing snap ring | 1 | 1 | 1 | 1 |
| 83 | 31C5949 | Drive end bearing | 1 | 1 | 1 | 1 |
| 84 | 31B1498D | Shaft snap ring | 1 | 1 | 1 | 1 |
| 85 | 31-8N1 | Clip nut | 1 | 1 | 1 | 1 |
| 86 | 31K6120 | Coil clip | 1 | 1 | 1 | 1 |
| 87 | 31QS2477C | Coil | 1 | 1 | 1 | 1 |
| 88 | 31SS14A | Screw, 5/16"-20 thread x 7/8" long | 2 | 2 | 2 | 2 |
| 89 | 31GW2425 | Housing | 1 | 1 | 1 | 1 |
| 91 | 31N195 | Name plate | 1 | 1 | 1 | 1 |
| 93 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 |
| 94 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 |
| 95 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 | 2 | 2 | 2 |
| 96 | 31S2568 | Pawl stop pin | 2 | 2 | 2 | 2 |
| 97 | 31A2492C | Seal inner washer | 1 | 1 | 1 | 1 |
| 98 | 31G3861 | Shaft seal | 1 | 1 | 1 | 1 |
| 99 | 31A2492A | Seal outer washer | 1 | 1 | 1 | 1 |
| 100 | 31TU2563C | Coupling complete | 1 | - | - | - |
| 101 | 31GX2563C | Coupling complete | - | 1 | 1 | 1 |
| 102 | 31A1498J | Pawl lock spring | 1 | 1 | 1 | 1 |
| 103 | 31Q2566 | Coupling pawl | 2 | 2 | 2 | 2 |
| 104 | 31T5963 | Pawl spring | - | 2 | 2 | 2 |
| 105 | 31EX2563 | Hub assembly | - | 1 | 1 | 1 |
| 106 | 31WZ2563 | Hub assembly | 1 | - | - | - |
| 107 | 31E2565 | Coupling spring | 1 | 1 | 1 | 1 |
| 108 | 31Y5957 | Coupling shell | 1 | 1 | 1 | 1 |
| 109 | 31F2572 | Gear bushing | 1 | 1 | 1 | 1 |
| 110 | 31M2570 | Coupling nut | 1 | 1 | 1 | 1 |

Y86A, Y86B, Y86C, Y86D Magnetos (Type FMZVE4B7) (Obsolete)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

This radio shielded magneto is built specifically for installation on Wisconsin Motor Corporation military engine model MVF4D and commercial models VE4D, VF4D requiring radio shielded ignition. These engines have a firing interval of 180°-270°-180°-90°. The magneto, having a four pole rotor and a four lobe cam, meets this requirement by producing four sparks per revolution of the rotor, running at crankshaft speed. In a complete cycle of two engine revolutions, four sparks are used for ignition and four fire in the exhaust.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent 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 an ignition spark test. See engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance which is 0.015 inch at full separation. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do

not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Center. Coil and condenser replacements are not recommended, unless test equipment is available.

SEALING MAGNETO

Opening the magneto for breaker point adjustment or other service necessitates resealing the magneto upon reassembly. The surfaces between magneto frame and end cap should be thoroughly cleaned and a new lead gasket installed. Remove vent hoods and clean vent screens of all foreign material.

SPECIAL DRIVE GEAR

The magneto is equipped with a special drive gear mounted directly to the impulse coupling. If it is necessary at any time to remove the drive gear, special care must be exercised in reassembly. Remove the end cap and turn the rotor until the contact segment is in firing position for No. 1 cylinder as shown in Fig. 1. With the distributor rotor in this position, fit gear to the impulse coupling lugs so that the punch mark on the face, and "X" mark on the outer edge of the gear tooth, are located as shown. Securely tighten coupling locknut.

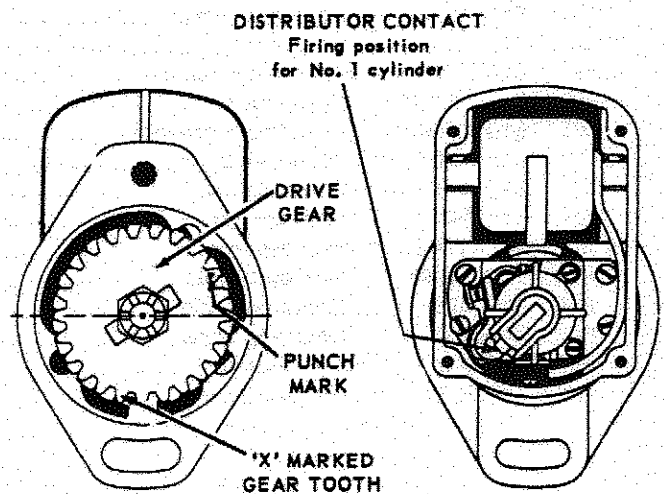
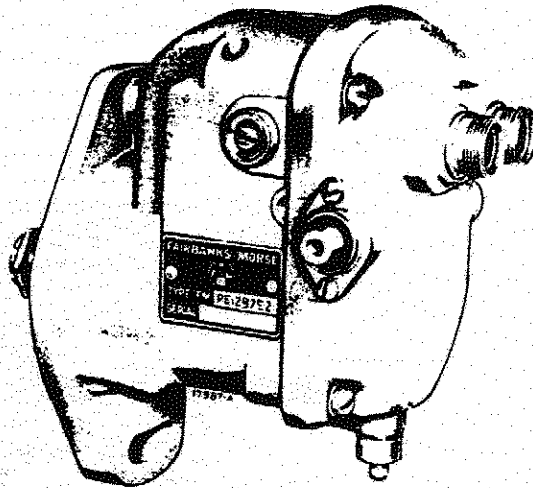


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Refer to Magneto Timing instructions in the front section of ENGINE INSTRUCTION MANUAL, for proper method of mounting magneto to engine in order to obtain correct ignition timing.

Y93C Magneto (Type FMPE1-2B7E2)



SERVICE AND ADJUSTMENT INFORMATION

GENERAL DESCRIPTION

The Type FM-PE1-2B7E-2 radio shielded magneto, whose parts are listed on page 2 of this instruction, is built specifically for application on Wisconsin Motor Corp. Models TH and MTHD spark ignited engines. These magnetos rotate clockwise and are fitted with a single pawl impulse coupling which facilitates starting by intensifying and retarding the ignition spark at low engine speeds. This magneto is special in design in that it has no distributor but produces two (2) ignition sparks every 360° of rotation.

SERVICE PROCEDURE

Field adjustments should be made only if malfunction of the engine occurs during the starting or operating cycle. When it is certain the magneto is the cause of poor engine performance, we only recommend servicing of the breaker points. The operator should clean or redress the point surfaces, adjust the contact points or replace the point set complete. If after the above work has been done on the points and the engine still does not function properly, the magneto should be taken complete to an authorized Fairbanks-Morse Service Account.

The following point setting should be used

when checking or adjusting the contact points -
Types FM-PE1-2B7E-2 - 0.015" \pm .002.

Since these magnetos do not require field lubrication, no attempt should be made to oil or grease the magneto bearings. They should be repacked at a regular overhaul period. However, if the cam wick is dry and hard, it should be replaced with a new factory impregnated wick. Further field service is not recommended.

TIMING THE MAGNETO TO THE ENGINE

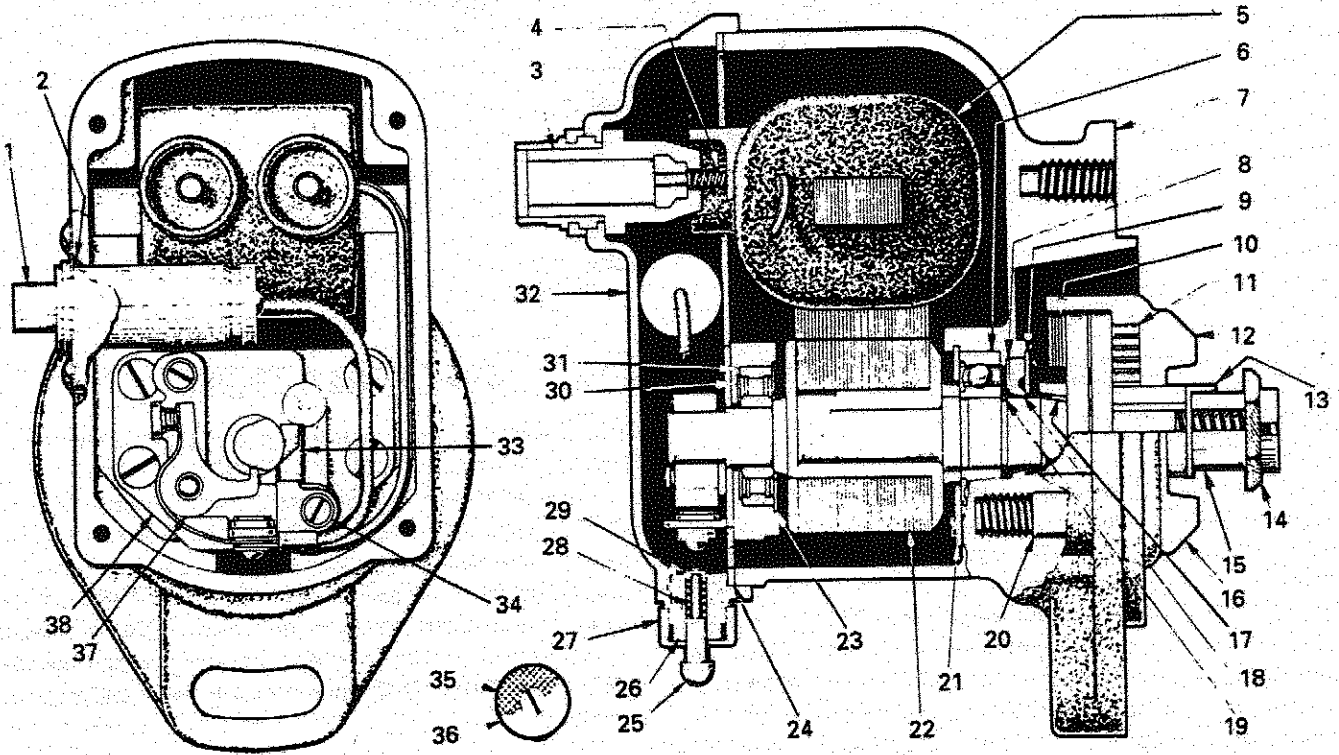
If the magneto has been removed from the engine for servicing, the operator must carefully follow the engine manufacturer's instruction for timing the magneto to the engine. When installing the magneto on the engine, be sure the magneto is properly attached and that the magneto housing to engine gasket is in good condition.

MAGNETO SERVICE FACILITIES

Fairbanks-Morse Magneto Service Accounts are located throughout the country and have the trained personnel and necessary equipment to insure efficient repair service to all owners of Fairbanks-Morse magnetos.

Refer to Bulletin FM-18, latest state, directory of Service Accounts, to locate the nearest service station.

Y93C Magneto (Type FMPE1-2B7E2)

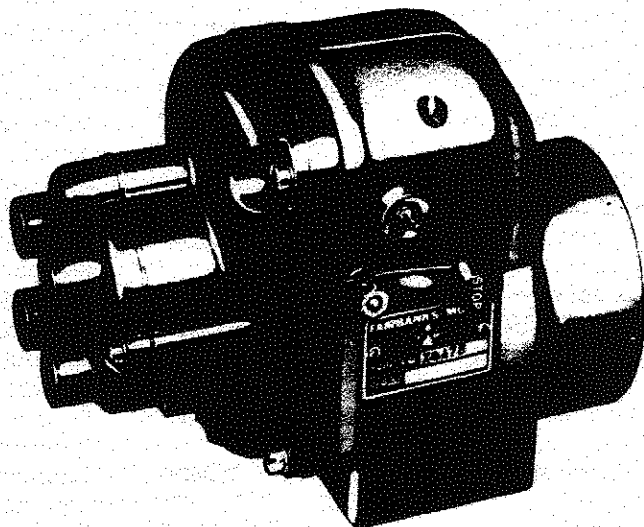


Y93C Magneto

USE WITH MODELS TH, THD, MTHD (see pg. 39)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|---|-----|------|-----------|---|-----|
| 1 | 31QX2433 | Feed-thru condenser..... | 1 | 22 | 31XS2480 | Magnetic rotor..... | 1 |
| - | 31-6S6D | Condenser mounting screw, no. 6-32 thread x 3/8" long | 2 | 23 | 31A2492C | Inner bearing support grease retaining washer | 1 |
| 2 | 31P2473 | Condenser "O" ring seal | 1 | 24 | 31K2498 | End cap to housing gasket | 1 |
| 3 | 31U2474 | Cable outlet | 2 | 25 | 31S2514 | Ground switch button..... | 1 |
| 4 | 31B3967 | Coil lead spring | 2 | - | 31CX2514C | Push button ground switch complete | 1 |
| 5 | 1QT2477C | Coil | 1 | 26 | 31C4373 | Ground switch bushing | 1 |
| - | 31SS12B | Coil bridge set screw, 5/16"-24 thread x 3/4" long | 2 | 27 | 31B2735A | Ground switch nut, 1/2" | 1 |
| 6 | 31C5949 | Rotor drive end bearing | 1 | 28 | 31C2513A | Ground switch spring | 1 |
| 7- | 31EV2425 | Housing | 1 | 29 | 31V1498 | Ground switch snap ring | 1 |
| 8 | 31A2492C | Rotor drive end seal inner washer | 1 | 30 | 31E2493 | Outer bearing support grease retaining washer | 1 |
| 9 | 31A2492A | Rotor drive end seal outer washer | 1 | 31 | 31D5949A | Rotor cam end bearing | 1 |
| 10 | 31C5963 | Impulse coupling pawl spring | 1 | 32 | 31FY2430A | End cap | 1 |
| 11 | 31E2565 | Impulse coupling drive spring | 1 | - | 31-10S10D | End cap screw, no. 10-24 thread x 5/8" long ... | 4 |
| 12 | 31WY2563 | Coupling hub assembly..... | 1 | 33 | 31G2788 | Cam wick and holder | 1 |
| - | 31ZV2563C | Impulse coupling complete.... | 1 | 34 | 31B5969 | Contact support locking screw plate washer, no. 8 | 1 |
| 13 | 31B2665K | Coupling plate washer..... | 1 | 35 | 31C6032B | Vent screen | 2 |
| 14 | 31M2570 | Impulse coupling nut..... | 1 | 36 | 31B6030A | Vent cover..... | 2 |
| 15 | 31F2572 | Coupling drive gear bushing | 1 | - | 31-6S4L | Vent cover screw, no. 6-32 thread x 1/4" long | 2 |
| 16 | 31AZ5957 | Impulse coupling shell | 1 | 37 | 31Q2437A | Breaker arm, support bracket and points | 1 |
| 17 | 31-3K1 | Key - rotor shaft to impulse coupling | 1 | - | 31-6S6U | Breaker arm terminal screw and lock washer, no. 6-32 thread x 3/8" long | 1 |
| 18 | 31G3861 | Rotor drive end seal..... | 1 | - | 31-8S5NA | Contact support locking screw and lock washer, no. 8-32 thread x 5/16" long ... | 2 |
| 19 | 31B1498D | Rotor drive end shaft snap ring | 1 | 38 | 31BY4631 | Bearing support | 1 |
| 20 | 31A2568 | Impulse coupling pawl stop pin | 1 | - | 31-8S6G | Bearing support screw, no. 8-32 thread x 3/16" long ... | 4 |
| 21 | 31A2492D | Rotor drive end bearing retaining washer | 1 | - | 31A195 | Name plate (not illustrated) ... | 1 |
| - | 31-8S7K | Retaining washer screw, no. 8-32 thread x 7/16" long ... | 1 | | | | |
| - | 31-8LW6 | Retaining washer screw lock washer | 1 | | | | |

Y94 Fairbanks-Morse Magneto (Type FMX4A7B) (Obsolete)



Service and Adjustment Information

GENERAL DESCRIPTION

Modern ignition systems are carefully designed to provide quick, easy starting and maximum dependability of operation with minimum adjustment and service. Due to advanced engineering and sturdy construction, the Fairbanks-Morse magnetos have become field performance leaders. The compact powerful Alnico rotor assures an intensely hot spark even under the most difficult operating conditions. Field adjustments are rarely necessary and, although simple, they should be made only in accordance with the following instructions.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine difficulty arising from other sources, such as a flooded carburetor, insufficient fuel or air, loose ignition connections, or a defective spark plug. A brief engine inspection will usually localize the trouble before the magneto is reached, and often prevents maladjustment of parts in good condition. Type FM-X4 magnetos are built in vented frames which should be opened only when it is certain that the ignition spark is unsatisfactory. This condition may be determined by ignition spark tests which are easily made in the field.

TESTING THE IGNITION SPARK

With spark plugs properly adjusted and 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 each ignition cable 1/16 in. away from the spark plug terminal while the engine is running. 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

Tag the ignition cables to insure their proper replacement in the end cap cover, then remove all the ignition cables from their respective sockets and insert a short, stiff wire in one of the sockets. Bend this wire to within 1/8 in. of the engine block. Turn the engine over slowly two complete revolutions and watch carefully for the spark discharge which should occur once during the cycle at the instant the impulse coupling releases. Repeat this test with the wire in each of the other sockets. If a strong spark is observed with the wire in each socket, it is recommended that the magneto be eliminated as the source of difficulty and that the cables, terminals, and spark plugs be thoroughly cleaned and inspected. If no spark occurs, the ignition switch should be examined to make certain it has not accidentally become closed.

END CAP COVER REMOVAL

If no spark is obtained from one or more of the magneto terminals, remove the end cap cover. Be careful not to damage the gasket. Remove the distributor rotor and clean the distributor compartment thoroughly, observing whether the air passages are open or clogged. **IT IS IMPORTANT THAT THESE AIR PASSAGES BE KEPT FREE OF DIRT AND OTHER FOREIGN MATTER.** If these passages are obstructed for any appreciable length of time, all metal parts within the end cap will become corroded. Examine the high-tension lead brush and replace it if noticeably worn or damaged. This brush should move freely in its holder and should be under slight spring pressure.

SERVICE OF BREAKER POINTS

Before examining the breaker points, it is first necessary to remove the end cap, which is sealed to the metal frame by a gasket joint. The breaker points should

Y94 Fairbanks-Morse Magneto (Type FMX4A7B) (Obsolete) (Cont.)

then be inspected for evidence of pitting or pyramiding. A tungsten file or fine stone may be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to readjust them to their proper clearance of 0.015 in. at full separation. This adjustment is made in the following manner: Loosen slightly the two contact support locking screws, Fig. 1. 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 take a final measurement of the breaker point gap after the locking screws are tightened.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory impregnated wick. Other than this, Type FM-X magnetos do not require field lubrication. Any attempt to oil or grease the bearings is inadvisable. The lubricant should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Magneto Service Station.

INTERNAL TIMING

If the distributor gear has been removed for any reason, the teeth must be properly meshed with those of the magnetic rotor gear upon reassembly. The gear teeth are marked to facilitate timing of the magneto. Since the Type FM-X4A and FM-X4B magnetos are of clockwise rotation, mesh the single marked tooth of the rotor gear between the two teeth of the distributor gear designated by the letter C.

REASSEMBLY AND SEALING

Before replacing the end cap on the magneto frame, clean the contact surfaces between the cap and the frame. Then coat both contact surfaces completely with Fairbanks-Morse FMCO2 Gasket Varnish, place a new gasket in the joint, and mount the end cap on the frame, tightening the four screws securely.

TIMING MAGNETO TO ENGINE

Proper timing of the magneto to the engine produces an ignition spark in each cylinder at the exact instant that the fuel mixture should be ignited for best engine performance. This instant, which is accurately determined by the engine designers, is usually designated as a given number of degrees of angular travel of the crankshaft before the piston reaches inner dead center during the com-

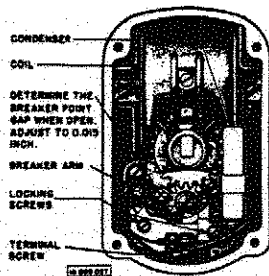


Fig. 1. End View of Type FMX4 Magnetos

pression stroke.

Retiming the magneto to the engine can be done by either (1), the advance spark position method, or (2), the impulse coupling trip method. Whichever method is used, the breaker points must first be accurately adjusted to secure proper timing of the ignition spark.

(1) Advance Spark Position Method

A. Magneto

Set the magneto for advance spark position in the No. 1 cylinder. This is done by turning the rotor from the coupling end in the direction OPPOSITE to that of normal operation until the distributor contact lines up exactly with the timing boss as indicated by the dotted lines in the timing diagram shown in Fig. 2. The magneto is now timed for advance spark position in the No. 1 cylinder and should be held exactly in this position until it is coupled to the engine.

B. Engine

Engine builders indicate by marks on the flywheel and flywheel housing the position of the engine for advance spark timing. Refer to the engine instruction book for details concerning the timing marks of your particular engine. Then rotate the crankshaft until the timing marks coincide, indicating that the No. 1 cylinder is in advance-spark firing position. Be sure that the piston is on its compression stroke.

(2) Impulse Coupling Trip Method

A. Magneto

Remount the end cap cover on the end cap, following the same procedure used in sealing the joint between the end cap and the magneto frame. Next, set the magneto for spark discharge to the No. 1 terminal. This may be accomplished by use of a short, stiff piece of wire placed in the No. 1 socket and bent to within 1/8 in. of the magneto frame. Then turn the magneto rotor from the impulse coupling end in its normal direction of rotation until a spark is observed between the wire and the frame. Hold the coupling in the position in which the trip occurred.

B. Engine

Remove the spark plug, or otherwise determine inner dead center for the piston in the No. 1 cylinder. Then turn the engine over until this position is reached, being certain that the piston is just at the end of its compression stroke.

COUPLING MAGNETO TO ENGINE

Without disturbing the setting of either magneto or engine as determined by method (1) or (2) above, couple the magneto to the engine by engaging the teeth of the magneto drive gear with those of the engine drive gear. A slight rotation of the engine flywheel may be necessary

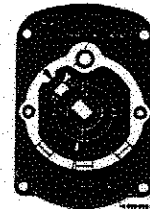


Fig. 2. Timing Diagram

Y94 Fairbanks-Morse Magneto (Type FMX4A7B) (Obsolete) (Cont.)

to secure accurate alignment of the gear teeth.

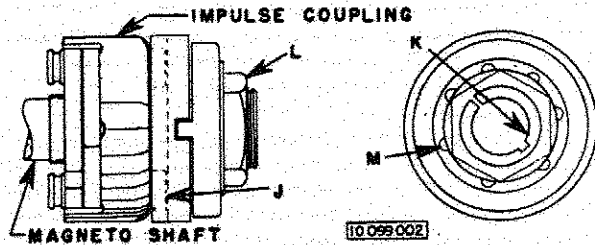


Fig. 3. Drive Member for Base Mounting Magnetos

ADJUSTABLE DRIVE MEMBERS

Most engines using base mounting magnetos are equipped with adjustable drive members. Ordinarily the position of the drive member is not altered when removing the magneto but when necessary, the drive collar nut L (See Fig. 3) can be loosened to permit relative movement of the engine drive shaft. The drive member slots J can then be turned for alignment with the impulse coupling lugs, after which the nut L should be tightened. The locking lugs M of the washer should be turned up around the nut to prevent loosening of the nut.

IMPULSE COUPLING

The impulse coupling is used to facilitate starting of the engine by automatically retarding the ignition spark

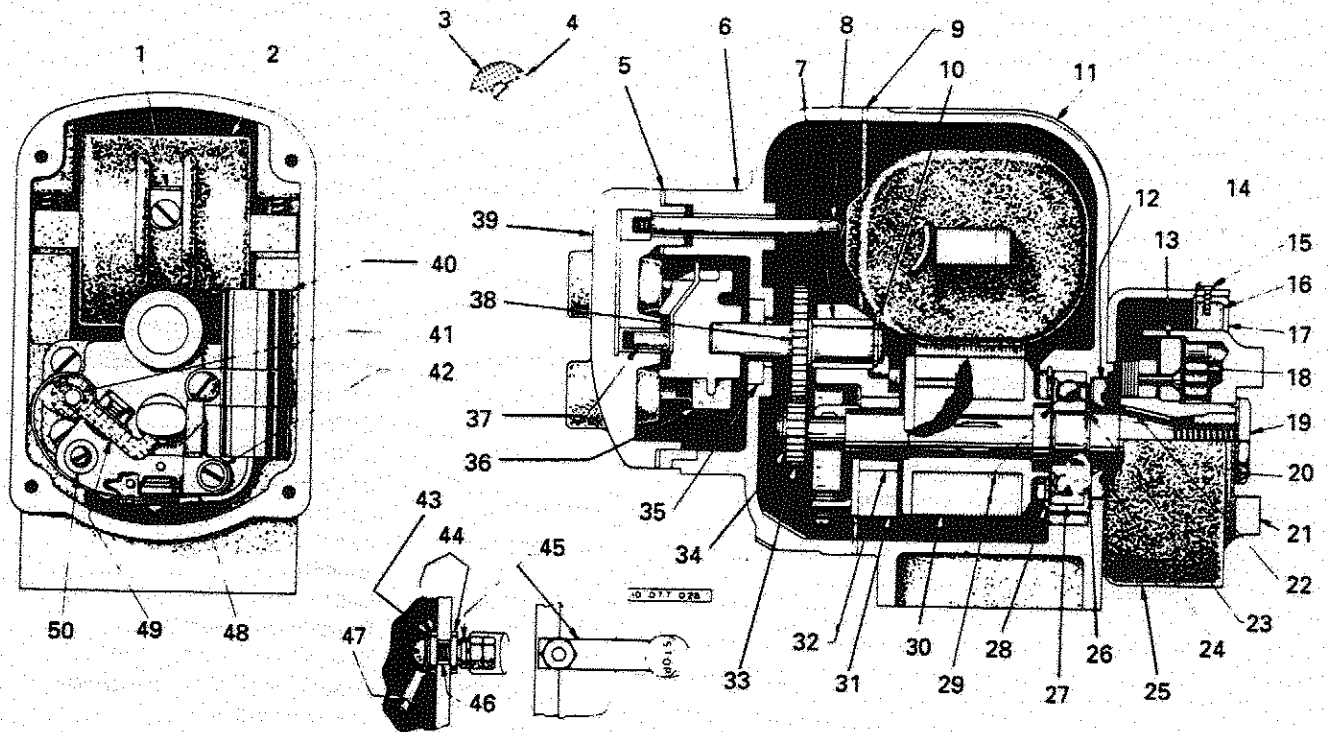
during the starting operation. At the same time, it produces an intense, hot spark which would otherwise be impossible at very low engine speeds. By means of this device, the rotor of the magneto is prevented from turning during the starting operation until the piston in the engine is approximately at top dead center. At the instant the rotor is snapped forward at high speed, it produces an intense spark which is automatically retarded to prevent backfiring. The impulse feature disengages as soon as the engine develops speed, after which the coupling serves as a conventional drive member. A characteristic snap as the impulse coupling releases usually indicates that it is functioning satisfactorily. The coupling may be cleaned in kerosene and lubricated with a medium engine oil, but if functioning improperly, it should be taken, together with the magneto, to an Authorized Fairbanks-Morse Magneto Service Station.

MAGNETO SERVICE FACILITIES

Authorized Fairbanks-Morse Magneto Service Stations, located throughout the United States and foreign countries, have been carefully selected by Fairbanks, Morse & Co. to insure highly efficient and complete repair service to owners of Fairbanks-Morse magnetos. These service stations, which are specially equipped for magneto repair and manned by highly-trained personnel, maintain close contact with the factory service and engineering departments. The station most convenient may be located by use of Bulletin FM18D, which is available upon request.

Y94 Fairbanks-Morse Magneto (Type FMX4A7B) (Obsolete)

USE WITH MODEL VR4D



| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|---|-----|------|----------|---|-----|
| 1 | 31D6120 | Coil clip | 1 | 14 | 31D2502 | Coupling outer shell flat washer | 1 |
| — | 31-6S3W | Coil clip screw, no. 6-32 thread x 3/16" long ... | 1 | 15 | 31B6222 | Outer shell screw - Parker - Kalen | 2 |
| 2 | 31R2477C | Coil | 1 | 16 | 31C5968 | Coupling outer shell felt washer | 1 |
| — | 31-25SS14A | Coil bridge set screw, 1/4"-20 thread x 7/8" long | 2 | 17 | 31D2428 | Coupling outer shell cupped washer | 1 |
| 3 | 31C6032B | Vent screen | 2 | 18 | 31D2565 | Impulse coupling drive spring | 1 |
| 4 | 31B6030A | Vent cover | 2 | 19 | 31K2570 | Impulse coupling nut | 1 |
| — | 31-6S5N | Vent cover screw, no. 6-32 thread x 5/16" long ... | 2 | 20 | 31A5931B | Impulse coupling nut lock washer | 1 |
| 5 | 31B682 | End cap cover gasket | 1 | 21 | 31Q5957 | Impulse coupling shell | 1 |
| 6 | 31VX2430 | End cap | 1 | — | 31T2563 | Impulse coupling complete | 1 |
| — | 31-10S14D | End cap screw, no. 10-24 thread x 7/8" long ... | 4 | 22 | 31-3K1 | Key - rotor shaft to impulse coupling | 1 |
| 7 | 31D5950C | Distributor bearing | 1 | 23 | 31C1498D | Rotor drive end shaft snap ring | 1 |
| 8 | 31J983A | High tension lead assembly ... | 1 | 24 | 31A2492A | Rotor drive end seal outer washer | 1 |
| 9 | 31H2498 | End cap to frame gasket | 1 | | | | |
| 10 | 31D1498 | Distributor shaft snap ring | 1 | | | | |
| 11 | 31QX2425 | Frame | 1 | | | | |
| 12 | 31G3861 | Rotor drive end seal | 1 | | | | |
| 13 | 31Q2563 | Coupling hub assembly | 1 | | | | |

(continued on page 45)

Y94 Fairbanks-Morse Magneto (Type FMX4A7B) (Obsolete) (Cont.)

USE WITH MODEL VR4D (see pg. 44)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|----------|--|-----|
| 25 | 31C4591 | Coupling outer shell | 1 | 43 | 31B5969 | Ground switch plate washer | 1 |
| — | 31-25S6G | Coupling outer shell screw, 1/4"-20 thread x 3/8" long | 4 | 44 | 31C6018 | Ground switch insulating washer | 1 |
| 26 | 31A2492C | Rotor drive end seal inner washer | 1 | 45 | 31D2514 | Ground switch insulated lever | 1 |
| 27 | 31C5949 | Rotor drive end bearing | 1 | — | 31L2514C | Primary ground switch assembly | 1 |
| 28 | 31B1498B | Rotor drive end bearing snap ring | 1 | — | 31-8S12N | Ground switch screw, no. 8-32 thread x 3/4" long | 1 |
| 29 | 31C2723 | Rotor drive end bearing shim | 2 | — | 31-8LW5 | Ground switch lock washer | 1 |
| 30 | 31XY2480 | Magnetic rotor | 1 | — | 31-8LW6 | Ground switch lock washer - shakeproof | 1 |
| 31 | 31X4631 | Bearing support | 1 | — | 31-8N1 | Ground switch nut | 2 |
| — | 31-8S6G | Bearing support screw, no. 8-32 thread x 3/8" long | 4 | 46 | 31K2457A | Ground switch insulating bushing | 1 |
| 32 | 31A5950A | Rotor cam end bearing | 1 | 47 | 31L2514C | Primary terminal wire assembly | 1 |
| 33 | 31F5952 | Rotor gear | 1 | 48 | 31G2788 | Cam wick and holder | 1 |
| — | 31F2533 | Rotor gear pin | 1 | 49 | 31A2437A | Breaker arm, support bracket and points - CW | 1 |
| 34 | 31D1498 | Rotor gear snap ring | 1 | — | 31-6S6U | Breaker arm terminal screw and lock washer, no. 6-32 thread x 3/8" long | 1 |
| 35 | 31E2501 | Distributor shaft seal | 1 | — | 31-6S6U | Contact support locking screw and lock washer, no. 6-32 thread x 3/8" long | 1 |
| 36 | 31M2765 | Distributor rotor | 1 | — | 31-8S6U | Contact support locking screw and lock washer, no. 8-32 thread x 3/8" long | 1 |
| 37 | 31E2460B | Center brush and spring | 1 | 50 | 31D2458 | Contact support locking screw plate washer, no. 6 | 1 |
| 38 | 31Y5939 | Distributor gear | 1 | | | | |
| 39 | 31C800 | End cap cover | 1 | | | | |
| — | 31-8S9D | End cap cover screw, no. 8-32 thread x 9/16" long | 2 | | | | |
| 40 | 31AXMR2433 | Condenser - bracket in "R" position | 1 | | | | |
| — | 31-8S4U | Condenser mounting screw, no. 8-32 thread x 1/4" long | 1 | | | | |
| 41 | 31C1498D | Fulcrum snap ring | 1 | | | | |
| 42 | 31B5969 | Contact support locking screw plate washer, no. 8 | 1 | | | | |

Y95S1, Y95S2 Magnetos (WICO Model XHG4, No. XH2207)

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.

DISTRIBUTOR CAP AND ARM

The distributor cap (Ref. No. 43) may be removed by loosening the 4 screws, 5622, which hold it in place.

After the cap has been removed the distributor arm (Ref. No. 57), may be pulled off the bridge. When replacing the arm make sure the timing marks on the distributor arm and the pinion gear are in line.

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. 44) enough so that the contact plate can be moved.

Insert the end of a small screwdriver 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. 48), the breaker arm lock and washer (Ref. No. 14) and (Ref. No. 18), then lift the breaker arm from its pivot. Remove the spacing washer, 5717, and the two breaker plate clamp screws (Ref. No. 44). 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. 46).

After assembly, the contacts should be adjusted as described in Breaker Contacts paragraph. The contacts should be kept clean at all times. Lacquer thinner is an ideal cleaner for this purpose. Use WICO tool S5449, to adjust the alignment of the contacts so that both surfaces meet squarely.

CONDENSER

To remove the condenser (Ref. No. 35), first disconnect the condenser lead by removing the breaker arm spring screw (Ref. No. 48), 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 between the two locating bosses and that the clamp screws are securely tightened.

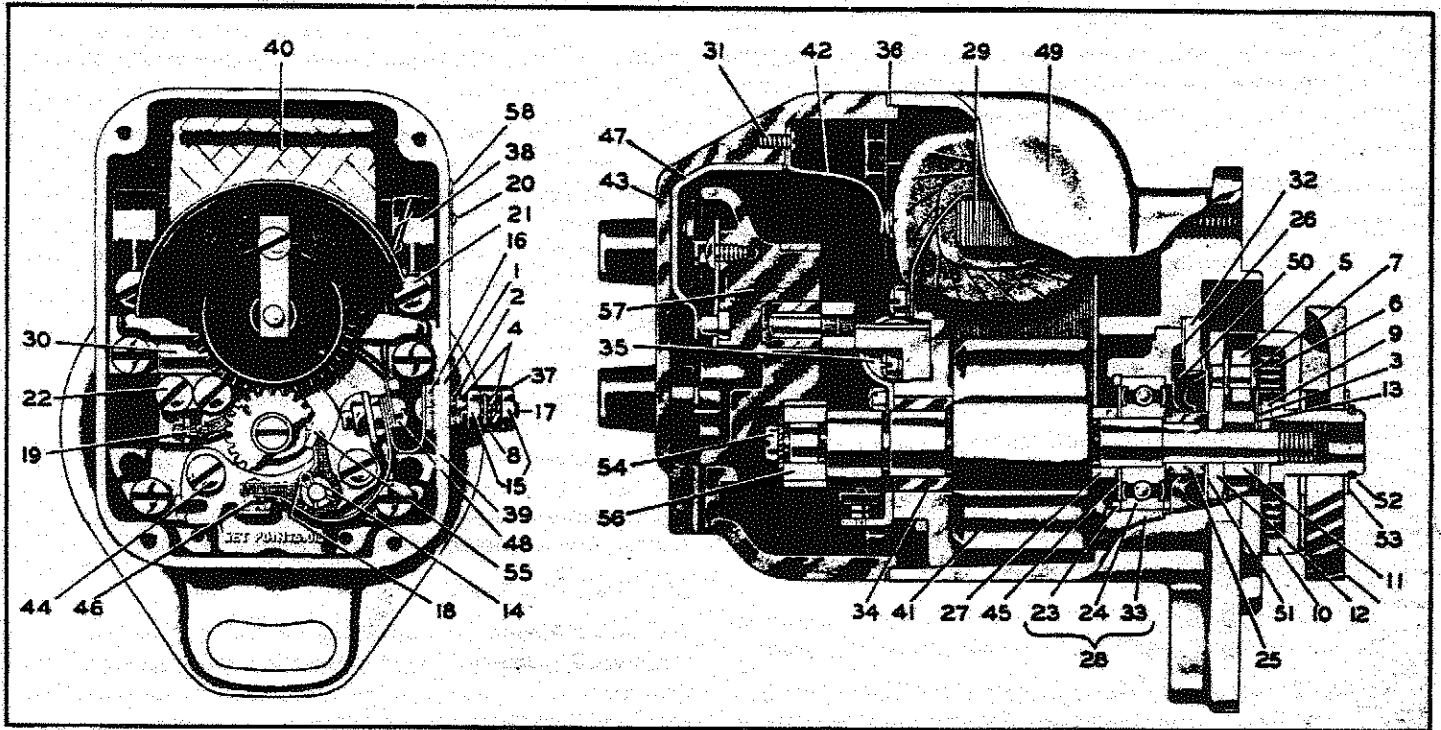
COIL AND COIL CORE

The coil and coil core must be removed from the magneto housing as a unit. After the distributor cap, distributor arm, have been removed and the primary wire disconnected from the breaker arm spring terminal by removing screw (Ref. No. 48), 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. 40) is held tight on the core (Ref. No. 29) by a spring wedge. 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.

Y95S1, Y95S2 Magnetos (WICO Model XGH4, No. XH2207)



Y95S1, Y95S2 Magnetos

USE MODEL VG4D WITH GD103-1 DRIVE GEAR, VH4D WITH GD93C4 DRIVE GEAR (see pg. 47)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|---|-----|------|-------------|---|-----|
| 1 | 90M34X | Spacing washer | 2 | 40 | 90FXH2403 | Coil group | 1 |
| 2 | 90M35X | Washer | 1 | 41 | 90FXG1106A | Rotor | 1 |
| 3 | 90M42XA | Spacing washer | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 4 | 90M55XA | Ground stud | 2 | — | 90-5719 | Gasket (not illustrated) | 1 |
| 5 | 90FXH125A | Trip arm | 2 | — | 90-5753 | Window (not illustrated) | 1 |
| 6 | 90FXH55 | Drive spring | 1 | 42 | 90-5773 | Coil contact spring | 1 |
| 7 | 90A243X | Snap ring | 2 | 43 | 90FXG2002A2 | Distributor cap unit | 1 |
| 8 | 90IXA256 | Washer | 1 | — | 90-5895 | Clamp plate (not illustrated) | 1 |
| 9 | 90IVA583 | Spacing washer | 1 | 44 | 90-5900 | Clamp screw | 2 |
| 10 | 90-9352 | Drive cup | 1 | 45 | 90-5926 | Ball bearing shield | 1 |
| 11 | 90-2122 | Driven flange spacer | 1 | 46 | 90FXH2100B | Breaker contact set | 1 |
| 12 | 90X2286 | Driven flange group | 1 | 47 | 90X6001 | Secondary interlead group | 1 |
| 13 | 90-2288 | Retainer | 1 | 48 | 90-5431 | Clamp screw | 1 |
| 14 | 90-3219 | Pivot washer | 1 | 49 | 90X6195 | Main housing assembly | 1 |
| 15 | 90-3230 | Nut | 2 | 50 | 90XA1393 | Oil seal | 1 |
| 16 | 90-3539 | Insulating lock | 2 | 51 | 90FXH27 | Oil slinger | 1 |
| 17 | 90-3945 | Ground stud | 1 | 52 | 90-6424 | Impulse lock ring | 1 |
| 18 | 90-4210 | Breaker arm lock | 1 | 53 | 90-6425 | Thrust washer | 1 |
| 19 | 90-5077 | Cam wiper felt | 1 | — | 90K6445 | Impulse lock nut kit (includes 52, 53; includes nut) (not illustrated) | 1 |
| 20 | 90-5250 | Name plate screw | 2 | — | 90-6465 | Clamp screw | 4 |
| 21 | 90-5411 | Clamp screw | 2 | 54 | 90-6466 | Distributor gear screw | 1 |
| 22 | 90-5411 | Clamp screw | 2 | 55 | 90-6468 | Breaker arm felt | 1 |
| 23 | 90-5516 | Retaining ring | 1 | — | 90X9366 | Impulse coupling unit (includes 3, 5-7, 9-13, 52, 53) (not illustrated) (NLA) | 1 |
| 24 | 90-5517 | Rotor bearing | 1 | 56 | 90FXG38 | Distributor gear | 1 |
| 25 | 90-5518 | Impulse spacer | 1 | 57 | 90FXG1008 | Distributor arm group | 1 |
| 26 | 90X5259 | Impulse stop gasket | 1 | 58 | 90-8792 | Name plate | 1 |
| 27 | 90-5520 | Spacer | 1 | — | 90-10407 | Aligning washer (not illustrated) | 1 |
| 28 | 90FXH1007A | Bearing cage group | 1 | — | YQ5 | Points and condenser kit (not illustrated) | 1 |
| 29 | 90FXH1611A | Coil core group | 1 | — | YQ2 | Overhaul kit (not illustrated) | 1 |
| 30 | 90-5532 | Condenser clamp | 1 | | | | |
| 31 | 90-5536 | Coil contact screw | 1 | | | | |
| — | 90-5536 | Screw (not illustrated) | 2 | | | | |
| 32 | 90X5549 | Impulse stop group | 1 | | | | |
| 33 | 90-5567 | Bearing cage | 1 | | | | |
| 34 | 90FXH31 | Breaker plate bushing | 1 | | | | |
| 35 | 90FXH2224 | Condenser assembly | 1 | | | | |
| 36 | 90FXH162 | Gasket | 1 | | | | |
| — | 90-53X5185 | Screw (not illustrated) | 4 | | | | |
| 37 | 90FXH1019 | Stop button group | 1 | | | | |
| 38 | 90FXH223 | Coil core clamp | 2 | | | | |
| 39 | 90FXH9 | Ground connector | 1 | | | | |
| — | 90FXH1009 | Ground connection unit (includes 1, 2, 4, 8, 15-17, 39) (not illustrated) | 1 | | | | |

Y97S1, Y97S2 Magnetos (Type FMX4B7A)

GENERAL DESCRIPTION

Fairbanks-Morse Type FM-X4B7A Magneto is designed and engineered to provide quick easy starting and maximum dependability of operation with minimum service. The compact alnico magnetic rotor assures an intensely hot spark under most operating conditions.

SERVICE PROCEDURE

The first step in magneto field servicing is to examine the magneto for corroded high tension towers, broken wires, or high tension wires not pushed far enough into the magneto tower to make good contact.

Then test the ignition spark while engine is being cranked. If a strong spark is observed, the magneto is not the cause of engine malfunction. If no spark is seen, proceed with servicing magneto.

SERVICING BREAKER POINTS, FIG. 1

Remove the end cap cover, distributor rotor and the end cap. Then inspect the breaker points for pitting, oxidation and shorting. If points are worn or shorted, they should be replaced.

To remove the point set, take out the breaker arm terminal screw releasing the breaker arm spring, coil lead and condenser lead. Remove the fulcrum pin snap ring and slide the breaker arm off the fulcrum pin. Remove the contact support locking screws and lift off the contact support.

The installation of new points is the reverse of the removal. After the points have been installed, they should be adjusted to the correct clearance of 0.015 inch at high point of cam. Be sure the points are clean and bright before adjusting them. Insert a screwdriver in the slot of the support bracket and pivot it between the two small bosses on the bearing support until the desired clearance is obtained. Then clean the points again before sealing the magneto.

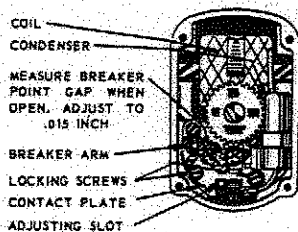


Fig. 1, BREAKER POINT ADJUSTMENT

FIELD SERVICE NOT RECOMMENDED

The cam wick, if dry or hard, should be replaced with a new factory impregnated wick. Other than this the magneto does not require field lubrication. No attempt should be made to oil or grease the magneto bearings. The magneto lubricant should be replaced only during the overhaul of the magneto by a Fairbanks-Morse authorized service station using recommended lubricant and factory engineered parts.

Coil and condenser replacement while simple are not recommended unless adequate test equipment is available. No attempt should be made to remove magnetic rotor from housing unless specific instructions for releasing the shaft are available.

INTERNAL TIMING, FIG. 2

If, for any reason, the magneto has been dismantled to the extent that the distributor gear has been removed the teeth must be properly meshed with those of the magnetic rotor gear upon reassembly. The gear teeth are marked to facilitate internal timing. The single marked tooth of the rotor gear must mesh between the two teeth of the distributor gear designated by the letter C.

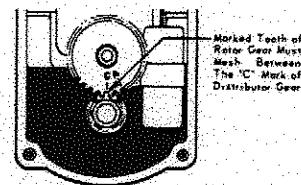


Fig. 2, INTERNAL TIMING GEARS

TIMING THE MAGNETO TO THE ENGINE

If the magneto has been removed from the engine for servicing, the operator must follow the engine manufacturer's instructions for timing the magneto to the engine. Refer to 'Magneto Timing' in engine instruction manual. When installing the magneto on the engine, be sure the magneto is properly attached and that the housing to engine gasket is in good condition.

SPECIAL DRIVE GEAR, FIG. 3

The magneto is equipped with a special drive gear mounted directly on the impulse coupling. If it is necessary to replace the drive gear, special care must be exercised in reassembly. It is possible to be off 180° in timing if gear is improperly mounted.

Assemble gear as follows: Remove magneto end cap cover and turn distributor rotor until it is in firing position for No. 1 cylinder. Retain rotor in this position and fit the drive gear to the impulse coupling lugs so that the prick punch mark on front of gear is located as shown.

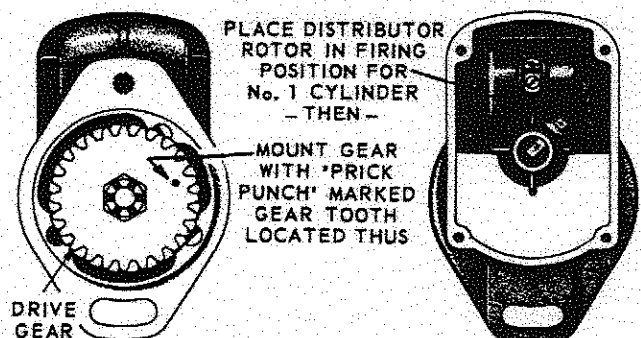
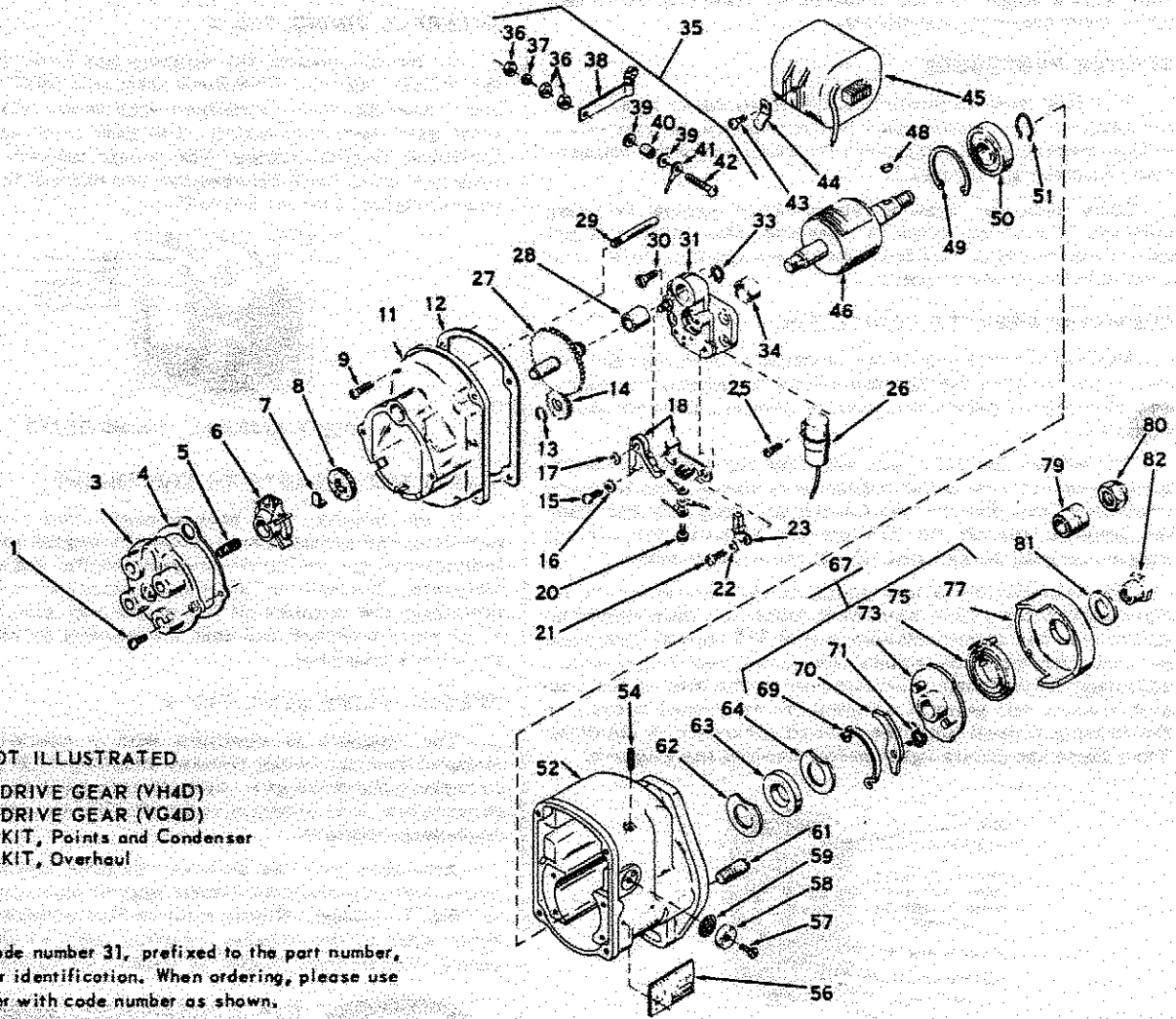


Fig. 3, DRIVE GEAR MARKING AND ASSEMBLY

Y97S1, Y97S2 Magnetos (Type FMX4B7A)



NOT ILLUSTRATED

- GD-93C-4 DRIVE GEAR (VH4D)
- GD-103-1 DRIVE GEAR (VG4D)
- YQ-8 KIT, Points and Condenser
- YQ-9 KIT, Overhaul

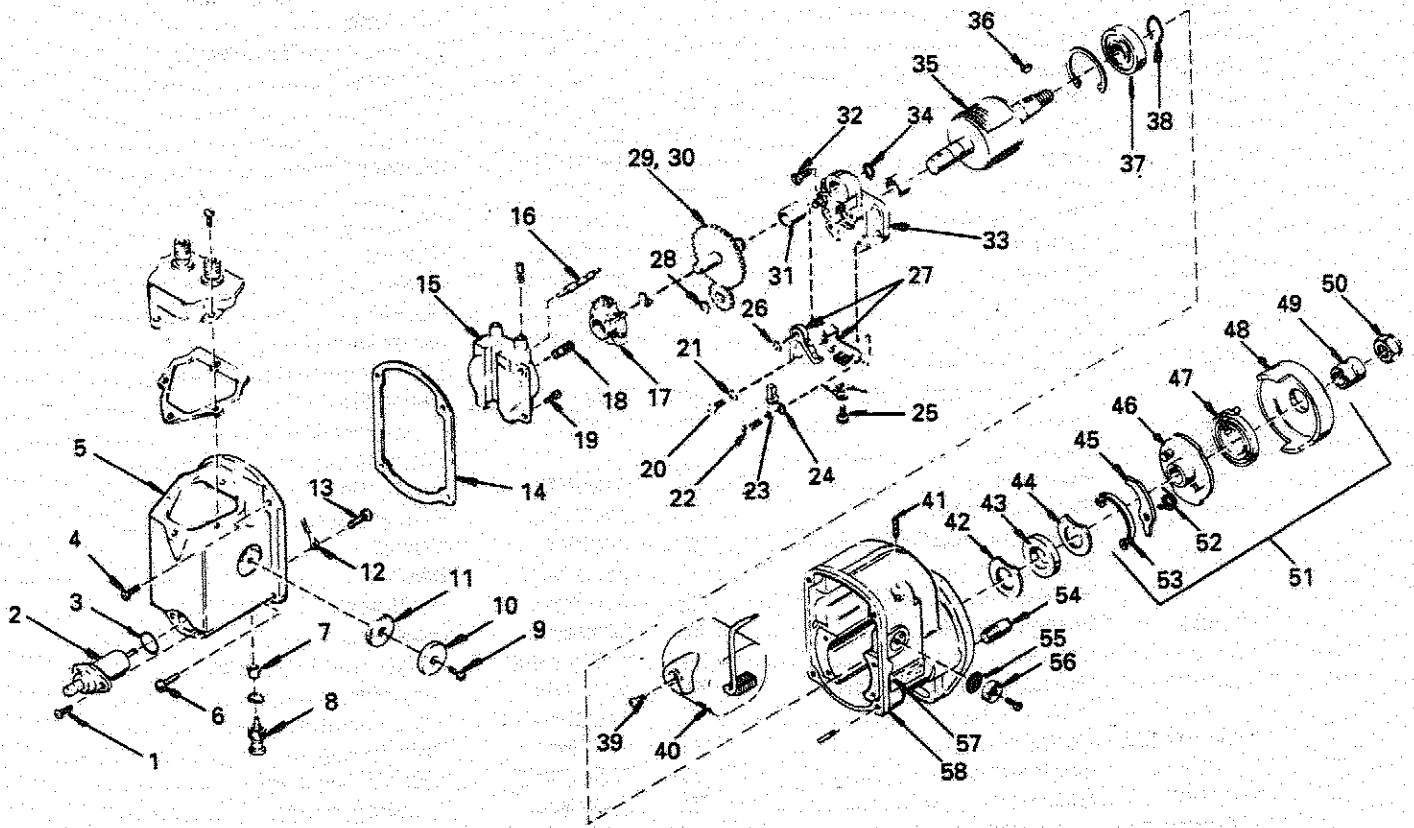
NOTE: Code number 31, prefixed to the part number, is a vendor identification. When ordering, please use part number with code number as shown.

Y97S1, Y97S2 Magnetos

USE WITH MODELS VG4D, VH4D, W4-1770 (see pg. 50)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|---|-----|------|-------------|---|-----|
| 1 | 31-8S9D | Screw, no. 8-32 thread x 9/16" long | 2 | 41 | 31L2514C | Wire | 1 |
| 3 | 31W800 | Cover | 1 | 42 | 31-8S14N | Screw, no. 8-32 thread x 7/8" long | 1 |
| 4 | 31B682 | Gasket | 13 | 43 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 1 |
| 5 | 31E2460B | Brush and spring | 1 | 44 | 31D6120 | Coil clip | 1 |
| 6 | 31M2765 | Distributor rotor | 1 | 45 | 31R2477C | Coil | 1 |
| 7 | 31A2766 | Spring clip | 1 | 46 | 31HW2480 | Magnetic rotor | 1 |
| 8 | 31G2501 | Seal | 1 | 48 | 31-3K1 | Key | 1 |
| 9 | 31-10S14D | Screw, no. 10-24 thread x 7/8" long | 4 | 49 | 31B1498B | Snap ring | 1 |
| 11 | 31AZ2430 | End cap | 1 | 50 | 31C5949 | Bearing | 1 |
| 12 | 31H2498 | Gasket | 1 | 51 | 31B1498D | Snap ring | 1 |
| 13 | 31D1498 | Snap ring | 1 | 52 | 31TZ2425 | Housing | 1 |
| 14 | 31Q5952 | Rotor gear | 1 | 54 | 31-31SS14A | Set screw, coil - 5/16"-24 thread x 7/8" long | 2 |
| 15 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 56 | 31N195 | Name plate | 1 |
| 16 | 31D2458 | Washer, no. 6 | 1 | 57 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 2 |
| 17 | 31C1498G | Snap ring | 1 | 58 | 31B6030A | Vent cover | 2 |
| 18 | 31A2437A | Point set | 1 | 59 | 31C6032B | Vent screen | 2 |
| 20 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 61 | 31S2568 | Stop pin | 1 |
| 21 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 62 | 31A2492C | Washer | 1 |
| 22 | 31B5969 | Washer, no. 8 | 1 | 63 | 31G3861 | Shaft seal | 1 |
| 23 | 31G2788 | Cam wick | 1 | 64 | 31A2492A | Washer | 1 |
| 25 | 31-8S5NA | Screw, no. 8-32 thread x 5/16" long | 1 | 67 | 31BW2563C28 | Coupling, 27° lag angle | 1 |
| 26 | 31AXMR2433 | Condenser | 1 | 69 | 31A1498J | Lock spring | 1 |
| 27 | 31Y5939 | Shaft and gear | 1 | 70 | 31Q2566 | Coupling pawl | 2 |
| 28 | 31D5950C | Bearing | 1 | 71 | 31S5963 | Pawl spring | 2 |
| 29 | 31J983A | Lead rod | 1 | 73 | 31S2563-27 | Hub, 27° lag angle | 1 |
| 30 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 1 | 75 | 31E2565 | Coupling spring | 1 |
| 31 | 31X4631 | Support | 1 | 77 | 31Y5957 | Coupling shell | 1 |
| 33 | 31D1498 | Snap ring | 1 | 79 | 31F2572 | Gear bushing | 1 |
| 34 | 31A5950A | Bearing | 1 | 80 | 31M2570 | Coupling nut | 1 |
| 35 | 31L2514C | Switch | 1 | — | YQ8 | Points and condenser kit (not illustrated) | 1 |
| 36 | 31-8N1 | Nut | 3 | — | YQ9 | Overhaul kit (not illustrated) | 1 |
| 37 | 31-8LW5 | Lock washer | 1 | — | GD93C4 | Drive gear (VH4D) (not illustrated) | 1 |
| 38 | 31M2514 | Insulated lever | 1 | — | GD103-1 | Drive gear (VG4D) (not illustrated) | 1 |
| 39 | 31C6018 | Insulating washer | 2 | | | | |
| 40 | 31K2457A | Insulating bushing | 1 | | | | |

Y98CS1, Y98CS2 Fairbanks-Morse Magnetos (Type FMXZE4B7-4)



Y98CS1, Y98CS2 Fairbanks-Morse Magnetos

USE WITH MODELS VG4D, VH4D (see pg. 52)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|-------------|--|-----|
| 1 | 31-6S6D | Condenser mounting screw ... | 1 | 29 | 31Q5952 | Rotor gear | 1 |
| 2 | 31AXMR2433 | Condenser | 1 | 30 | 31Q5939 | Distributor shaft and gear | 1 |
| 3 | 31H2473 | Seal, condenser "O" ring | 1 | 31 | 31D5950C | Bearing | 1 |
| 4 | 31-10S10D | End cap screw | 1 | 32 | 31-8S6G | Screw | 1 |
| 5 | 31LY2430A | End cap assembly | 1 | 33 | 31X4631 | Bearing support | 1 |
| 6 | 31-10S18D | End cap screw | 1 | 34 | 31D1498 | Rotor gear snap ring | 1 |
| 7 | 31F4373 | Spacer | 1 | — | 31G1498 | Distributor shaft snap ring | 1 |
| 8 | 31HW2514 | Plunger and nut assembly | 1 | 35 | 31TS2480 | Rotor | 1 |
| 9 | 31-6S6N | Vent cover screw | 1 | 36 | 31-3K1 | Key | 1 |
| — | 31A1233 | Vent cover copper wool | 1 | — | 31SK90 | Service kit | 1 |
| — | 31B1355 | Ground strip guide | 1 | 37 | 31C5949 | Bearing | 1 |
| 10 | 31A1232 | Vent cover - end cap | 1 | — | 31D5949A | Bearing | 1 |
| 11 | 31A6032A | Vent screen - end cap | 1 | 38 | 31B1498D | Rotor drive end shaft snap ring | 1 |
| 12 | 31L2514C | Switch assembly | 1 | 39 | 31-6S4U | Cover screw | 1 |
| — | 31H2514 | Terminal strip | 1 | 40 | 31RS2477C | Coil | 1 |
| 13 | 31-688N | Screw, terminal | 1 | 41 | 31SS14A | Coil set screw | 1 |
| — | 31-6LW1 | Lock washer | 1 | 42 | 31A2492C | Washer | 2 |
| — | 31-6N1 | Screw nut | 1 | — | 31E2493 | Washer | 1 |
| — | 31W2514 | Lever | 1 | 43 | 31G3861 | Shaft seal | 1 |
| 14 | 31K2498 | Gasket | 1 | 44 | 31A2492A | Washer | 1 |
| 15 | 31L2474E | Distributor block | 1 | 45 | 31Q2566 | Coupling pawl | 1 |
| 16 | 31F983B | High tension lead | 1 | 46 | 31CZ2563 | Coupling | 1 |
| — | 31D1182 | Suppressor insulator | 1 | 47 | 31E2565 | Coupling spring | 1 |
| 17 | 31M2765 | Distributor rotor | 1 | 48 | 31Y5957 | Coupling shell | 1 |
| — | 31A2766 | Spring clip | 1 | 49 | 31F2572 | Gear bushing | 1 |
| 18 | 31E2460B | Brush and spring | 1 | 50 | 31M2570 | Coupling nut | 1 |
| 19 | 31-8S8D | Screw | 1 | 51 | 31BW2563C30 | Coupling complete | 1 |
| 20 | 31-6S6U | Support screw | 1 | 52 | 31S5963 | Coupling spring | 1 |
| 21 | 31D2458 | Washer | 1 | 53 | 31-29-45 | Snap ring | 1 |
| 22 | 31-8S6U | Support screw | 1 | 54 | 31S2568 | Stop pin | 1 |
| — | 31G2457A | Bushing | 1 | 55 | 31B6030A | Vent cover | 1 |
| 23 | 31B5969 | Washer | 1 | 56 | 31C6032B | Vent screen - housing | 1 |
| 24 | 31G2788 | Cam wick | 1 | 57 | 31A195 | Name plate | 1 |
| 25 | 31-6S6Z | Terminal screw | 1 | 58 | 31WW2425 | Housing | 1 |
| 26 | 31C1498G | Fulcrum pin snap ring | 1 | | | | |
| 27 | 31A2437A | Points set | 1 | | | | |
| 28 | 31B1498B | Rotor drive end bearing snap ring | 1 | | | | |

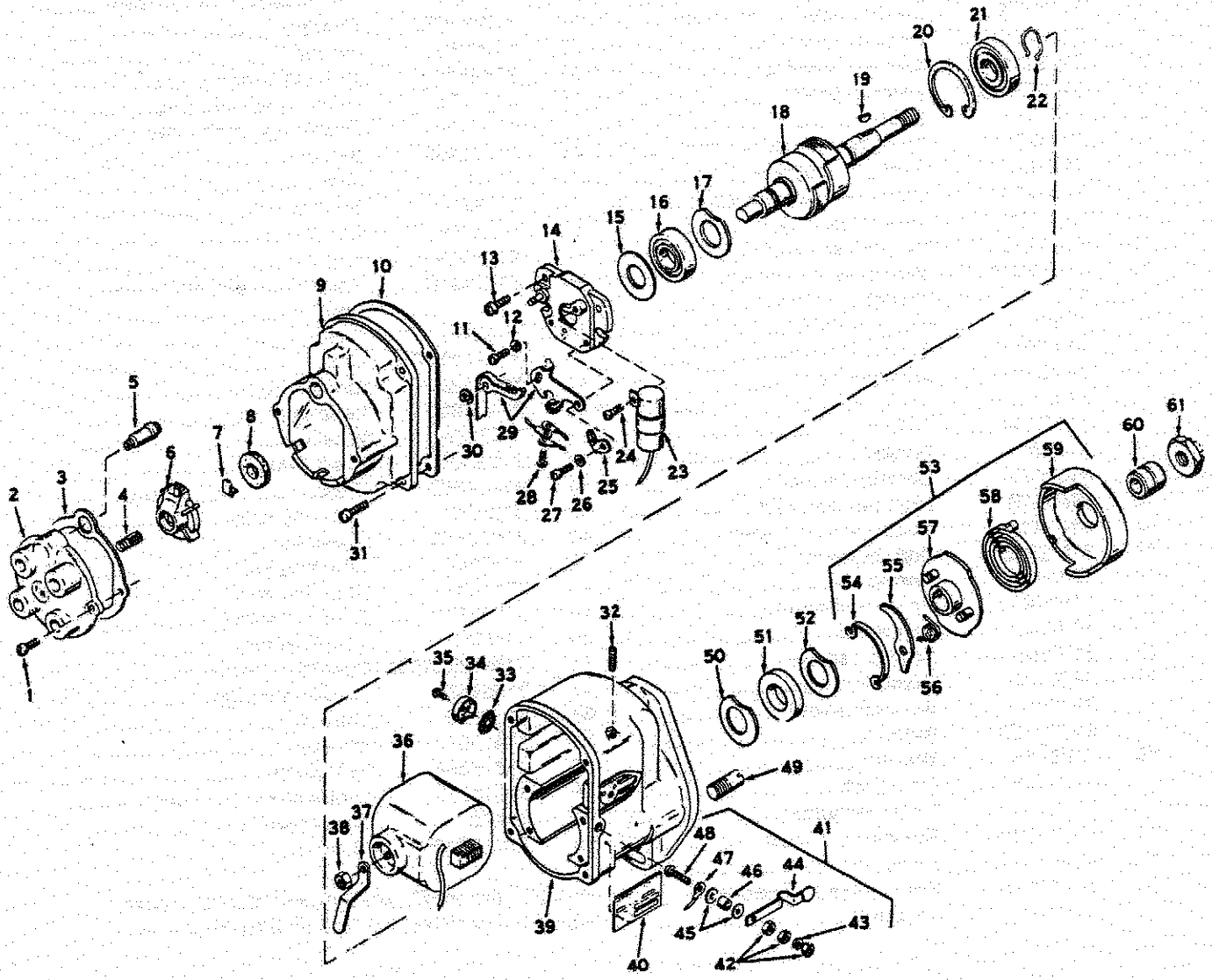
Y98CS1 For VG4D, MVG4D with GD103-1 gear.
Y98CS2 For VH4D, MVH4D with GD93C4 gear.

Y106S1, Y106-1S1 Fairbanks-Morse Magnetos

USE WITH MODELS VE4D, VF4D, VP4D (see pg. 54)

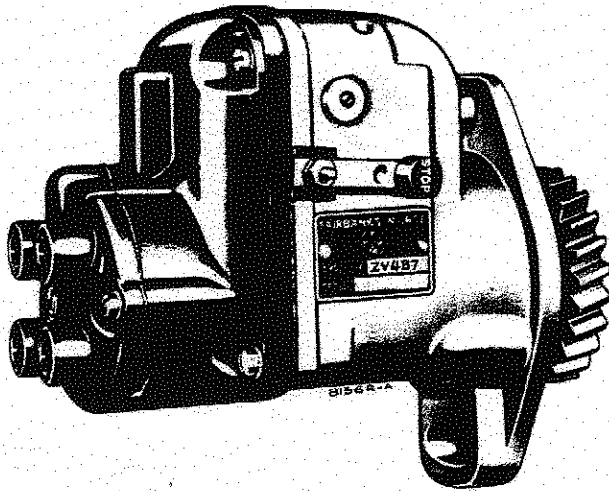
| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|---|-------------|--|-----|
| 1 | 31-8S9D | Screw, no. 8-32 thread x 9/16" long | 2 | 33 | 31C6032B | Vent screen | 2 |
| 2 | 31G800 | Cover | 1 | 34 | 31B6030A | Vent cover | 2 |
| 3 | 31B682 | Gasket | 1 | 35 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 |
| 4 | 31E2460B | Brush and spring | 1 | 36 | 31QS2477C | Coil | 1 |
| 5 | 31DX983A | Lead rod | 1 | 37 | 31C6120 | Coil clip | 1 |
| 6 | 31M2765 | Distributor rotor | 1 | 38 | 31-8N1 | Clip nut | 1 |
| 7 | 31A2766 | Spring clip | 1 | 39 | 31GW2425 | Housing | 1 |
| 8 | 31G2501 | Seal | 1 | 40 | 31A195 | Name plate | 1 |
| 9 | 31TY2430 | End cap | 1 | 41 | 31L2514C | Ground switch | 1 |
| 10 | 31H2498 | Gasket | 1 | 42 | 31-8N1 | Screw nut | 3 |
| 11 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 43 | 31-8LW5 | Lock washer | 1 |
| 12 | 31D2458 | Washer, no. 6 | 1 | 44 | 31M2514 | Lever | 1 |
| 13 | 31-8S6D | Support screw, no. 8-32 thread x 3/8" long | 4 | 45 | 31C6018 | Insulating washer | 2 |
| 14 | 31SX4631 | Bearing support | 1 | 46 | 31K2457A | Switch bushing | 1 |
| 15 | 31E2493 | Washer | 1 | 47 | 31L2514C | Wire assembly | 1 |
| 16 | 31D5949A | Bearing | 1 | 48 | 31-8S14N | Switch screw, no. 8-32 thread x 7/8" long | 1 |
| 17 | 31A2492C | Washer | 1 | 49 | 31S2568 | Pin | 2 |
| 18 | 31RT2480 | Rotor | 1 | 50 | 31A2492C | Washer | 1 |
| 19 | 31-3K1 | Key | 1 | 51 | 31G3861 | Shaft seal | 1 |
| 20 | 31B1498B | Snap ring | 1 | 52 | 31A2492A | Washer | 1 |
| 21 | 31C5949 | Bearing | 1 | 53 | 31GX2563C30 | Coupling, 30° lag angle | 1 |
| 22 | 31B1498D | Snap ring | 1 | 54 | 31A1498J | Lock spring | 1 |
| 23 | 31SXY2433 | Condenser | 1 | 55 | 31Q2566 | Coupling pawl | 2 |
| 24 | 31-8S6U | Condenser screw, no. 8-32 thread x 3/8" long | 1 | 56 | 31T5963 | Pawl spring | 2 |
| 25 | 31G2788 | Cam wick | 1 | 57 | 31EX2563-30 | Hub assembly, 30° lag angle | 1 |
| 26 | 31B5969 | Washer, no. 8 | 1 | 58 | 31E2565 | Coupling spring | 1 |
| 27 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 59 | 31Y5957 | Coupling shell | 1 |
| 28 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 60 | 31F2572 | Gear bushing | 1 |
| 29 | 31A437A | Point set | 1 | 61 | 31M2570 | Coupling nut | 1 |
| 30 | 31C1498G | Snap ring | 1 | — | YQ6 | Points and condenser kit (not illustrated) | 1 |
| 31 | 31-10S12D | Screw, no. 10-24 thread x 3/4" long | 4 | — | YQ3 | Overhaul kit (not illustrated) | 1 |
| 32 | 31-31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 | Y106S1 For VE4D, VF4D with GD93C5 gear. Y106-1S1 For VP4D with GD103 gear. | | | |

Y106S1, Y106-1S1 Fairbanks-Morse Magnetos (Type FMZV4B7)



Y106S1, Y106-1S1 Fairbanks-Morse Magnetos (Type FMZV4B7)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

This magneto is a special unit designed and built for use on engine models VE4D, VF4D and VP4D, manufactured by the Wisconsin Motor Corporation. These engines have a firing interval of 180°-270°-180°-90°. The magneto, having a four pole rotor and a four lobe cam, meets this requirement by producing four sparks per revolution of the rotor, running at crankshaft speed. In a complete cycle of two engine revolutions, four sparks are used for ignition and four fire in the exhaust.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent maladjustment of magneto parts in good condition. It is suggested that the magneto be opened only when it is certain that the magneto spark is unsatisfactory. This condition may be determined by a simple ignition spark check, as outlined in engine INSTRUCTION MANUAL.

END CAP COVER REMOVAL

If no spark is obtained from one or more of the magneto terminals, remove the end cap cover, taking care not to damage the gasket. Remove the distributor rotor and clean the distributor compartment thoroughly, observing whether the air passages are open or clogged. IT IS EXTREMELY IMPORTANT THAT THESE AIR PASSAGES BE KEPT FREE OF DIRT AND OTHER FOREIGN MATTER. Examine the high-tension lead brush and replace it if noticeably worn or damaged. This brush should move freely in its holder and should be under slight spring pressure.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface

or replace the breaker points, it will also be necessary to adjust them to their proper clearance which is 0.015 inch at full separation. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Center. Coil and condenser replacements are not recommended, unless test equipment is available.

SEALING MAGNETO

Opening the magneto for breaker point adjustment or other service necessitates resealing the magneto upon reassembly. The surfaces between magneto frame and end cap should be thoroughly cleaned and a new gasket provided. Remove the vent hoods and clean vent screens of all foreign material.

SPECIAL DRIVE GEAR

The magneto is equipped with a special drive gear mounted directly to the impulse coupling. If it is necessary at any time to remove the drive gear, special care must be exercised in reassembly. Remove the entire end cap and turn the rotor until the contact segment is in firing position for No. 1 cylinder as shown in Fig. 1. With the distributor rotor in this position, fit gear to the impulse coupling lugs so that the punch mark on the face, and "X" mark on the outer edge of the gear tooth, are located as shown. Securely tighten coupling locknut.

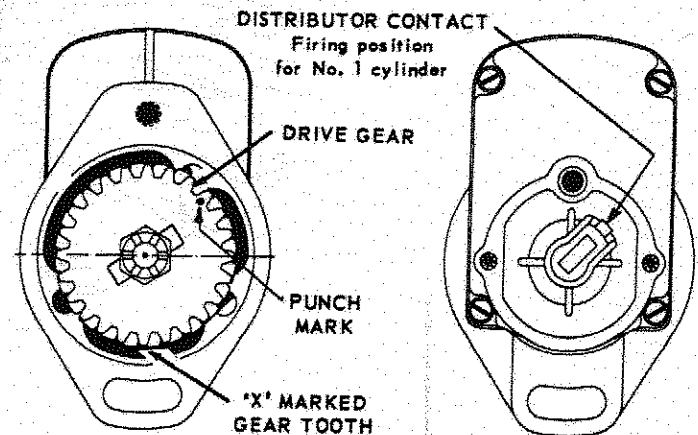
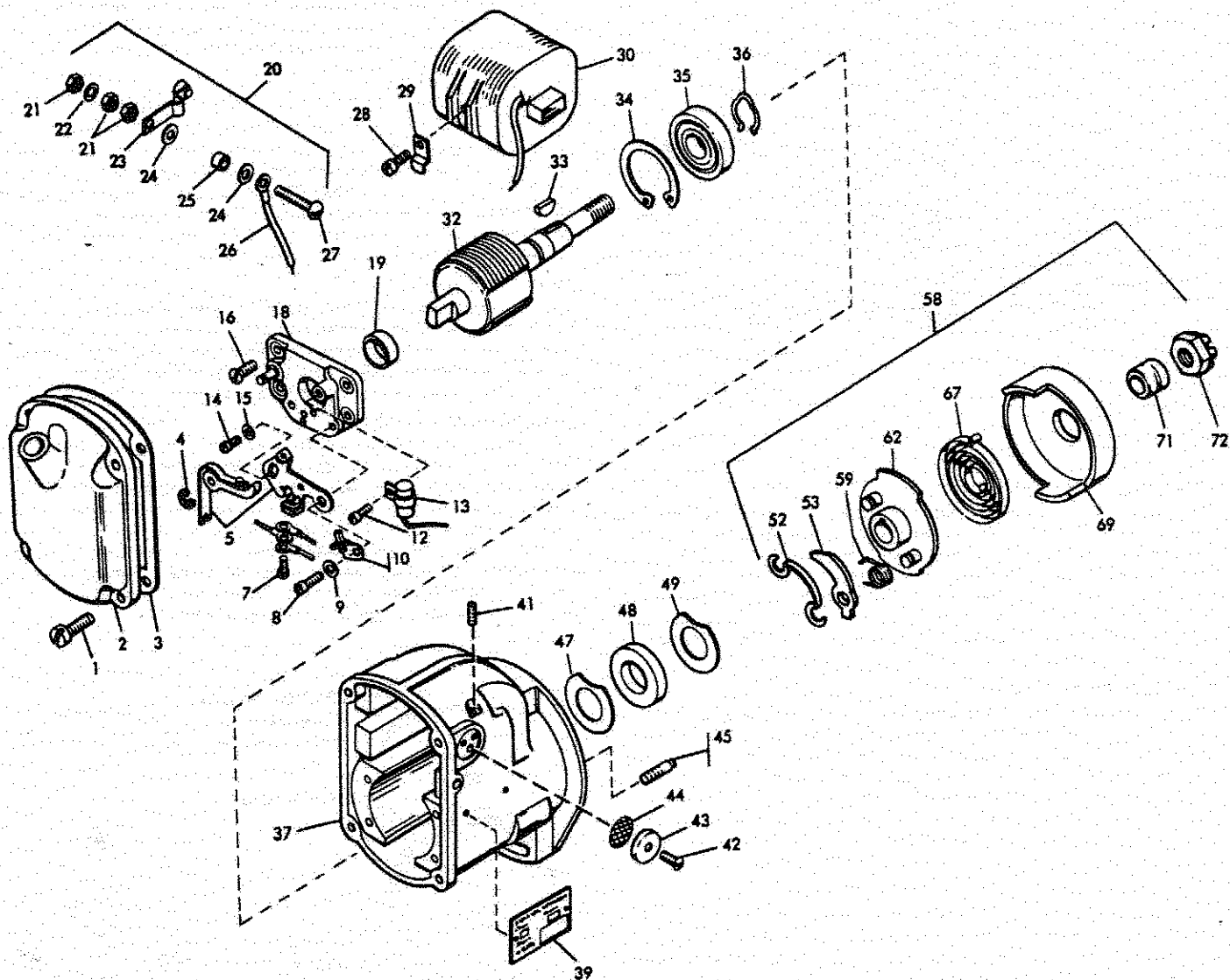


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Refer to magneto timing in the front section of ENGINE INSTRUCTION MANUAL, for proper method of mounting magneto to engine in order to obtain correct ignition timing.

Y107AS1; Y107BS1 Magnetos (Type FMXD1B7R)



Y107AS1 Magneto

USE WITH MODEL AGND (see pg. 57)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|-------------|---|-----|
| 1 | 31-10S10D | Screw, no. 10-24 thread..... | 4 | 30 | 31T2477C | Coil | 1 |
| 2 | 31SX2430 | End cap | 1 | 32 | 31GS2480 | Rotor | 1 |
| 3 | 31H2498 | Gasket | 1 | 33 | 31-3K1 | No. 3 Woodruff key | 1 |
| 4 | 31C1488D | Snap ring | 1 | 34 | 31B1498B | Snap ring | 1 |
| 5 | 31B2437A | Point set - CCW | 1 | 35 | 31C5949 | Bearing | 1 |
| 7 | 31-6S6U | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 36 | 31C1498D | Snap ring | 1 |
| 8 | 31-8S6G | Support screw, no. 10-32 thread x 3/8" long ... | 1 | 37 | 31TW2425 | Housing | 1 |
| 9 | 31B5969 | Washer, no. 8 | 1 | 39 | 31N195 | Name plate | 1 |
| 10 | 31H2788 | Cam wick | 1 | 41 | 31-25SS14A | Set screw | 2 |
| 12 | 31-8S4U | Screw, no. 8-32 thread | 1 | 42 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 2 |
| 13 | 31AXMR2433 | Condenser | 1 | 43 | 31B6030A | Vent cover | 2 |
| 14 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 44 | 31C6032B | Vent screen | 2 |
| 15 | 31D2458 | Washer, no. 6 | 1 | 45 | 31B2568 | Pin | 1 |
| 16 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 47 | 31A2492C | Washer | 1 |
| 18 | 31W4631 | Bearing support | 1 | 48 | 31G3861 | Shaft seal | 1 |
| 19 | 31A5950A | Bearing | 1 | 49 | 31A2492A | Washer | 1 |
| 20 | 31N2514C | Switch assembly | 1 | 58 | 31QV2563C15 | Coupling, 15° lag angle | 1 |
| 21 | 31-8N1 | Nut | 3 | 59 | 31N5963 | Pawl spring (NLA) | 1 |
| 22 | 31-8LW5 | Lock washer | 1 | 62 | 31EY2563-15 | Hub assembly, 15° lag angle | 1 |
| 23 | 31M2514 | Insulated lever | 1 | 67 | 31D2565 | Coupling spring | 1 |
| 24 | 31C6018 | Insulating washer | 2 | 69 | 31XY5957 | Coupling shell | 1 |
| 25 | 31K2457A | Insulating bushing | 1 | 71 | 31F2572 | Gear bushing | 1 |
| 26 | 31L2514C | Wire assembly | 1 | 72 | 31M2570 | Coupling nut | 1 |
| 27 | 31-8S16N | Screw, no. 8-32 thread | 1 | — | GD125 | Drive gear (not illustrated) | 1 |
| 28 | 31-6S3W | Screw, no. 6-32 thread | 1 | — | YQ4 | Overhaul kit (not illustrated) | 1 |
| 29 | 31B6120 | Coil clip | 1 | — | YQ7 | Points and condenser kit (not illustrated) | 1 |

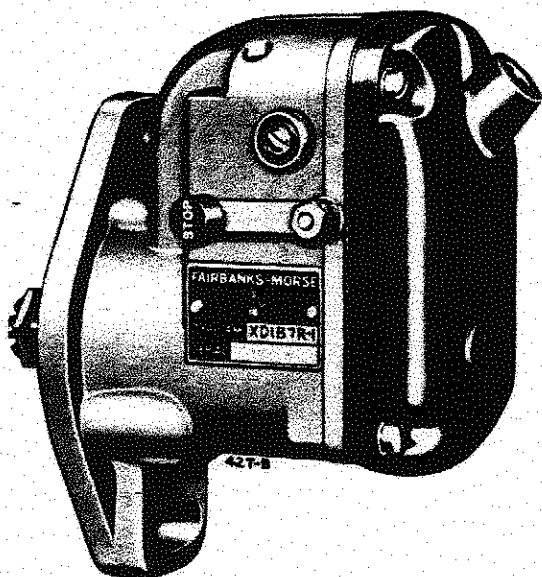
Y107BS1 Magneto

USE WITH MODEL AGND (see pg. 57)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|-------------|---|-----|
| 1 | 31-10S12D | Screw, no. 10-24 thread | 4 | 32 | 31GS2480 | Rotor | 1 |
| 2 | 31BZ2430 | End cap | 1 | 33 | 31-3K1 | No. 3 Woodruff key | 1 |
| 3 | 31H2498 | Gasket | 1 | 34 | 31B1498B | Snap ring | 1 |
| 4 | 31C1498G | Snap ring | 1 | 35 | 31C5949 | Bearing | 1 |
| 5 | 31B2437A | Point set - CCW | 1 | 36 | 31B1498D | Snap ring | 1 |
| 7 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 37 | 31TW2425 | Housing | 1 |
| 8 | 31-8S6U | Support screw, no. 10-32 thread x 3/8" long | 1 | 39 | 31N195 | Name plate | 1 |
| 9 | 31B5969 | Washer, no. 8 | 1 | 41 | 31-31SS14A | Set screw | 2 |
| 10 | 31H2788 | Cam wick | 1 | 42 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 2 |
| 12 | 31-8S5NA | Screw, no. 8-32 thread | 1 | 43 | 31B6030A | Vent cover | 2 |
| 13 | 31AXMR2433 | Condenser | 1 | 44 | 31C6032B | Vent screen | 2 |
| 14 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 45 | 31F2568 | Pin | 1 |
| 15 | 31D2458 | Washer, no. 6 | 1 | 47 | 31A2492C | Washer | 1 |
| 16 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 48 | 31G3861 | Shaft seal | 1 |
| 18 | 31W4631 | Bearing support | 1 | 49 | 31A2492A | Washer | 1 |
| 19 | 31A5950A | Bearing | 1 | 52 | 31A1498J | Spring | 1 |
| 20 | 31N2514C | Switch assembly | 1 | 53 | 31Q2566 | Coupling pawl | 1 |
| 21 | 31-8N1 | Nut | 3 | 58 | 31XV2563C15 | Coupling, 15° lag angle | 1 |
| 22 | 31-8LW5 | Lock washer | 1 | 59 | 31N5963 | Pawl spring (NLA) | 1 |
| 23 | 31M2514 | Insulated lever | 1 | 62 | 31EY2563-15 | Hub assembly, 15° lag angle | 1 |
| 24 | 31C6018 | Insulating washer | 2 | 67 | 31E2565 | Coupling spring | 1 |
| 25 | 31K2457A | Insulating bushing | 1 | 69 | 31ZY5957 | Coupling shell | 1 |
| 26 | 31L2514C | Wire assembly | 1 | 71 | 31F2572 | Gear bushing | 1 |
| 27 | 31-8S14N | Screw, no. 8-32 thread | 1 | 72 | 31M2570 | Coupling nut | 1 |
| 28 | 31-6S4U | Screw, no. 6-32 thread | 1 | — | GD125 | Drive gear (not illustrated) | 1 |
| 29 | 31B6120 | Coil clip | 1 | — | YQ4 | Overhaul kit (not illustrated) | 1 |
| 30 | 31T2477C | Coil | 1 | — | YQ7 | Points and condenser kit (not illustrated) | 1 |

Y107BS1 Magneto (Type FMXD1B7R1)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

The magneto gear rotates counter-clockwise, when viewed from the drive end, and is fitted with a dependable single pawl impulse coupling, which facilitates starting by providing an intensified and retarded ignition spark at low engine speeds. A two pole magnetic rotor and a single lobe cam produce one ignition spark per revolution.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine difficulty arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent 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 an ignition spark test. See engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface 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. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING THE MAGNETO

Opening the magneto for breaker point adjustment or any other service, necessitates resealing the magneto upon reassembly. Clean the surface between the magneto frame and end cap and install a new gasket. Remove the vent hoods and clean the vent screens before final assembly.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

To engage the slotted drive gear correctly with the drive lugs of the coupling, the rotor should be turned until the coupling pawl engages the stop pin. The coupling drive lugs will then be in a vertical position as shown by A of Fig. 1. Mount drive gear to the coupling so that the marked tooth is at the upper right hand, or approximate 1 o'clock position, as illustrated in view B.

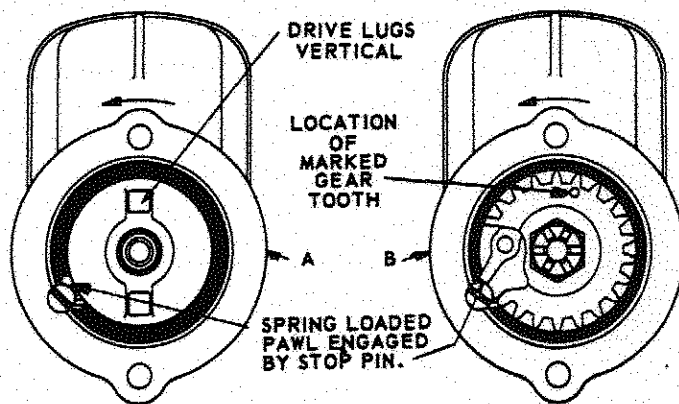


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Refer to 'MAGNETO TIMING' paragraphs in front section of engine 'INSTRUCTION MANUAL' for proper mounting of magneto to crankcase, in order to obtain correct ignition timing.

**Y108B (Replaced By Y107BS1) (WICO Spec. No. XH2523B),
Y118 (Replaced By Y117S1) (WICO Spec. No. XH2504) Magnetos
(Y108A, WICO Spec. No. XH2523, Replaced By Y108B For Engine Model AGN)**

TIMING

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

LUBRICATION

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

IMPORTANT

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

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

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

MAGNETO COVER

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

BREAKER CONTACTS - REPLACEMENT AND ADJUSTMENT

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

Insert the end of a small screwdriver 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 S5449, 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

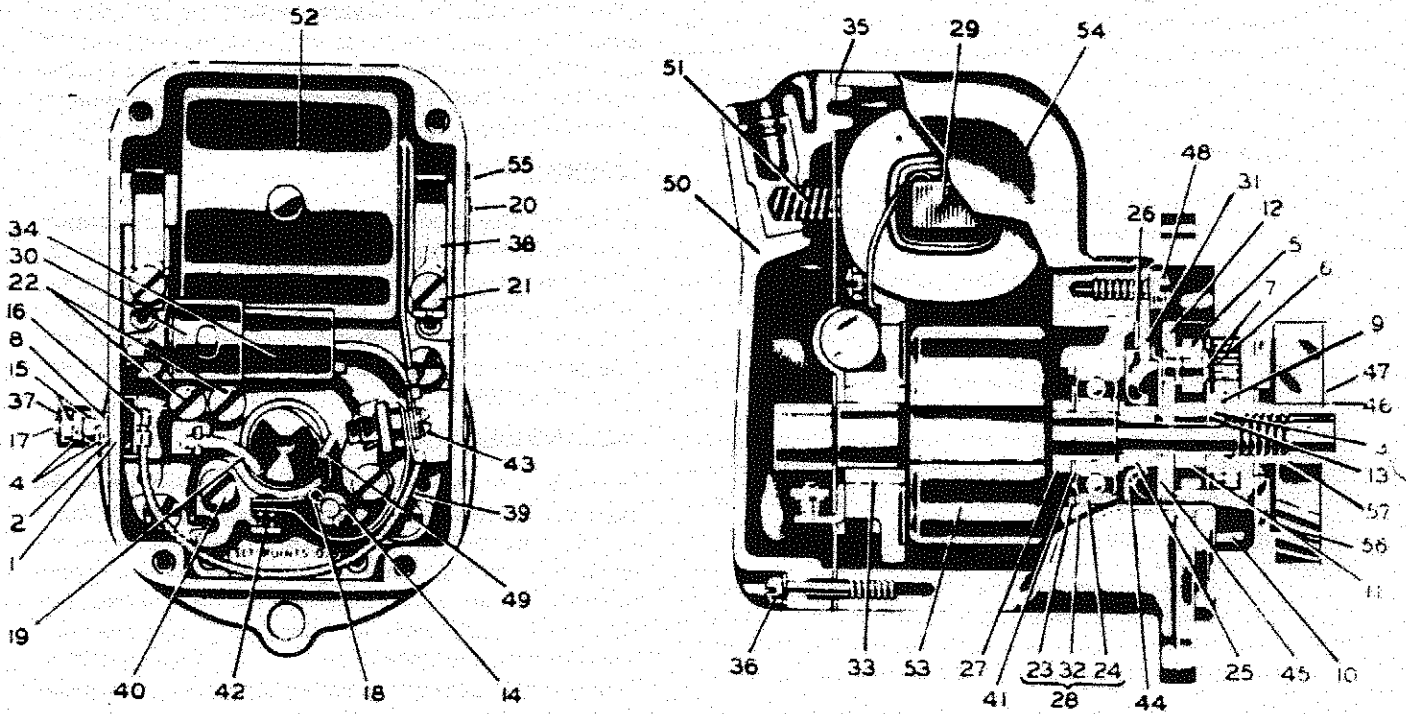
The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw (Ref. No. 43), take out the two coil core clamp screws (Ref. No. 21) and remove the clamps (Ref. No. 38). The coil and core can then be pulled 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.

**Y108B (Replaced By Y107BS1) (WICO Spec. No. XH2523B),
 Y118 (Replaced By Y117S1) (WICO Spec. No. XH2504) Magnetos
 (Y108A, WICO Spec. No. XH2523, Replaced By Y108B For Engine Model AGN)**



**Y108B (Replaced By Y107BS1),
Y118 (Replaced By Y117S1) Magnetos**

USE WITH MODEL AGND (Y107BS1), AENL (Y117S1) (see pg. 62)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|---|-----|------|-------------|---|-----|
| 2 | YD316 | Insulator | 1 | 34 | 90FXH1019 | Condenser assembly | 1 |
| 3 | 90M42XA | Spacing washer | 1 | 35 | 90FXH162 | Cover gasket | 1 |
| 4 | 90M55XA | Lock washer | 2 | 36 | 90-53X5185 | Screw | 4 |
| 5 | 90-11312 | Trip arm (Y118) | 1 | 37 | 90FXH1019 | Stop button group | 1 |
| — | 90FXH125A | Trip arm (Y108A, Y108B) | 1 | 38 | 90FXH223 | Coil core group | 2 |
| 6 | 90FXH55 | Drive spring | 1 | 39 | 90X5757 | Ground lead group | 1 |
| 7 | 90FXH642 | Trip arm spring (Y118) | 1 | — | 90FXH2009 | Ground connection unit (includes 2, 4, 8, 15-17, 39) (not illustrated) | 1 |
| — | 90-6587 | Trip arm spring (Y108A, Y108B) | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 8 | 90IXA256 | Washer | 1 | 40 | 90-5900 | Clamp screw | 2 |
| 9 | 90IVA583 | Spacing washer | 1 | 41 | 90-5926 | Ball bearing shield | 1 |
| 10 | 90-11472 | Drive cup (Y118) | 1 | 42 | 90FXH2100B | Breaker contact set | 1 |
| — | 90-11641 | Drive cup (Y108A, Y108B) | 1 | 43 | 90-5431 | Clamp screw | 1 |
| 11 | 90-2122 | Driven flange spacer | 1 | 44 | 90XA1393 | Oil seal | 1 |
| 12 | 90FXH1025C | Driven flange group (Y118) | 1 | 45 | 90FXH27 | Oil slinger (NLA) | 1 |
| — | 90X6588 | Driven flange group (Y108A, Y108B) | 1 | 46 | 90X5261 | Impulse lock ring | 1 |
| 13 | 90-2288 | Retainer | 1 | 47 | 90-6425 | Thrust washer | 1 |
| 14 | 90-3219 | Pivot washer | 1 | — | 90X11473 | Impulse coupling unit (includes 3, 5-7, 9-13, 46, 47, 57) (Y118) (not illustrated) | 1 |
| 15 | 90-3230 | Nut | 2 | — | 90X11572 | Impulse coupling unit (Y108A, Y108B) (not illustrated) | 1 |
| 16 | YD324 | Insulating washer | 2 | 48 | 90-6465 | Clamp screw | 4 |
| 17 | 90-3945 | Ground stud | 1 | 49 | 90-6468 | Breaker arm felt | 1 |
| 18 | 90-4210 | Breaker arm lock | 1 | 50 | 90FXH2312A2 | Cover unit | 1 |
| 19 | 90-5077 | Cam wiper felt | 1 | 51 | 90-6732 | Coil contact spring | 1 |
| 20 | 90-5250 | Screw | 2 | 52 | 90FXH2403 | Coil group (replaces X6762) | 1 |
| 21 | 90-5411 | Clamp screw | 2 | — | 90-10383 | Coil wedge (not illustrated) | 2 |
| 22 | 90-5411 | Clamp screw | 2 | 53 | 90Y7569 | Rotor (Y118) | 1 |
| 23 | 90-5516 | Retaining ring | 1 | — | 90FXH2106B | Rotor (Y108A, Y108B) | 1 |
| 24 | 90-5517 | Rotor bearing | 1 | 54 | 90FXH3501 | Main housing group (Y118) (NLA) | 1 |
| 25 | 90-5518 | Impulse spacer | 1 | | | | |
| 26 | 90X5259 | Gasket | 1 | | | | |
| 27 | 90-5520 | Spacer | 1 | | | | |
| 28 | 90FXH1007A | Bearing cage group | 1 | | | | |
| 29 | 90FXH1611A | Coil core group | 1 | | | | |
| 30 | 90-6924 | Condenser clamp | 1 | | | | |
| 31 | 90X5549 | Impulse stop group | 1 | | | | |
| 32 | 90-5567 | Bearing cage | 1 | | | | |
| 33 | 90FXH31 | Bushing | 1 | | | | |

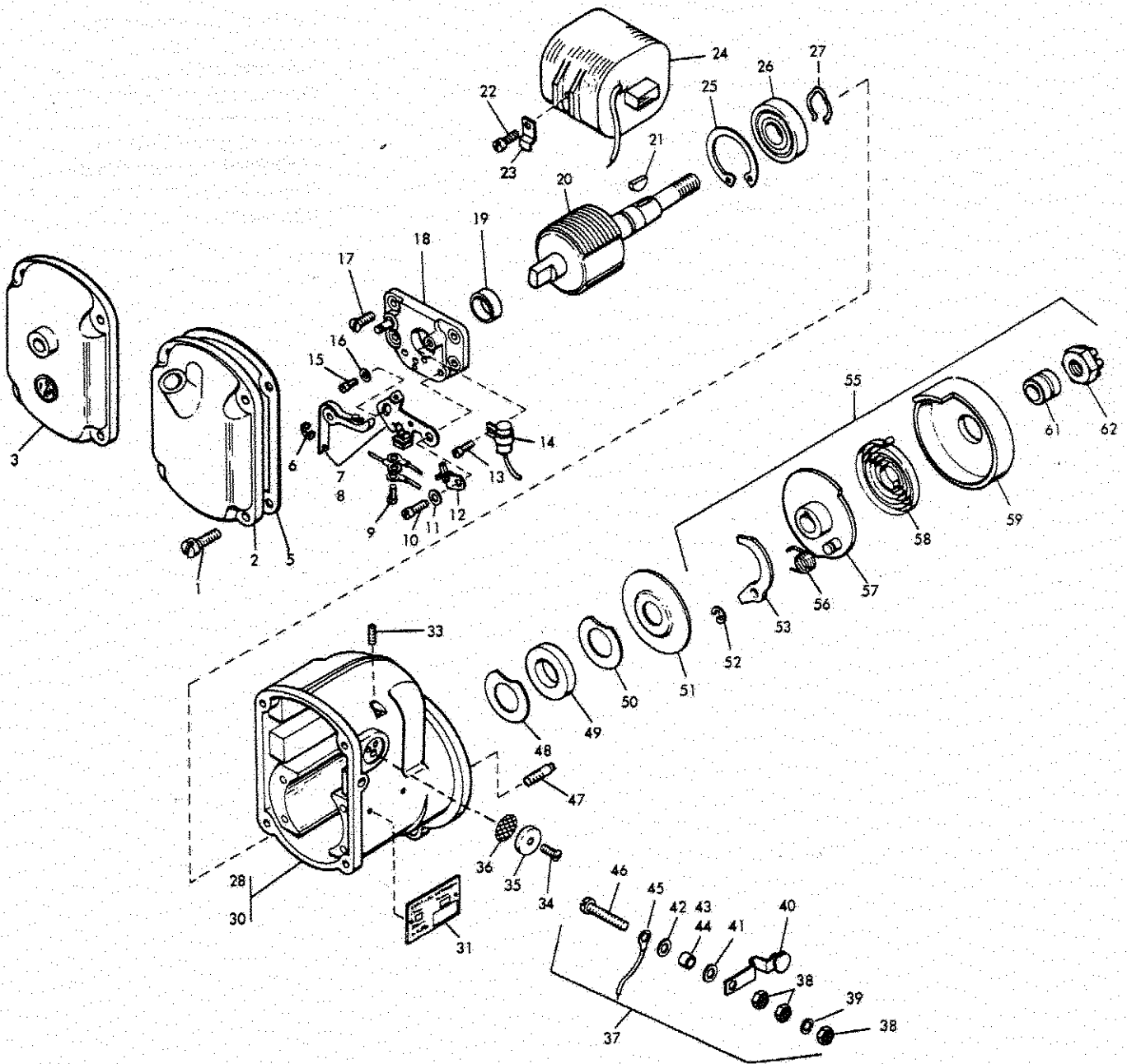
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**Y108B (Replaced By Y107BS1),
Y118 (Replaced By Y117S1) Magnetos (Cont.)**

USE WITH MODEL AGND (Y107BS1), AENL (Y117S1) (see pg. 62)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--|-----|------|----------|--|-----|
| — | 90X7262 | Main housing group (Y108A, Y108B)..... | 1 | — | YQ5 | Points and condenser kit (Y108BS1, Y118) (not illustrated) | 1 |
| 55 | 90-5543 | Name plate (Y118) | 1 | — | YQ2 | Overhaul kit (Y108BS1, Y118) (not illustrated) | 1 |
| — | 90-8792 | Name plate (Y108A, Y108B) ... | 1 | — | YQ7 | Points and condenser kit (Y107BS1) (not illustrated) | 1 |
| — | 90-10407 | Breaker point aligning washer (not illustrated) | 1 | — | YQ4 | Overhaul kit (Y107BS1) (not illustrated) | 1 |
| 56 | GD113 | Drive gear (Y118) | 1 | | | | |
| — | GD125 | Drive gear (Y108A, Y108B) | 1 | | | | |
| 57 | 90-6412 | Impulse lock nut | 1 | | | | |

**Y109S1, Y109AS1, Y109BS1, Y109CS1 Fairbanks-Morse Magnetos
(Type FMXD1B7)**



Y109S1, Y109AS1, Y109BS1, Y109CS1 Fairbanks-Morse Magnetos

USE WITH MODELS ACN, BKN (see pg. 65)

| ITEM | PART NO. | DESCRIPTION | Y109S1 FMXD1B7S | Y109AS1 FMXD1B7T | Y109BS1 FMXD1B7S3 | Y109CS1 FMXD1B7S1 |
|------|------------|--|--------------------|---------------------|----------------------|----------------------|
| 1 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 4 | 4 | 4 | 4 |
| 2 | 31BZ2430 | End cap | 1 | 1 | 1 | 1 |
| 3 | 31SX2430 | End cap | 1 | 1 | 1 | 1 |
| 5 | 31H2498 | End cap gasket | 1 | 1 | 1 | 1 |
| 6 | 31C1498G | Fulcrum pin snap ring | 1 | 1 | 1 | 1 |
| 7 | 31A2437A | Point set | 1 | 1 | 1 | 1 |
| 8 | 31A2437AX | Point set | 1 | 1 | 1 | 1 |
| 9 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 10 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 11 | 31B5969 | Support screw washer, no. 8 | 1 | 1 | 1 | 1 |
| 12 | 31G2788 | Cam wick | 1 | 1 | 1 | 1 |
| 13 | 31-8S5NA | Condenser screw, no. 8-32 thread x 5/16" long | 1 | 1 | 1 | 1 |
| 14 | 31AXMR2433 | Condenser | 1 | 1 | 1 | 1 |
| 15 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 16 | 31D2458 | Support screw washer, no. 6 | 1 | 1 | 1 | 1 |
| 17 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 4 | 4 | 4 |
| 18 | 31V4631 | Bearing support | 1 | 1 | 1 | 1 |
| 19 | 31A5950A | Cam end bearing | 1 | 1 | 1 | 1 |
| 20 | 31DW2480 | Rotor | 1 | 1 | 1 | 1 |
| 21 | 31-3K1 | No. 3 Woodruff key | 1 | 1 | 1 | 1 |
| 22 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 1 | 1 | 1 |
| 23 | 31B6120 | Coil clip | 1 | 1 | 1 | 1 |
| 24 | 31T2477C | Coil | 1 | 1 | 1 | 1 |
| 25 | 31B1498B | Bearing snap ring | 1 | 1 | 1 | 1 |
| 26 | 31C5949 | Drive end bearing | 1 | 1 | 1 | 1 |
| 27 | 31B1498D | Shaft snap ring | 1 | 1 | 1 | 1 |
| 28 | 31JV2425 | Housing | 1 | 1 | 1 | 1 |
| 30 | 31RX2425 | Housing | 1 | 1 | 1 | 1 |
| 31 | 31N195 | Name plate | 1 | 1 | 1 | 1 |
| 33 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 | 2 | 2 | 2 |
| 34 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 | 2 | 2 | 2 |

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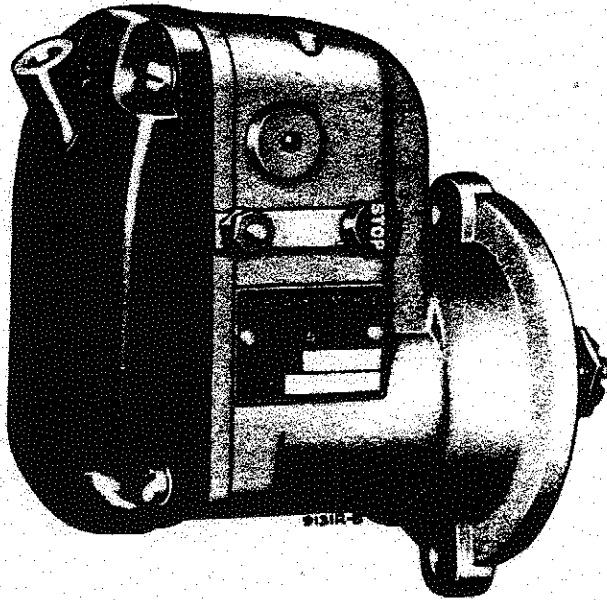
Y109S1, Y109AS1, Y109BS1, Y109CS1 Fairbanks-Morse Magnetos (Cont.)

USE WITH MODELS ACN, BKN (see pg. 65)

| ITEM | PART NO. | DESCRIPTION | Y109S1 FMXD1B7S | Y109AS1 FMXD1B7T | Y109BS1 FMXD1B7S3 | Y109CS1 FMXD1B7S1 |
|------|-------------|---|--------------------|---------------------|----------------------|----------------------|
| 35 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 |
| 36 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 |
| 37 | 31N2514C | Switch assembly | 1 | 1 | 1 | 1 |
| 38 | 31-8N1 | Screw nut, no. 8-32 thread | 3 | 3 | 3 | 3 |
| 39 | 31-8LW5 | Screw lock washer, no. 8 | 1 | 1 | 1 | 1 |
| 40 | 31M2514 | Insulated lever | 1 | 1 | 1 | 1 |
| 41 | 31C6018X | Insulating washer | - | 1 | - | - |
| 42 | 31C6018 | Insulating washer | 2 | - | 1 | 1 |
| 43 | 31K2457AX | Insulating bushing | - | 1 | - | - |
| 44 | 31K2457A | Insulating bushing | 1 | - | 1 | 1 |
| 45 | 31L2514C | Wire assembly | 1 | 1 | 1 | 1 |
| 46 | 31-8S14N | Switch screw, no. 8-32 thread x 7/8" long | 1 | 1 | 1 | 1 |
| 47 | 31S2568 | Pawl stop pin | 1 | 1 | 1 | 1 |
| 48 | 31A2492C | Seal inner washer | 1 | 1 | 1 | 1 |
| 49 | 31G3861 | Shaft seal | 1 | 1 | 1 | 1 |
| 50 | 31A2492A | Seal outer washer | 1 | 1 | 1 | 1 |
| 51 | 31E2303 | Oil slinger | 1 | 1 | 1 | 1 |
| 52 | 31-29-45 | Pawl snap ring | 1 | 1 | 1 | 1 |
| 53 | 31H2566 | Coupling pawl | 1 | 1 | 1 | 1 |
| 55 | 31LV2563C13 | Coupling complete | 1 | 1 | 1 | 1 |
| 56 | 31S5963 | Pawl spring | 1 | 1 | 1 | 1 |
| 57 | 31SZ2563 | Hub assembly | 1 | 1 | 1 | 1 |
| 58 | 31D2565 | Coupling spring | 1 | 1 | 1 | 1 |
| 59 | 31WY5957 | Coupling shell | 1 | 1 | 1 | 1 |
| 61 | 31F2572 | Gear bushing | 1 | 1 | 1 | 1 |
| 62 | 31M2570 | Coupling nut | 1 | 1 | 1 | 1 |
| — | YQ5 | Points and condenser kit (not illustrated) | 1 | 1 | 1 | 1 |
| — | YQ2 | Overhaul kit (not illustrated) | 1 | 1 | 1 | 1 |

Y109S1, Y109AS1, Y109BS1, Y109CS1 Fairbanks-Morse Magnetos (Type FMXD1B7)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

The magneto gear rotates clockwise, when viewed from the drive end, and is fitted with a dependable single pawl impulse coupling, which facilitates 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 engine difficulty arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent 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 an ignition spark test. See engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface 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. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING THE MAGNETO

Opening the magneto for breaker point adjustment or any other service, necessitates resealing the magneto upon reassembly. Clean the surface between the magneto frame and end cap and install a new gasket. Remove the vent hoods and clean the vent screens before final assembly.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

To engage the slotted drive gear correctly with the drive lugs of the coupling, the rotor should be turned until the coupling pawl engages the stop pin. The coupling drive lugs will then be as shown by A of Fig. 1. Mount drive gear to the coupling so that the marked tooth is in an approximate 12 o'clock location, as illustrated in view B:

TIMING MAGNETO TO ENGINE

Refer to 'MAGNETO TIMING' paragraphs in front section of engine 'INSTRUCTION MANUAL' for proper mounting of magneto to crankcase, in order to obtain correct ignition timing.

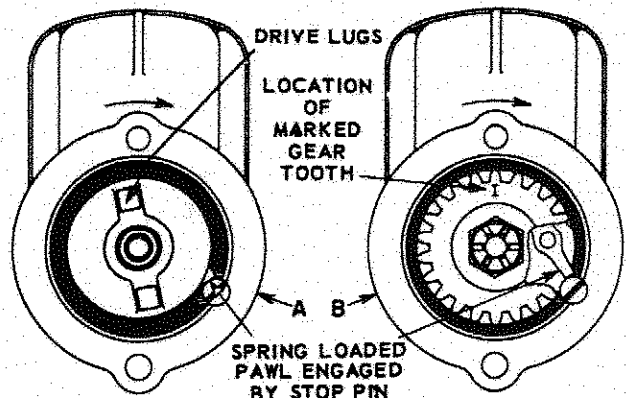
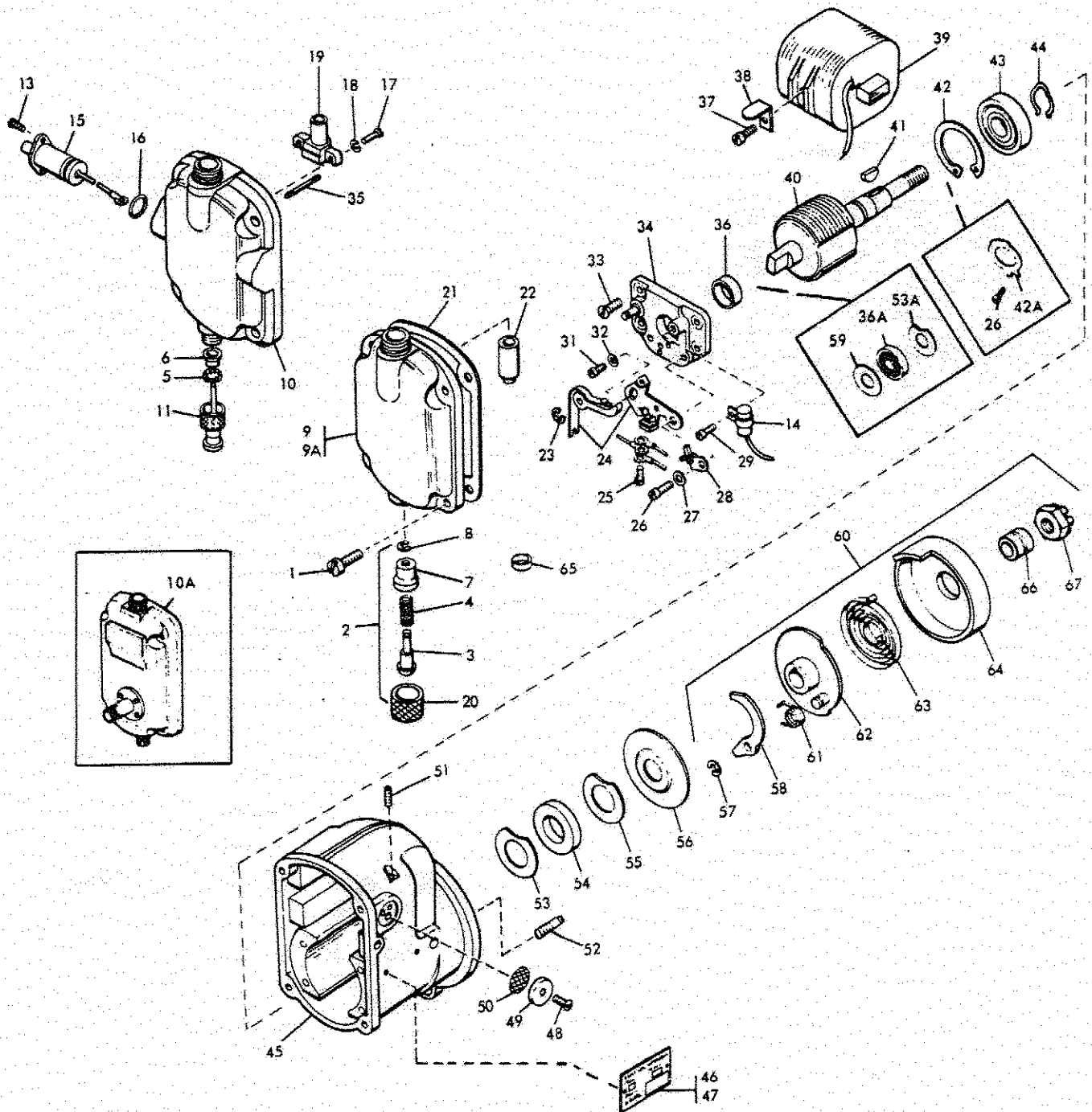


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

**Y110S1, Y110AS1 (Obsolete), Y110BS1 (Obsolete),
Y110CS1 Fairbanks-Morse Magnetos (Types FMPE1B7, FMXDE1B7)**



**Y110S1, Y110AS1 (Obsolete), Y110BS1 (Obsolete),
Y110CS1 Fairbanks-Morse Magnetos**

USE WITH MODELS MACND, MBKND (see pg. 69)

| ITEM | PART NO. | DESCRIPTION | Y110S1 FMPE1B7 | Y110AS1 FMPE1B7A (Obsolete) | Y110BS1 FMPE1B7A3 (Obsolete) | Y110CS1 FMXDE1B7S1 |
|------|-----------|---|-------------------|-----------------------------------|------------------------------------|-----------------------|
| 1 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 4 | 4 | 4 | 4 |
| 2 | 31CX2514C | Ground switch complete | 1 | - | - | - |
| — | 31GX2514C | Ground switch complete | - | 1 | 1 | - |
| 3 | 31S2514 | Switch button | 1 | 1 | 1 | - |
| 4 | 31C2513A | Ground switch spring | 1 | 1 | 1 | - |
| 5 | 31E2513A | Ground switch spring | - | - | - | 1 |
| 6 | 31F4373 | Ground switch bushing | - | - | - | 1 |
| 7 | 31D4373 | Ground switch bushing | 1 | - | - | - |
| — | 31E4373 | Ground switch bushing | - | 1 | 1 | - |
| 8 | 31V1498 | Ground switch snap ring | 1 | 1 | 1 | - |
| 9 | 31J2430A | End cap | 1 | - | - | - |
| 9A | 31CY2430A | End cap | - | 1 | - | - |
| 10 | 31MY2430A | End cap | - | - | - | 1 |
| 10A | 31KY2430A | End cap | - | - | 1 | - |
| 11 | 31GW2514 | Switch plunger assembly | - | - | - | 1 |
| 13 | 31-6S6D | Condenser screw, no. 6-32 thread x 3/8" long | - | - | - | 2 |
| 14 | 31SXY2433 | Condenser | 1 | - | - | - |
| — | 31PX2433 | Condenser | - | 1 | 1 | - |
| 15 | 31QX2433 | Condenser | - | - | - | 1 |
| 16 | 31P2473 | Condenser "O" ring | - | - | - | 1 |
| 17 | 31-8S8N | Outlet screw, no. 8-32 thread x 1/2" long | - | - | - | 2 |
| 18 | 31-8LW6 | Outlet screw lock washer | - | - | - | 2 |
| 19 | 31AX2474 | Cable outlet | - | - | - | 1 |
| 20 | 31B2735A | Cable nut | 1 | - | - | - |
| — | 31C2735A | Cable nut | - | 1 | 1 | - |
| 21 | 31K2498 | End cap gasket | 1 | 1 | 1 | 1 |
| 22 | 31P2474 | Cable outlet | 1 | 1 | 1 | - |
| 23 | 31C1498G | Fulcrum pin snap ring | 1 | - | - | 1 |
| 24 | 31A2437A | Point set | - | - | - | 1 |
| — | 31Q2437A | Point set | 1 | 1 | 1 | - |
| 25 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 1 | 1 | 1 |
| 26 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 2 | 2 | 2 | 1 |

(continued on page 71)

**Y110S1, Y110AS1 (Obsolete), Y110BS1 (Obsolete),
Y110CS1 Fairbanks-Morse Magnetos (Cont.)**

USE WITH MODELS MACND, MBKND (see pg. 69)

| ITEM | PART NO. | DESCRIPTION | Y110S1 FMPE1B7 | Y110AS1 FMPE1B7A (Obsolete) | Y110BS1 FMPE1B7A3 (Obsolete) | Y110CS1 FMXDE1B7S1 |
|------|----------|--|-------------------|-----------------------------------|------------------------------------|-----------------------|
| 27 | 31B5969 | Support screw washer | 1 | 1 | 1 | 1 |
| 28 | 31G2788 | Cam wick | 1 | 1 | 1 | 1 |
| 29 | 31-8S5NA | Condenser screw, no. 8-32 thread x 5/16" long | 1 | 1 | 1 | 1 |
| 31 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | - | - | - | 1 |
| 32 | 31D2458 | Support screw washer | - | - | - | 1 |
| 33 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 4 | 4 | 4 |
| 34 | 31V4631 | Bearing support | - | - | - | 1 |
| — | 31BY4631 | Bearing support | 1 | 1 | 1 | - |
| 35 | 31P983 | Lead rod | - | - | - | 1 |
| 36 | 31A5950A | Cam end bearing | - | - | - | 1 |
| 36A | 31D5949A | Cam end bearing | 1 | 1 | 1 | - |
| 37 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 1 | 1 | 1 |
| 38 | 31D6120 | Coil clip | 1 | 1 | 1 | 1 |
| 39 | 31T2477C | Coil | 1 | 1 | 1 | 1 |
| 40 | 31DW2480 | Rotor | - | - | - | 1 |
| — | 31BP2480 | Rotor | - | - | 1 | - |
| — | 31US2480 | Rotor | 1 | 1 | - | - |
| 41 | 31-3K1 | No. 3 Woodruff key | 1 | 1 | 1 | 1 |
| 42 | 31B1498B | Bearing snap ring | - | - | - | 1 |
| 42A | 31A2492D | Bearing retaining washer | 1 | 1 | 1 | - |
| 43 | 31C5949 | Drive end bearing | 1 | 1 | 1 | 1 |
| 44 | 31B1498D | Shaft snap ring | 1 | 1 | 1 | 1 |
| 45 | 31RX2425 | Housing | 1 | 1 | 1 | 1 |
| 46 | 31N195 | Name plate | - | - | - | 1 |
| 47 | 31A195 | Name plate | 1 | 1 | 1 | - |
| 48 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 | 2 | 2 | 2 |
| 49 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 |
| 50 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 |
| 51 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 | 2 | 2 | 2 |
| 52 | 31S2568 | Pawl stop pin | 1 | 1 | 1 | 1 |
| 53 | 31A2492C | Seal inner washer | 1 | 1 | 1 | 1 |
| 53A | 31A2492C | Grease retaining washer | 1 | 1 | 1 | - |
| 54 | 31G3861 | Shaft seal | 1 | 1 | 1 | 1 |
| 55 | 31A2492A | Seal outer washer | 1 | 1 | 1 | 1 |

(continued on page 72)

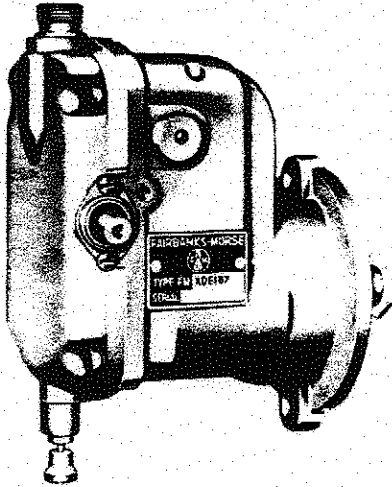
**Y110S1, Y110AS1 (Obsolete), Y110BS1 (Obsolete),
Y110CS1 Fairbanks-Morse Magnetos (Cont.)**

USE WITH MODELS MACND, MBKND (see pg. 69)

| ITEM | PART NO. | DESCRIPTION | Y110S1 FMPE1B7 | Y110AS1 FMPE1B7A (Obsolete) | Y110BS1 FMPE1B7A3 (Obsolete) | Y110CS1 FMXDE1B7S1 |
|------|-------------|-------------------------------|-------------------|-----------------------------------|------------------------------------|-----------------------|
| 56 | 31E2303 | Oil slinger | 1 | 1 | 1 | 1 |
| 57 | 31-29-45 | Pawl snap ring | 1 | 1 | 1 | 1 |
| 58 | 31H2566 | Coupling pawl | 1 | 1 | 1 | 1 |
| 59 | 31E2493 | Grease retaining washer | 1 | 1 | 1 | 1 |
| 60 | 31LV2563C13 | Coupling complete | 1 | 1 | 1 | 1 |
| 61 | 31S5963 | Pawl spring | 1 | 1 | 1 | 1 |
| 62 | 31SZ2563 | Hub assembly | 1 | 1 | 1 | 1 |
| 63 | 31D2565 | Coupling spring | 1 | 1 | 1 | 1 |
| 64 | 31WY5957 | Coupling shell | 1 | 1 | 1 | 1 |
| 65 | 31M6018 | Ground spacer | 1 | 1 | 1 | 1 |
| 66 | 31F2572 | Gear bushing | 1 | 1 | 1 | 1 |
| 67 | 31M2570 | Coupling nut | 1 | 1 | 1 | 1 |

**Y110S1, Y110AS1 (Obsolete), Y110BS1 (Obsolete),
Y110CS1 Fairbanks-Morse Magnetos (Types FMPE1B7, FMXDE1B7)**

FIELD SERVICE AND ADJUSTMENT



272709C

GENERAL DESCRIPTION

This radio shielded magneto is built specifically for installation on Wisconsin Motor Corporation single cylinder engine models MACND and MBKND. The drive gear rotates clockwise, when viewed from drive end, and is fitted to a dependable single pawl impulse coupling, which facilitates starting by providing an intensified and retarded ignition spark at low engine speed. The magneto is designed to operate at minus 65° F.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent maladjustment of magneto parts in good condition. It is suggested that the magneto be opened only when it is certain that the magneto spark produced is unsatisfactory. This condition may be determined by a simple ignition spark check, as explained in engine INSTRUCTION MANUAL.

SERVICING OF THE BREAKER POINTS

Remove magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. Use a small tungsten file or fine stone to resurface the points. Points that are badly worn or pitted should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance of 0.015 inch. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING MAGNETO

Opening the magneto for breaker point adjustment or other service, necessitates resealing the magneto upon reassembly. The surfaces between the magneto housing and the end cap should be thoroughly cleaned and a new lead gasket installed. Remove vent hoods and clean the vent screens.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

To engage the slotted drive gear correctly with the drive lugs of the coupling, the rotor should be turned until the coupling pawl engages the stop pin. The coupling drive lugs will then be as shown by A of Fig. 1. Mount drive gear to the coupling so that the marked tooth is in an approximate 12 o'clock location as illustrated in view B.

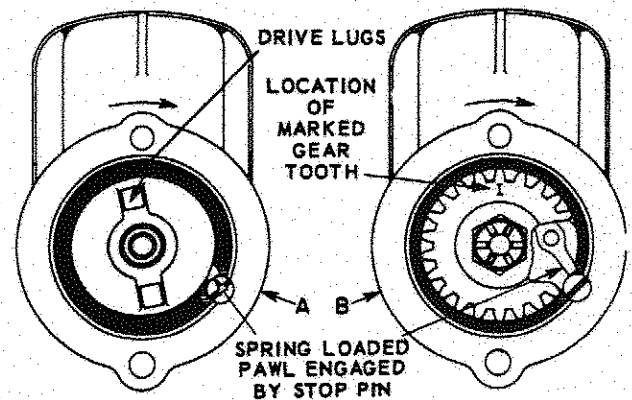


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Ignition timing is accomplished by correctly mounting magneto to the crankcase. Refer to 'MAGNETO TIMING' in engine INSTRUCTION MANUAL for assembly procedure.

Y111 Magneto (Replaced By Y109S1) (WICO Model XH1, WICO Spec. No. XH2477B)

TIMING

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

LUBRICATION

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

IMPORTANT

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

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

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

MAGNETO COVER

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

BREAKER CONTACTS - REPLACEMENT AND ADJUSTMENT

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

Insert the end of a small screwdriver 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 S5449, 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

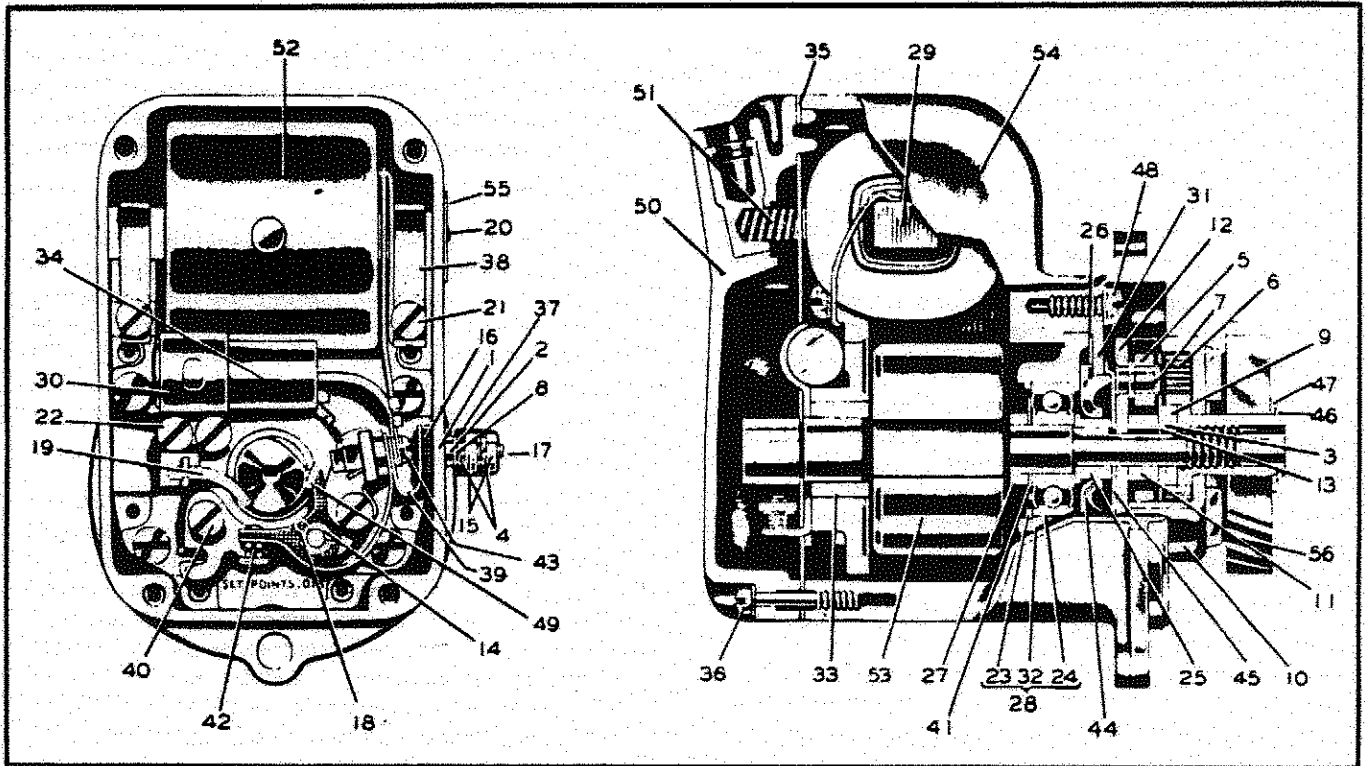
The coil and coil core must be removed from the magneto housing as a unit. Disconnect the primary wire from the breaker arm spring terminal by removing screw (Ref. No. 43), take out the two coil core clamp screws (Ref. No. 21) and remove the clamps (Ref. No. 38). The coil and core can then be pulled 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.

**Y111 Magneto (Replaced By Y109S1)
(WICO Model XH1, WICO Spec. No. XH2477B)**

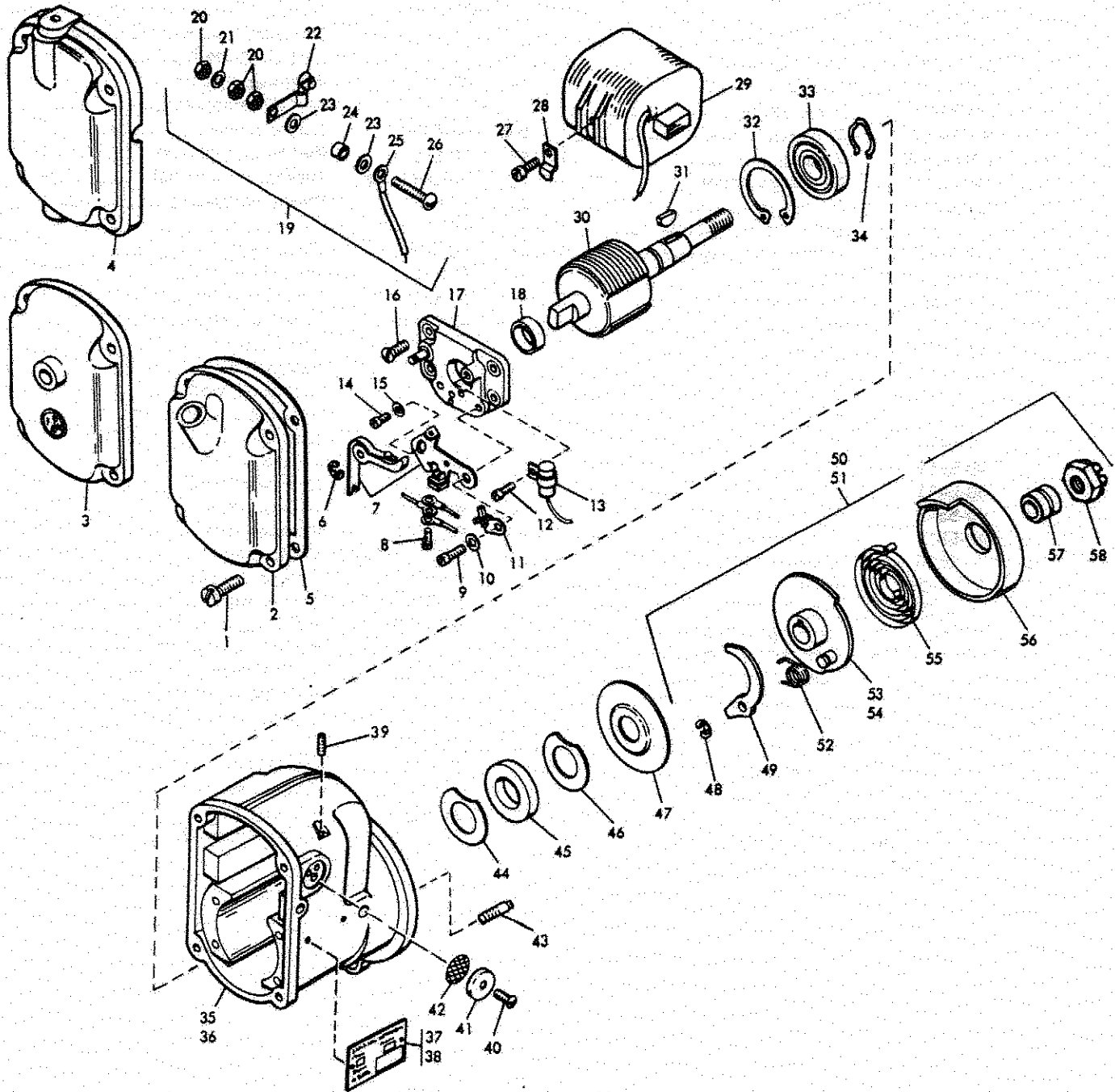


Y111 Magneto (Replaced By Y109S1)

USE WITH MODELS ACN, BKN (see pg. 75)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|----------------------------|-----|------|-------------|--|-----|
| 1 | 90M34X | Spacing washer | 2 | 39 | 90FXH9 | Ground connector | 1 |
| 2 | 90M35X | Washer | 1 | — | 90X5654 | Ground connection unit (includes 1, 2, 4, 8, 15-17, 39) (not illustrated) | 1 |
| 3 | 90M42XA | Spacing washer | 1 | — | 90-5717 | Aligning washer (not illustrated) | 1 |
| 4 | 90M55XA | Lock washer | 2 | 40 | 90-5900 | Clamp screw | 2 |
| 5 | 90-11312 | Trip arm | 1 | 41 | 90-5926 | Ball bearing shield | 1 |
| 6 | 90FXH55 | Drive spring | 1 | 42 | 90FXH2100B | Breaker contact set | 1 |
| 7 | 90FXH642 | Trip arm spring | 1 | 43 | 90-5431 | Clamp screw | 1 |
| 8 | 90IXA256 | Washer | 1 | 44 | 90XA1393 | Oil seal | 1 |
| 9 | 90IVA583 | Spacing washer | 1 | 45 | 90FXH27 | Oil slinger (NLA) | 1 |
| 10 | 90-2040 | Drive cup | 1 | 46 | 90X5261 | Impulse lock ring | 1 |
| 11 | 90-2122 | Driven flange spacer | 1 | 47 | 90-6425 | Thrust washer | 1 |
| 12 | 90FXH1025C | Driven flange group | 1 | — | 90K6445 | Impulse lock nut kit (includes 46, 47; includes nut) (not illustrated) | 1 |
| 13 | 90-2288 | Retainer | 1 | — | 90X11129B | Impulse coupling unit (includes 3, 5-7, 9-13, 46, 47; includes nut) (not illustrated) | 1 |
| 14 | 90-3219 | Pivot washer | 2 | 48 | 90-6465 | Clamp screw | 4 |
| 15 | 90-3230 | Nut | 2 | 49 | 90-7644 | Breaker arm felt | 1 |
| 16 | 90-11874 | Insulating lock | 2 | 50 | 90FXH2312A2 | Cover unit | 1 |
| 17 | 90-3945 | Ground stud | 1 | 51 | 90-6732 | Coil contact spring | 1 |
| 18 | 90-4210 | Breaker arm lock | 1 | — | 90FXH2403 | Coil group | 1 |
| 19 | 90-5077 | Cam wiper felt | 1 | 53 | 90Y7569 | Rotor | 1 |
| 20 | 90-5250 | Screw | 2 | 54 | 90FXH3501 | Main housing group (NLA) | 1 |
| 21 | 90-5411 | Clamp screw | 2 | 55 | 90-8792 | Name plate | 1 |
| 22 | 90-5411 | Clamp screw | 2 | — | 90-10407 | Breaker point aligning washer (not illustrated) | 1 |
| 23 | 90-5516 | Retaining ring | 1 | 56 | 90GD87B | Drive gear | 1 |
| 24 | 90-5517 | Rotor bearing | 1 | — | 90YQ5 | Points and condenser kit (not illustrated) | 1 |
| 25 | 90-5518 | Impulse spacer | 1 | — | 90YQ2 | Overhaul kit (not illustrated) | 1 |
| 26 | 90X5259 | Gasket | 1 | | | | |
| 27 | 90-5520 | Spacer | 1 | | | | |
| 28 | 90FXH1007A | Bearing cage group | 1 | | | | |
| 29 | 90FXH1611A | Coil core group | 1 | | | | |
| 30 | 90-6924 | Condenser clamp | 1 | | | | |
| 31 | 90X11128 | Impulse stop group | 1 | | | | |
| 32 | 90-5567 | Bearing cage | 1 | | | | |
| 33 | 90FXH31 | Bushing | 1 | | | | |
| 34 | 90FXH1019 | Condenser assembly | 1 | | | | |
| 35 | 90FXH162 | Cover gasket | 1 | | | | |
| 36 | 90-53X5185 | Screw | 4 | | | | |
| 37 | 90FXH1019 | Stop button group | 1 | | | | |
| 38 | 90FXH223 | Coil core clamp | 1 | | | | |

**Y117S1, Y117AS1 (Obsolete), Y117BS1 (Obsolete), Y117CS1 (Obsolete),
Y117DS1 (Obsolete) Magnetos (Type FMXD1B7U)**



**Y117S1, Y117AS1 (Obsolete), Y177BS1 (Obsolete), Y117CS1 (Obsolete),
Y117DS1 (Obsolete) Magnetos**

USE WITH MODEL AENL (see pg. 77)

| ITEM | PART NO. | DESCRIPTION | Y117S1 FMXD1B7U | Y117AS1 FMXD1B7U1 (Obsolete) | Y117BS1 FMXD1B7U2 (Obsolete) | Y117CS1 FMXD1B7U3 (Obsolete) | Y117DS1 FMXD1B7U (Obsolete) |
|------|------------|--------------------------|--------------------|------------------------------------|------------------------------------|------------------------------------|-----------------------------------|
| 1 | 31-10S12D | Screw | 4 | 4 | 4 | 4 | 4 |
| 2 | 31BZ2430 | End cap | 1 | 1 | - | - | 1 |
| 3 | 31SX2430 | End cap | - | - | 1 | - | - |
| 4 | 31WX2430 | End cap | - | - | - | 1 | - |
| 5 | 31H2498 | Gasket | 1 | 1 | 1 | 1 | 1 |
| 6 | 31C1498G | Snap ring | 1 | 1 | 1 | 1 | 1 |
| 7 | 31A2437A | Point set | 1 | 1 | 1 | 1 | 1 |
| 8 | 31GS6Z | Terminal screw | 1 | 1 | 1 | 1 | 1 |
| 9 | 31-8S6U | Support screw | 1 | 1 | 1 | 1 | 1 |
| 10 | 31B5969 | Washer | 1 | 1 | 1 | 1 | 1 |
| 11 | 31G2788 | Cam wick | 1 | 1 | 1 | 1 | 1 |
| 12 | 31-8S5NA | Screw | 1 | 1 | 1 | 1 | 1 |
| 13 | 31AMXR2433 | Condenser | 1 | 1 | 1 | 1 | 1 |
| 14 | 31-6S6U | Screw | 1 | 1 | 1 | 1 | 1 |
| 15 | 31D2458 | Washer | 1 | 1 | 1 | 1 | 1 |
| 16 | 31-8S6G | Screw | 4 | 4 | 4 | 4 | 4 |
| 17 | 31V4631 | Support | 1 | 1 | 1 | 1 | 1 |
| 18 | 31A5950A | Bearing | 1 | 1 | 1 | 1 | 1 |
| 19 | 31N2514C | Switch assembly | 1 | 1 | 1 | 1 | 1 |
| 20 | 31-8N1 | Nut | 3 | 3 | 3 | 3 | 3 |
| 21 | 31-8LW5 | Lock washer | 1 | 1 | 1 | 1 | 1 |
| 22 | 31M2514 | Lever | 1 | 1 | 1 | 1 | 1 |
| 23 | 31C6018 | Washer | 2 | 2 | 2 | 2 | 2 |
| 24 | 31K2457A | Bushing | 1 | 1 | 1 | 1 | 1 |
| 25 | 31L2514C | Wire assembly | 1 | 1 | 1 | 1 | 1 |
| 26 | 31-8S14N | Screw | 1 | 1 | 1 | 1 | 1 |
| 27 | 31-6S4U | Screw | 1 | 1 | 1 | 1 | 1 |
| 28 | 31B6120 | Coil clip | 1 | 1 | 1 | 1 | 1 |
| 29 | 31T2477C | Coil | 1 | 1 | 1 | 1 | 1 |
| 30 | 31DW2480 | Rotor | 1 | 1 | 1 | 1 | 1 |
| 31 | 31-3K1 | No. 3 Woodruff key | 1 | 1 | 1 | 1 | 1 |
| 32 | 31B1498B | Snap ring | 1 | 1 | 1 | 1 | 1 |
| 33 | 31C5949 | Bearing | 1 | 1 | 1 | 1 | 1 |
| 34 | 31B1498D | Snap ring | 1 | 1 | 1 | 1 | 1 |
| 35 | 31KV2425 | Housing | - | - | - | - | 1 |
| 36 | 31RX2425 | Housing | 1 | 1 | 1 | 1 | - |
| 37 | 31N195 | Name plate | 1 | - | 1 | 1 | - |
| 38 | 31A195 | Name plate | - | 1 | - | - | 1 |
| 39 | 31-31SS14A | Set screw | 2 | 2 | 2 | 2 | 2 |
| 40 | 31-6S4U | Screw | 2 | 2 | 2 | 2 | 2 |

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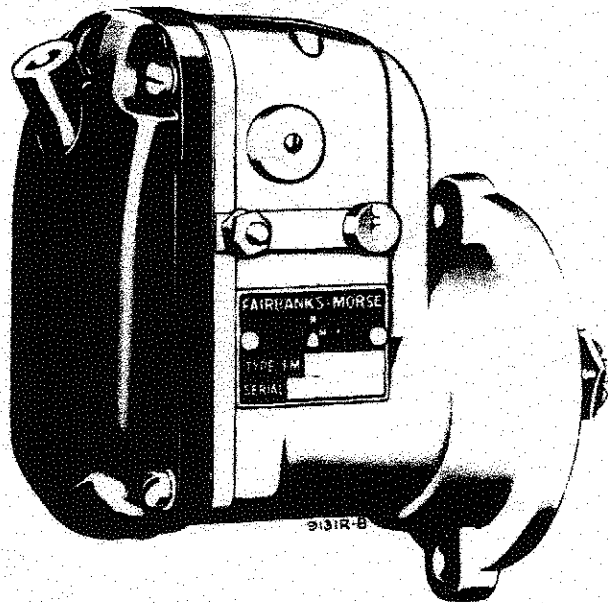
**Y117S1, Y117AS1 (Obsolete), Y117BS1 (Obsolete), Y117CS1 (Obsolete),
Y117DS1 (Obsolete) Magnetos (Cont.)**

USE WITH MODEL AENL (see pg. 77)

| ITEM | PART NO. | DESCRIPTION | Y117S1 FMXD1B7U | Y117AS1 FMXD1B7U1 (Obsolete) | Y117BS1 FMXD1B7U2 (Obsolete) | Y117CS1 FMXD1B7U3 (Obsolete) | Y117DS1 FMXD1B7U (Obsolete) |
|------|-------------|---|--------------------|------------------------------------|------------------------------------|------------------------------------|-----------------------------------|
| 41 | 31B6030A | Vent cover | 2 | 2 | 2 | 2 | 2 |
| 42 | 31C6032B | Vent screen | 2 | 2 | 2 | 2 | 2 |
| 43 | 31S2568 | Pin | 1 | 1 | 1 | 1 | 1 |
| 44 | 31A2492C | Washer | 1 | 1 | 1 | 1 | 1 |
| 45 | 31G3861 | Seal | 1 | 1 | 1 | 1 | 1 |
| 46 | 31A2492A | Washer | 1 | 1 | 1 | 1 | 1 |
| 47 | 31E2303 | Oil slinger | 1 | 1 | 1 | 1 | 1 |
| 48 | 31-29-45 | Snap ring | 1 | 1 | 1 | 1 | 1 |
| 49 | 31H2566 | Coupling pawl | 1 | 1 | 1 | 1 | 1 |
| 50 | 31SV2563C20 | Coupling | 1 | - | 1 | 1 | 1 |
| 51 | 31LV2563C13 | Coupling | - | 1 | - | - | - |
| 52 | 31S5963 | Pawl spring | 1 | - | 1 | 1 | 1 |
| 53 | 31SZ2563 | Hub assembly | 1 | - | 1 | 1 | 1 |
| 54 | 31ZX2563 | Hub assembly | - | 1 | - | - | - |
| 55 | 31D2565 | Spring | 1 | 1 | 1 | 1 | 1 |
| 56 | 31ZX5957 | Shell | 1 | 1 | 1 | 1 | 1 |
| 57 | 31F2572 | Bushing | 1 | 1 | 1 | 1 | 1 |
| 58 | 31M2570 | Nut | 1 | 1 | 1 | 1 | 1 |
| — | GD113 | Drive gear (not illustrated) | 1 | 1 | 1 | 1 | 1 |
| — | YQ8 | Points and condenser kit (not illustrated) | 1 | 1 | 1 | 1 | 1 |
| — | YQ9 | Overhaul kit (not illustrated) | 1 | 1 | 1 | 1 | 1 |

**Y117S1, Y117AS1 (Obsolete), Y117BS1 (Obsolete), Y117CS1 (Obsolete),
Y117DS1 (Obsolete) Magnetos (Type FMXD1B7U)**

FIELD SERVICE AND ADJUSTMENT



TYPICAL FMXD1B7U MAGNETO, EXCEPT GROUND SWITCH ON OPPOSITE SIDE

GENERAL DESCRIPTION

The magneto gear rotates clockwise, when viewed from the drive end, and is fitted with a dependable single pawl impulse coupling, which facilitates 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 engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent 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 an ignition spark test. See engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone may be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance, which is 0.015 inch at full separation. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING MAGNETO

Opening the magneto for breaker point adjustment or other service, necessitates resealing the magneto upon reassembly. The surfaces between the magneto frame and the end cap should be thoroughly cleaned and a new gasket provided. Remove the vent hoods and clean the vent screens of all foreign material.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

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 will then be in the position shown by A of Fig. 1. Mount drive gear to coupling shell so that the 'X' mark on the outer edge of the gear tooth is located as shown in view B.

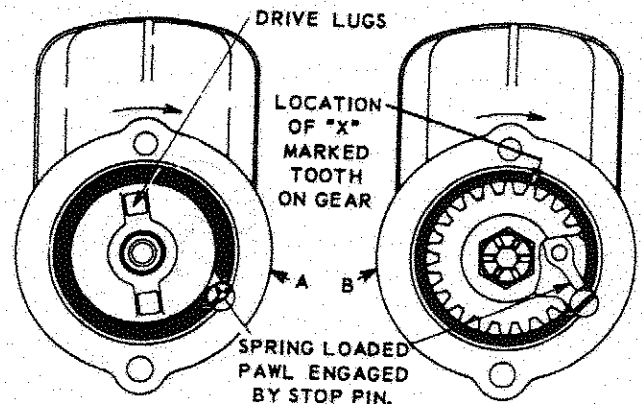
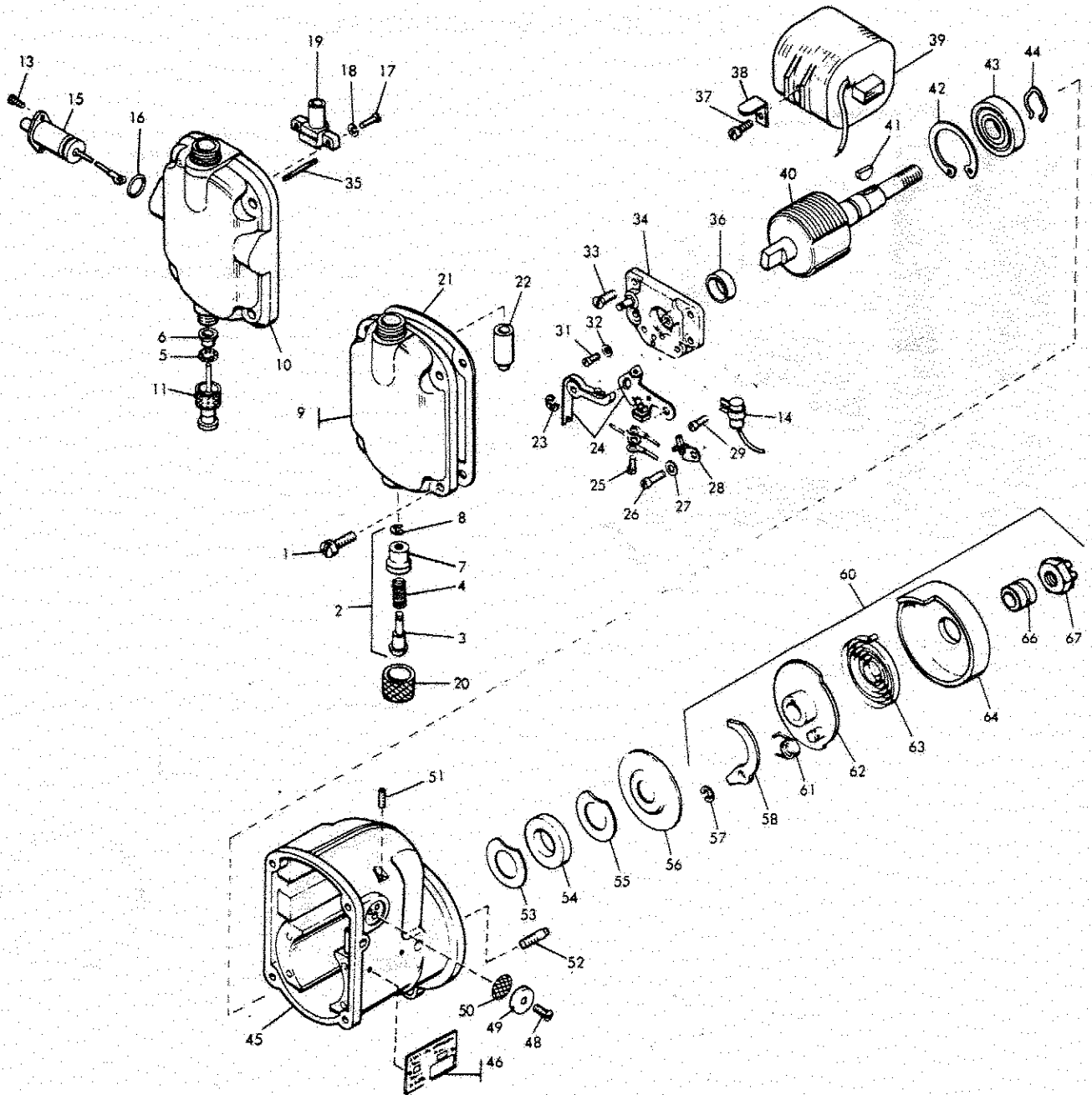


Fig. 1 DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Refer to Magneto Timing instructions in the front section of ENGINE INSTRUCTION MANUAL, for proper mounting of magneto to crankcase, in order to obtain correct ignition timing.

**Y119, Y119-1 (Replaced By Y119AS3),
Y119AS1 Fairbanks-Morse Magnetos (Type FMXDE1B7U)**



Y119 (Y119S1 includes GD122A drive gear for R. S. commercial engine) (AENL).
Y119-1 (Use Y119S2, includes GD122A drive gear for military engine) (MAENLD).

**Y119, Y119-1 (Replaced By Y119AS3),
Y119AS1 Fairbanks-Morse Magnetos**
USE WITH MODELS AENL, MAENLD (see pg. 81)

| ITEM | PART NO. | DESCRIPTION | Y119AS3 (Replaces Y119, Y119-1) FMXDE1B7U | Y119AS1 FMXDE1B7U2 |
|------|-----------|---|--|-----------------------|
| 1 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 4 | 4 |
| 2 | 31CX2514C | Switch complete | 1 | - |
| 3 | 31S2514 | Switch button | 1 | - |
| 4 | 31C2513A | Switch spring | 1 | - |
| 5 | 31E2513A | Switch spring | - | 1 |
| 6 | 31F4373 | Switch bushing | 1 | - |
| 7 | 31D4373 | Switch bushing | 1 | - |
| 8 | 31V1498 | Switch snap ring | 1 | - |
| 9 | 31J2430A | End cap | 1 | - |
| 10 | 31JY2430A | End cap | - | 1 |
| 11 | 31GW2514 | Switch plunger assembly | - | 1 |
| 13 | 31-6S6D | Condenser screw, no. 6-32 thread x 3/8" long | - | 2 |
| 14 | 31SXY2433 | Condenser | 1 | - |
| 15 | 31QX2433 | Condenser | - | 1 |
| 16 | 31P2473 | Condenser "O" ring | - | 1 |
| 17 | 31-8S8N | Outlet screw, no. 8-32 thread x 1/2" long | - | 2 |
| 18 | 31-8LW6 | Outlet screw lock washer, no. 8 | - | 2 |
| 19 | 31AX2474 | Cable outlet | - | 1 |
| 20 | 31B2735A | Cable nut | 1 | - |
| 21 | 31K2498 | End cap gasket | 1 | 1 |
| 22 | 31P2474 | Cable outlet | 1 | - |
| 23 | 31C1498G | Fulcrum pin snap ring | 1 | 1 |
| 24 | 31A2437A | Point set | 1 | 1 |
| 25 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 1 |
| 26 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 1 |
| 27 | 31B5969 | Support screw washer | 1 | 1 |
| 28 | 31G2788 | Cam wick | 1 | 1 |
| 29 | 31-8S5NA | Condenser screw, no. 8-32 thread x 5/16" long | 1 | - |
| 31 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 1 |
| 32 | 31D2458 | Support screw washer | 1 | 1 |
| 33 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 4 |
| 34 | 31V4631 | Bearing support | 1 | 1 |
| 35 | 31P983 | Lead rod | - | 1 |
| 36 | 31A5950A | Cam end bearing | 1 | 1 |
| 37 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 1 |
| 38 | 31D6120 | Coil clip | 1 | 1 |
| 39 | 31T2477C | Coil | 1 | 1 |
| 40 | 31DW2480 | Rotor | 1 | 1 |
| 41 | 31-3K1 | No. 3 Woodruff key | 1 | 1 |

(continued on page 83)

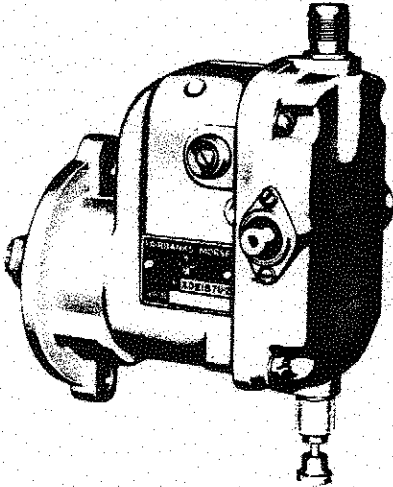
**Y119, Y119-1 (Replaced By Y119AS3),
Y119AS1 Fairbanks-Morse Magnetos (Cont.)**

USE WITH MODELS AENL, MAENLD (see pg. 81)

| ITEM | PART NO. | DESCRIPTION | Y119AS3 (Replaces Y119, Y119-1) FMXDE1B7U | Y119AS1 FMXDE1B7U2 |
|------|-------------|---|--|-----------------------|
| 42 | 31B1498B | Bearing snap ring | 1 | 1 |
| 43 | 31C5949 | Drive end bearing | 1 | 1 |
| 44 | 31B1498D | Shaft snap ring | 1 | 1 |
| 45 | 31RX2425 | Housing | 1 | 1 |
| 46 | 31N195 | Name plate | 1 | 1 |
| 48 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 | 2 |
| 49 | 31B6030A | Vent cover | 2 | 2 |
| 50 | 31C6032B | Vent screen | 2 | 2 |
| 51 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 | 2 |
| 52 | 31S2568 | Pawl stop pin | 1 | 1 |
| 53 | 31A2492C | Seal inner washer | 1 | 1 |
| 54 | 31G3861 | Shaft seal | 1 | 1 |
| 55 | 31A2492A | Seal outer washer | 1 | 1 |
| 56 | 31E2303 | Oil slinger | 1 | 1 |
| 57 | 31-29-45 | Pawl snap ring | 1 | 1 |
| 58 | 31H2566 | Coupling pawl | 1 | 1 |
| 60 | 31SV2563C20 | Coupling complete | 1 | 1 |
| 61 | 31S5963 | Pawl spring | 1 | 1 |
| 62 | 31SZ2563 | Hub assembly | 1 | 1 |
| 63 | 31D2565 | Coupling spring | 1 | 1 |
| 64 | 31ZX5957 | Coupling shell | 1 | 1 |
| 66 | 31F2572 | Gear bushing | 1 | 1 |
| 67 | 31M2570 | Coupling nut | 1 | 1 |

**Y119, Y119-1 (Replaced By Y119AS3),
Y119AS1 Fairbanks-Morse Magnetos (Type FMXDE1B7U)**

FIELD SERVICE AND ADJUSTMENT



266643C

GENERAL DESCRIPTION

This radio shielded magneto is built specifically for installation on Wisconsin Motor Corporation Model MAENLD single cylinder engine. The drive gear rotates clockwise, when viewed from the drive end, and is fitted with a dependable single pawl impulse coupling which facilitates starting by providing an intensified and retarded ignition spark at low engine speeds. The magneto is designed to operate at minus 65°F.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent maladjustment of magneto parts in good condition. It is suggested that the magneto be opened only when it is certain that the magneto spark produced is unsatisfactory. This condition may be determined by a simple ignition spark check, as explained in engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance which is 0.015 inch at full separation. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING MAGNETO

Opening the magneto, for breaker point adjustment or other service, necessitates resealing the magneto upon reassembly. The surfaces between the magneto housing and the end cap should be thoroughly cleaned and a new lead gasket installed. Remove the vent hoods and clean the vent screens of all foreign material.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

To engage the slotted drive gear correctly with the drive lugs of the coupling, the magneto rotor should be turned until the coupling pawl engages the stop pin in the flange. The coupling drive lugs will then be in the position shown by A of Fig. 1. The drive gear should then be fitted to the coupling so that the "X" mark, on the outer edge of the gear tooth is located as shown in view B.

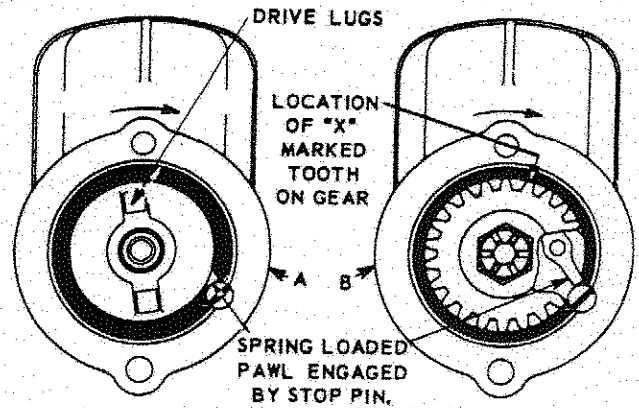
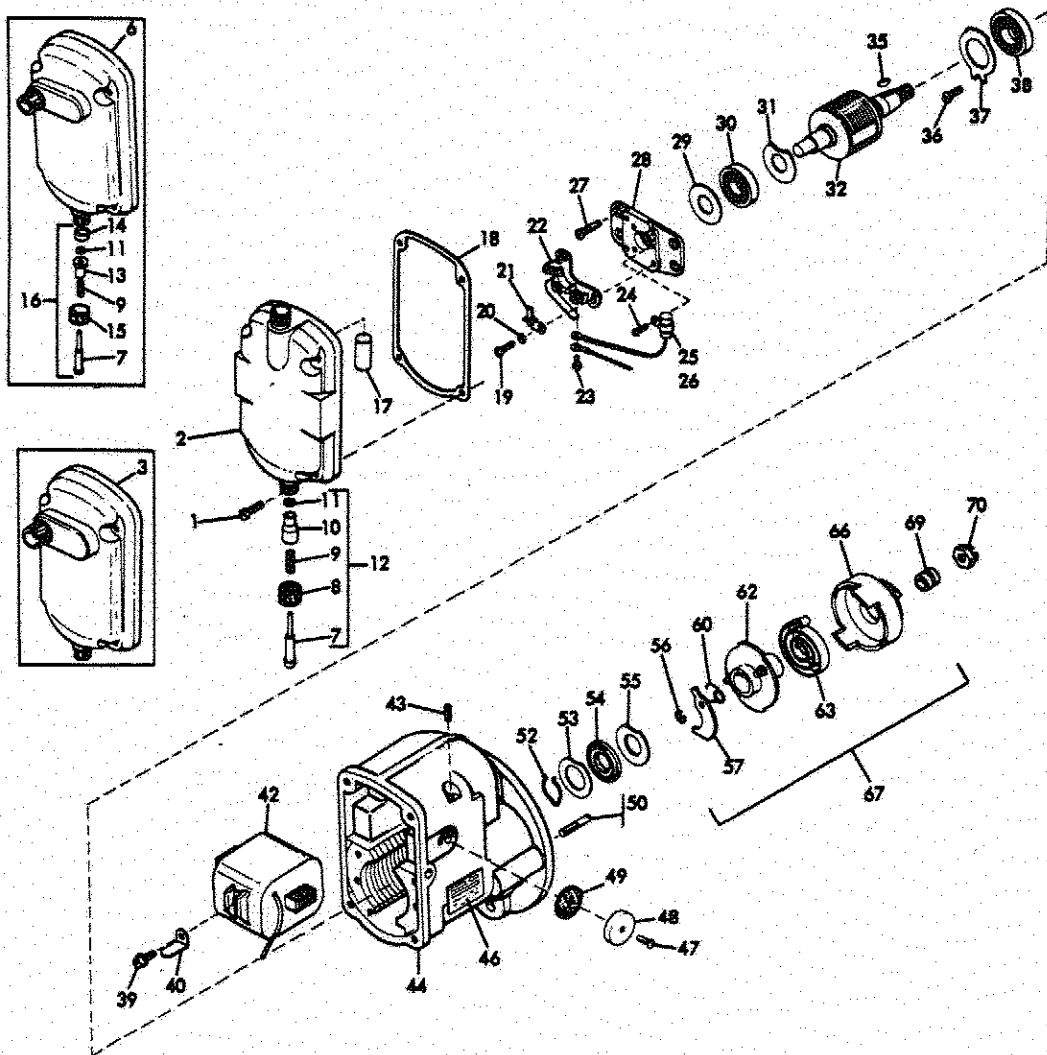


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Refer to Magneto Timing instructions in the front section of ENGINE INSTRUCTION MANUAL, for proper mounting of magneto to crankcase in order to obtain correct ignition timing.

**Y121S1, Y121AS1, Y121BS1 Fairbanks-Morse Magnetos
(Type FMPE1B7R) (Obsolete)**



**Y121S1, Y121AS1, Y121BS1 Fairbanks-Morse
Magnetos (Obsolete)**

USE WITH MODEL AGND (RADIO SHIELDED) (see pg. 85)

| ITEM | PART NO. | DESCRIPTION | Y121AS1 FMPE1B7R1 | Y121BS1 FMPE1B7R2 | Y121S1 FMPE1B7R |
|------|-----------|---|----------------------|----------------------|--------------------|
| 1 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 4 | 4 | - |
| — | 31-10S10D | End cap screw, no. 10-24 thread x 5/8" long | - | - | 4 |
| 3 | 31TX2430A | End cap | 1 | - | 1 |
| 6 | 31XY2430A | End cap | - | 1 | - |
| 7 | 31S2514 | Ground switch button | 1 | 1 | - |
| 8 | 31B2735A | Cable nut | 1 | - | 1 |
| 9 | 31C2513A | Ground switch button spring | 1 | 1 | 1 |
| 10 | 31D4373 | Ground switch bushing | 1 | - | 1 |
| 11 | 31V1498 | Ground switch snap ring | 1 | 1 | 1 |
| 12 | 31CX2514C | Ground switch complete | 1 | - | 1 |
| 13 | 31E4373 | Ground switch bushing | - | 1 | - |
| 14 | 31M6018 | Ground spacer | - | 1 | - |
| 15 | 31C2735A | Cable nut | - | 1 | - |
| 16 | 31GX2514C | Ground switch complete | - | 1 | - |
| 17 | 31P2474 | Cable outlet | 1 | 1 | - |
| — | 31P2474X | Cable outlet | - | - | 1 |
| 18 | 31K2498 | End cap gasket | 1 | 1 | - |
| — | 31K2498 | End cap gasket | - | - | 1 |
| 19 | 31-8S5NA | Support screw, no. 8-32 thread x 5/16" long | 2 | 2 | - |
| — | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | - | - | 2 |
| 20 | 31B5969 | Support screw washer | 2 | 2 | 2 |
| 21 | 31G2788 | Cam wick | 1 | 1 | 1 |
| 22 | 31Q2437A | Breaker points | 1 | 1 | - |
| — | 31Q2437AX | Breaker points | - | - | 1 |
| 23 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 1 | - |
| 24 | 31-8S4U | Mounting screw, no. 8-32 thread x 1/4" long | 1 | 1 | 1 |
| 25 | 31PX2433 | Condenser | - | 1 | - |
| 26 | 31SXY2433 | Condenser | 1 | - | 1 |
| 27 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 4 | 4 |
| 28 | 31BY4631 | Bearing support | 1 | 1 | 1 |
| 29 | 31E2493 | Grease retaining washer | 1 | 1 | - |
| 30 | 31D5949A | Cam end bearing | 1 | 1 | 1 |
| 31 | 31A2492C | Grease retaining washer | 1 | 1 | 1 |
| 32 | 31XS2480 | Magnetic rotor | 1 | 1 | 1 |
| 35 | 31-3K1 | No. 3 Woodruff key | 1 | 1 | 1 |
| 36 | 31-8S6U | Retaining washer screw | 1 | 1 | - |
| — | 31-8S5X | Retaining washer screw | - | - | 1 |
| 37 | 31A2492D | Bearing retaining washer | 1 | 1 | 1 |
| 38 | 31C5949 | Drive end bearing | 1 | 1 | 1 |

(continued on page 87)

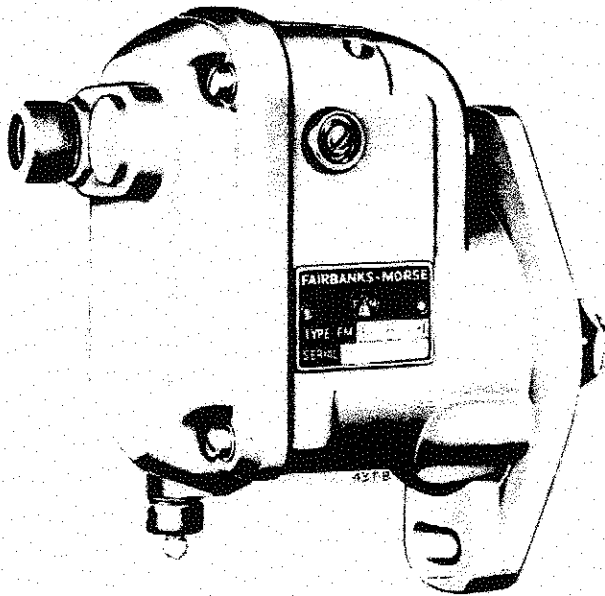
Y121S1, Y121AS1, Y121BS1
Fairbanks-Morse Magnetos (Obsolete) (Cont.)

USE WITH MODEL AGND (RADIO SHIELDED) (see pg. 85)

| ITEM | PART NO. | DESCRIPTION | Y121AS1 FMPE1B7R1 | Y121BS1 FMPE1B7R2 | Y121S1 FMPE1B7R |
|------|-------------|---|----------------------|----------------------|--------------------|
| 39 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 1 | - |
| — | 31-6S3W | Clip screw, no. 6-32 thread x 3/16" long | - | - | 1 |
| 40 | 31N6120 | Coil clip | 1 | 1 | 1 |
| 42 | 31T2477C | Coil | 1 | 1 | 1 |
| 43 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 | 2 | - |
| — | 31-25SS14A | Coil set screw, 1/4"-20 thread x 7/8" long | - | - | 2 |
| 44 | 31-MU2425 | Housing | 1 | 1 | - |
| — | 31TW2425 | Housing | - | - | 1 |
| 46 | 31A195 | Name plate | 1 | 1 | 1 |
| 47 | 31-6S4U | Cover screw | 2 | 2 | 2 |
| 48 | 31B6030A | Vent cover | 2 | 2 | 2 |
| 49 | 31C6032B | Vent screen | 2 | 2 | 2 |
| 50 | 31F2568 | Pawl stop pin | 1 | 1 | - |
| — | 31B2568 | Pawl stop pin | - | - | 1 |
| 52 | 31B1498D | Shaft snap ring | 1 | 1 | - |
| 53 | 31A2492C | Seal inner washer | 1 | 1 | 1 |
| 54 | 31G3861 | Shaft seal | 1 | 1 | 1 |
| 55 | 31A2492A | Seal outer washer | 1 | 1 | 1 |
| 56 | 31-29-45 | Pawl snap ring | 1 | 1 | - |
| 57 | 31Q2566 | Coupling pawl | 1 | 1 | - |
| 60 | 31R5963 | Pawl spring | 1 | 1 | - |
| — | 31N5963 | Pawl spring | - | - | 1 |
| 62 | 31EY2563 | Hub assembly | 1 | 1 | 1 |
| 63 | 31E2565 | Drive spring | 1 | 1 | - |
| — | 31D2565 | Drive spring | - | - | 1 |
| 66 | 31ZY5957 | Coupling shell | 1 | 1 | - |
| — | 31XY5957 | Coupling shell | - | - | 1 |
| 67 | 31XV2563C15 | Coupling complete | 1 | 1 | - |
| — | 31QV2563C | Coupling complete | - | - | 1 |
| 69 | 31F2572 | Drive gear bushing | 1 | 1 | - |
| — | 31F2572 | Drive gear bushing | - | - | 1 |
| 70 | 31M2570 | Coupling nut | 1 | 1 | 1 |

Y121S1, Y121AS1, Y121BS1 Fairbanks-Morse Magnetos (Type FMPE1B7R) (Obsolete)

FIELD SERVICE AND ADJUSTMENT



GENERAL DESCRIPTION

This radio shielded magneto is built specifically for installation on Wisconsin Motor Corporation single cylinder engine model AGND. The drive gear rotates counter-clockwise, when viewed from drive end, and is fitted to a dependable single pawl impulse coupling, which facilitates starting by providing an intensified and retarded ignition spark at low engine speed. A two pole magnetic rotor and a single lobe cam produce one ignition spark per revolution.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine trouble arising from other sources. A brief engine inspection will often locate the trouble before the magneto is reached and prevent maladjustment of magneto parts in good condition. It is suggested that the magneto be opened only when it is certain that the magneto spark produced is unsatisfactory. This condition may be determined by a simple ignition spark check, as explained in engine INSTRUCTION MANUAL.

SERVICING OF THE BREAKER POINTS

Remove magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. Use a small tungsten file or fine stone to resurface the points. Points that are badly worn or pitted should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance of 0.015 inch. Refer to engine INSTRUCTION MANUAL for breaker point adjustment procedure.

SEALING MAGNETO

Opening the magneto for breaker point adjustment or other service, necessitates resealing the magneto upon reassembly. The surfaces between the magneto housing and the end cap should be thoroughly cleaned and a new lead gasket installed. Remove vent hoods and clean the vent screens.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam felt wick, if dry or hard, should be replaced by a new factory-impregnated wick. Other than this, these magnetos do not require field lubrication and any attempt to oil or grease the bearings is inadvisable. The lubricants should be renewed only during a complete overhaul of the magneto by a Factory-Authorized Service Station. Coil and condenser replacements are not recommended, unless test equipment is available.

DRIVE GEAR

To engage the slotted drive gear correctly with the drive lugs of the coupling, the rotor should be turned until the coupling pawl engages the stop pin. The coupling drive lugs will then be in a vertical position as shown by A of Fig. 1. Mount drive gear to the coupling so that the marked tooth is at the upper right hand, or approximate 1 o'clock position, as illustrated in view B.

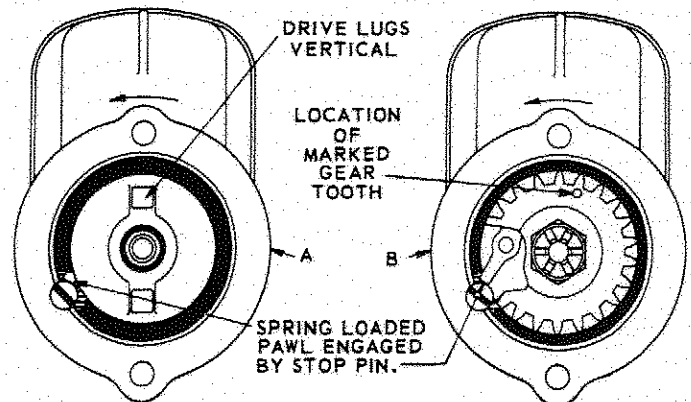


Fig. 1, DRIVE GEAR TIMING MARK ASSEMBLY

TIMING MAGNETO TO ENGINE

Ignition timing is accomplished by correctly mounting magneto to the crankcase. Refer to 'MAGNETO TIMING' in engine INSTRUCTION MANUAL for assembly procedure.

Y128S1 Magneto (Type FMX4B7D)

GENERAL DESCRIPTION

Fairbanks-Morse Type FM-X4B7D Magneto is designed and engineered to provide quick easy starting and maximum dependability of operation with minimum service. The compact alnico magnetic rotor assures an intensely hot spark under most operating conditions.

SERVICE PROCEDURE

The first step in magneto field servicing is to examine the magneto for corroded high tension towers, broken wires, or high tension wires not pushed far enough into the magneto tower to make good contact.

Then test the ignition spark while the engine is being cranked. Hold the ignition wire 1/4 in. away from the engine block. If a strong spark is observed, the magneto is not the cause of the engine malfunction. If no spark is seen, proceed with servicing the magneto.

SERVICING BREAKER POINTS

Remove the end cap cover, distributor rotor and the end cap. Then inspect the breaker points for pitting, oxidation and shorting. If points are worn or shorted, they should be replaced.

To remove the point set, take out the breaker arm terminal screw releasing the breaker arm spring, coil lead and condenser lead. Remove the fulcrum pin snapping and slide the breaker arm off the fulcrum pin. Remove the contact support locking screws and lift off the contact support.

The installation of new points is the reverse of the removal. After the points have been installed, they should be adjusted to the correct clearance of *0.015 inch* at high point of cam. Be sure the points are clean and bright before adjusting them. Insert a screwdriver in the slot of the support bracket and pivot it between the two small bosses on the bearing support until the desired clearance is obtained. Then clean the points again before sealing the magneto.

FIELD SERVICE NOT RECOMMENDED

The cam wick, if dry or hard, should be replaced with a new factory impregnated wick. Other than this the Type FM-X4B7D Magneto does not require field lubrication. No attempt should be made to oil or grease the magneto bearings. The magneto lubricant should

be replaced only during the overhaul of the magneto by a Fairbanks-Morse authorized service station using recommended lubricant and factory engineered parts.

Coil and condenser replacement while simple are not recommended unless adequate test equipment is available. Under no circumstances should any attempt be made to remove the magnetic rotor from the housing unless specific instructions for releasing the shaft are available.

TIMING THE MAGNETO TO THE ENGINE

If the magneto has been removed from the engine for servicing, the operator must follow the engine manufacturer's instructions for timing the magneto to the engine. Refer to 'Magneto Timing' in engine instruction manual. When installing the magneto on the engine, be sure the magneto is properly attached and that the housing to engine gasket is in good condition.

SPECIAL DRIVE GEAR

The magneto is equipped with a special drive gear mounted directly on the impulse coupling. If it is necessary at any time to remove the drive gear, special care must be exercised in reassembly. It is possible to be off 180° in mounting the gear, with relation to the correct location of the timing mark on the gear.

Assemble gear as follows: Remove magneto end cap cover and turn distributor rotor until it is in firing position for No. 1 cylinder, as illustrated in *Fig. A*. Retain rotor in this position and fit the drive gear to the impulse coupling lugs so that the prick punch mark on front of gear is located as shown.

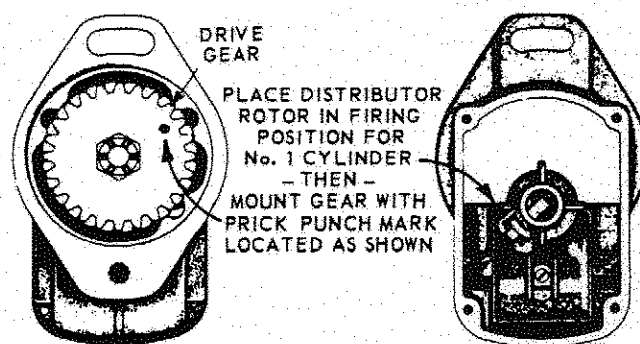
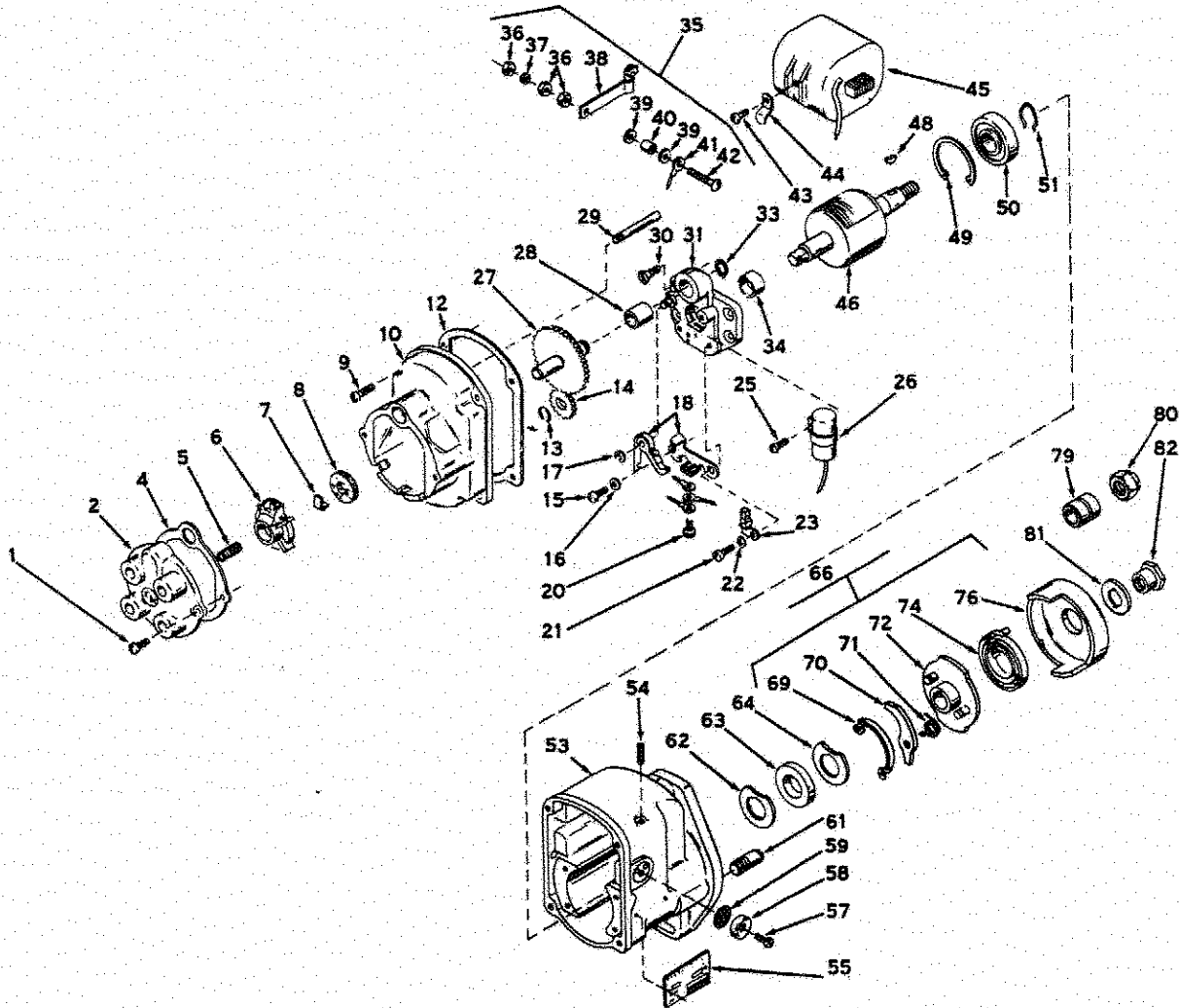


Fig. A, DRIVE GEAR MARKING AND ASSEMBLY

Y128S1 Magneto (Type FMX4B7D)



Y128S1 Magneto (Type FMX4B7D)

USE WITH MODELS V461D, V465D (see pg. 90)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|------------|--|-----|------|-------------|---|-----|
| 1 | 31-8S9D | Screw, no. 8-32 thread x 9/16" long | 2 | 40 | 31K2457A | Insulating bushing | 1 |
| 2 | 31W800 | Cover | 1 | 41 | 31L2514C | Wire assembly | 1 |
| 4 | 31B682 | Gasket | 1 | 42 | 31-8S14N | Screw, no. 8-32 thread x 7/8" long | 1 |
| 5 | 31E2460B | Brush and spring | 1 | 43 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 1 |
| 6 | 31M2765 | Distributor rotor | 1 | 44 | 31D6120 | Coil clip | 1 |
| 7 | 31A2766 | Spring clip | 1 | 45 | 31R2477C | Coil | 1 |
| 8 | 31G2501 | Seal | 1 | 46 | 31PZ2480 | Magnetic rotor | 1 |
| 9 | 31-10814D | Screw, no. 10-24 thread x 7/8" long | 4 | 48 | 31-3K1 | Key | 1 |
| 10 | 31GY2430 | End cap | 1 | 49 | 31B1498B | Snap ring | 1 |
| 12 | 31H2498 | Gasket | 1 | 50 | 31C5949 | Bearing | 1 |
| 13 | 31D1498 | Snap ring | 1 | 51 | 31B1498D | Snap ring | 1 |
| 14 | 31Q5952 | Rotor gear | 1 | 53 | 31XU2425 | Housing | 1 |
| 15 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 54 | 31-31SS14A | Set screw, 5/16"-24 thread x 7/8" long | 2 |
| 16 | 31D2458 | Washer, no. 6 | 1 | 55 | 31A195 | Name plate | 1 |
| 17 | 31C1498G | Snap ring | 1 | 57 | 31-6S4U | Screw, no. 6-32 thread x 1/4" long | 2 |
| 18 | 31A2437A | Point set | 1 | 58 | 31B6030A | Vent cover | 2 |
| 20 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 59 | 31C6032B | Vent screen | 2 |
| 21 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 61 | 31S2568 | Stop pin | 1 |
| 22 | 31B5969 | Washer, no. 8 | 1 | 62 | 31A2492C | Washer | 1 |
| 23 | 31G2788 | Cam wick | 1 | 63 | 31G3861 | Shaft seal | 1 |
| 25 | 31-8S5NA | Screw, no. 8-32 thread x 5/16" long | 1 | 64 | 31A2492A | Washer | 1 |
| 26 | 31AXMR2433 | Condenser | 1 | 66 | 31UU2563C18 | Coupling, 18° lag angle | 1 |
| 27 | 31Y5939 | Shaft and gear | 1 | 69 | 31A1498J | Lock spring | 1 |
| 28 | 31D5950C | Bearing | 1 | 70 | 31Q2566 | Coupling pawl | 2 |
| 29 | 31J983A | Lead rod | 1 | 71 | 31S5963 | Pawl spring | 2 |
| 30 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 72 | 31S2563-27 | Hub assembly, 18° lag angle | 1 |
| 31 | 31X4631 | Support | 1 | 74 | 31E2565 | Coupling spring | 1 |
| 33 | 31D1498 | Snap ring | 1 | 76 | 31AZ5957 | Coupling shell | 1 |
| 34 | 31A5950A | Bearing | 1 | 79 | 31F2572 | Gear bushing | 1 |
| 35 | 31-12514C | Switch assembly | 1 | 80 | 31M2570 | Coupling nut | 1 |
| 36 | 31-8N1 | Nut | 3 | — | GD103A | Drive gear (not illustrated) | 1 |
| 37 | 31-8LW5 | Lock washer | 1 | — | YQ8 | Points and condenser kit (not illustrated) | 1 |
| 38 | 31M2514 | Insulated lever | 1 | — | YQ9 | Overhaul kit (not illustrated) | 1 |
| 39 | 31C6018 | Insulating washer | 2 | | | | |

Y134S1 Magneto (Replaced By Y134AS1, FMXE2B7F) (FMXE2B7E)

GENERAL DESCRIPTION

The type FMXE2B7 radio shielded magneto is adapted to the model TJD engines manufactured by Wisconsin Motor Corporation. This magneto is flange mounted clockwise in rotation and has a lag angle of 15° provided by an impulse coupling.

SERVICE PROCEDURE

Improper functioning of the magneto is often believed to be the cause of engine difficulty arising from other sources, such as a flooded carburetor, insufficient fuel or air, loose ignition connections, or a defective spark plug. A brief engine inspection will often locate the trouble before the magneto is reached, and prevent maladjustment of parts in good condition. The magneto should be opened only when it is certain that the ignition spark produced is unsatisfactory. This condition may be determined by an ignition spark test, as explained in engine INSTRUCTION MANUAL.

SERVICING BREAKER POINTS, Fig. 1

Remove the magneto end cap and inspect the breaker points for evidence of pitting or pyramiding. A small tungsten file or fine stone should be used to resurface the points. Badly worn or pitted points should be replaced. If it is necessary to resurface or replace the breaker points, it will also be necessary to adjust them to their proper clearance which is 0.015 inch at full separation.

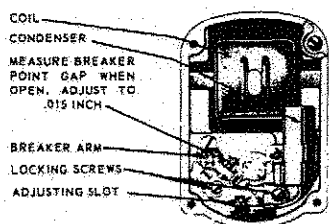


Fig. 1, BREAKER POINT ADJUSTMENT

The adjustment of breaker points is made in the following manner: Lightly loosen the two contact support locking screws, identified in Fig. 1. Then, with the points at full separation, move the contact support until the proper breakerpoint clearance is obtained. This is accomplished by means of a screw driver inserted in the slot at the bottom of the contact support and pivoted between the two small bosses on the bearing support. Lock assembly in place by tightening locking screws, and take a final measurement of breaker point gap after the locking screws are tightened. Finally clean the points with a piece of hard cardboard.

SEALING THE MAGNETO

Before replacing end cap on magneto frame, clean the contact surfaces between the end cap and frame. Place a new gasket on frame, mount end cap plate and end cap, and securely tighten mounting screws.

FURTHER FIELD SERVICE NOT RECOMMENDED

The cam wick, if dry or hard, should be replaced by a new, factory impregnated, wick. Other than this the magneto does not require field lubrication and any attempt to oil or to grease the bearings is inadvisable. The lubricant should be renewed only during a complete overhaul of the magneto. Coil and condenser replacement, can be done if adequate test equipment is available.

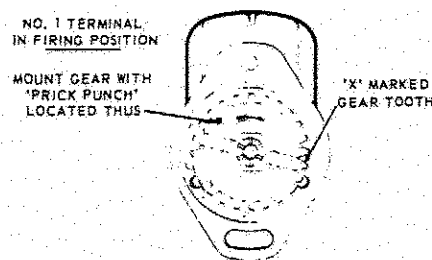


Fig. 2, DRIVE GEAR MARKING AND ASSEMBLY

DRIVE GEAR MOUNTING, Fig. 2

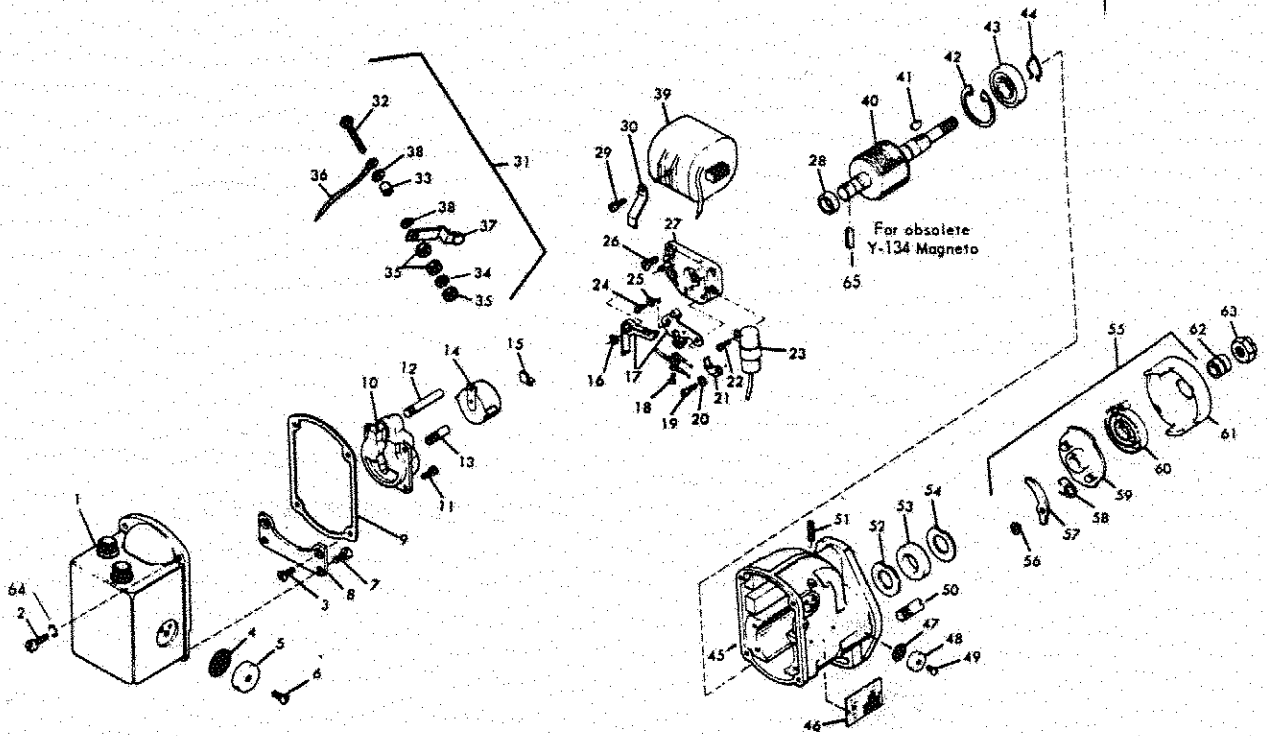
The magneto is equipped with a special drive gear mounted directly on the impulse coupling. If it is necessary to replace the drive gear, special care must be exercised in reassembly. It is possible to be off 180° in timing if gear is improperly mounted.

Set magneto for spark discharge to the No. 1 terminal, (tower closest to engine). This is accomplished by inserting a short stiff length of wire into the No. 1 terminal socket and bend to within 1/8 inch of the magneto frame. Then turn the impulse coupling in a clockwise rotation, tripping the impulse, until a spark is observed between the wire and frame. Retain coupling in this position and mount gear with drive lugs in slot, and prick punch mark on gear face located as illustrated. The 'X' marked gear tooth will be located so as to be seen through gear cover inspection hole when magneto is mounted.

TIMING MAGNETO TO ENGINE

Ignition timing is accomplished by correctly mounting magneto to the gear cover. Refer to "MAGNETO TIMING" in engine INSTRUCTION MANUAL for assembly procedure.

Y134 Fairbanks-Morse Magneto (Replaced By Y136) (Type FMXE2B7)



Y134 Fairbanks-Morse Magneto (Replaced By Y136)

USE WITH MODEL TJD (RADIO SHIELDED) (see pg. 93)

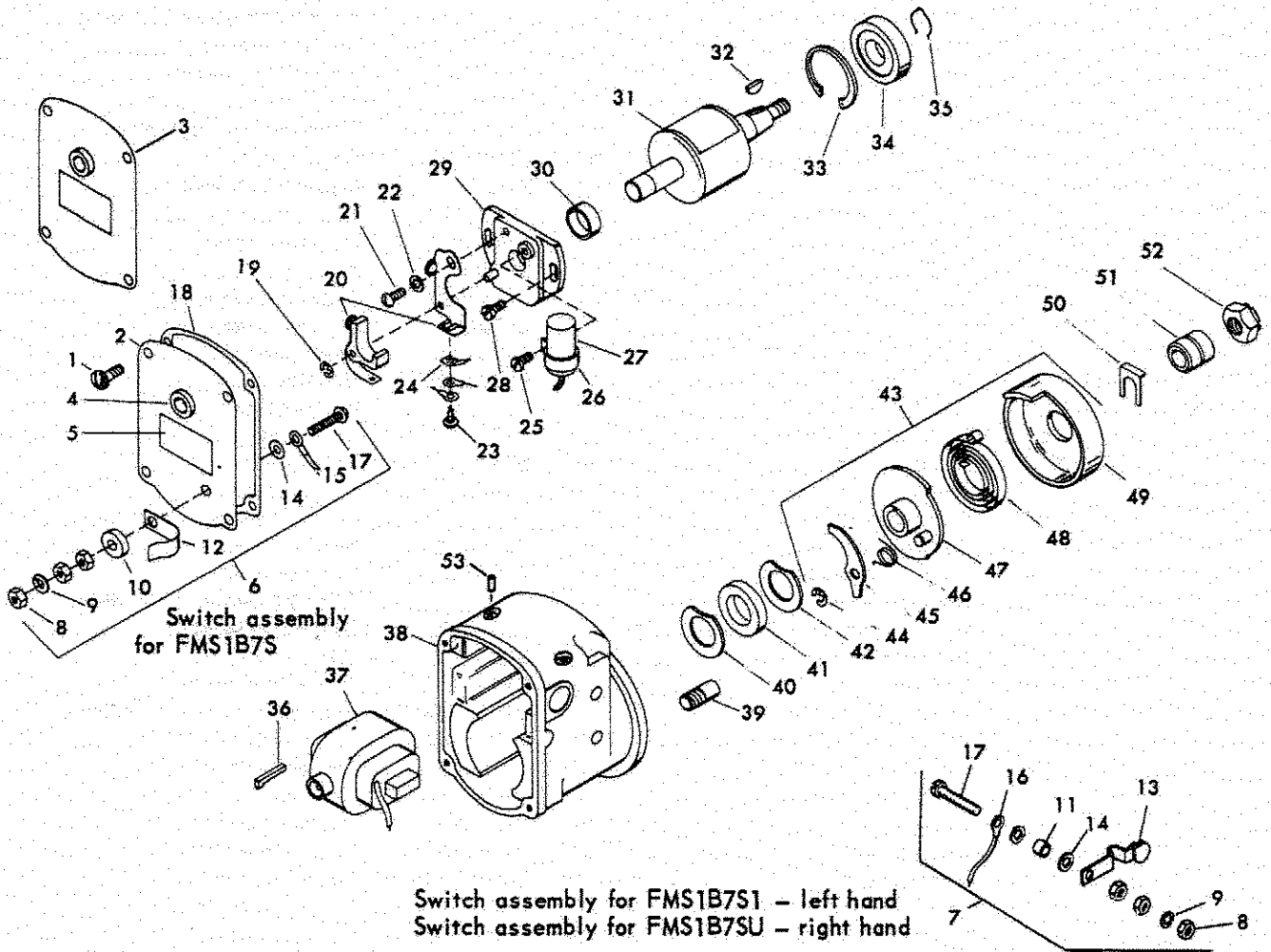
| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|--|-----|------|-------------|---|-----|
| 1 | 31CZ2430A | End cap | 1 | 30 | 31E6120 | Coil clip | 1 |
| 2 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long | 2 | 31 | 31N2514C | Switch | 1 |
| 3 | 31-10S8D | End cap screw, no. 10-24 thread x 1/2" long | 2 | 32 | 31-8S14N | Switch screw, no. 8-32 thread x 7/8" long | 1 |
| 4 | 31A6032A | Vent screen | 1 | 33 | 31K2457A | Screw bushing | 1 |
| 5 | 31A1232 | Vent cover | 1 | 34 | 31-8LW5 | Screw lock washer | 1 |
| 6 | 31-6S6N | Vent screw, no. 6-32 thread x 3/8" long | 1 | 35 | 31-8N1 | Screw nut | 1 |
| 7 | 31-10S6G | Plate screw, no. 10-24 thread x 3/8" long | 2 | 36 | 31L2514C | Terminal wire assembly | 1 |
| 8 | 31A2636 | End cap plate | 1 | 37 | 31M2514 | Switch lever | 1 |
| 9 | 31K2498 | End cap gasket | 1 | 38 | 31C6018 | Insulated washer | 1 |
| 10 | 31D2474E | Distributor block | 1 | 39 | 31R2477C | Coil | 1 |
| 11 | 31-8S8D | Block screw, no. 8-32 thread x 1/2" long | 4 | 40 | 31PP2480 | Magnetic rotor | 1 |
| 12 | 31A983B | Lead rod | 1 | 41 | 31-3K1 | Key | 1 |
| 13 | 31E2460B | Brush and spring | 1 | 42 | 31B1498B | Bearing snap ring | 1 |
| 14 | 31R2765 | Distributor rotor | 1 | 43 | 31C5949 | Drive end bearing | 1 |
| 16 | 31C1498G | Fulcrum pin snap ring | 1 | 44 | 31B1498D | Shaft snap ring | 1 |
| 17 | 31A2437A | Breaker point set | 1 | 45 | 31TZ2425 | Housing | 1 |
| 18 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 46 | 31N195 | Name plate | 1 |
| 19 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 47 | 31C6032B | Vent screen - housing | 2 |
| 20 | 31B5969 | Support screw washer | 1 | 48 | 31B6030A | Vent cover - housing | 2 |
| 21 | 31G2788 | Cam wick | 1 | 49 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 |
| 22 | 31-8S5NA | Condenser screw, no. 8-32 thread x 3/8" long | 1 | 50 | 31S2568 | Pawl stop pin | 1 |
| 23 | 31SXY2433 | Condenser | 1 | 51 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 |
| 24 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 52 | 31A2492C | Seal inner washer | 1 |
| 25 | 31D2458 | Support screw lock washer | 1 | 53 | 31G3861 | Shaft seal | 1 |
| 26 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 54 | 31A2492A | Seal outer washer | 1 |
| 27 | 31V4631 | Bearing support | 1 | 55 | 31AR2563C15 | Impulse coupling, complete ... | 1 |
| 28 | 31A5950A | Cam end bearing | 1 | 56 | 31D1498J | Pawl snap ring | 2 |
| 29 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 57 | 31Q2566 | Coupling pawl | 2 |
| | | | | 58 | 31T5963 | Coupling pawl spring | 2 |
| | | | | 59 | 31S2563 | Coupling hub | 1 |
| | | | | 60 | 31E2565 | Coupling spring | 1 |
| | | | | 61 | 31GW5957 | Coupling shell | 1 |
| | | | | 62 | 31F2572 | Coupling bushing | 1 |
| | | | | 63 | 31M2570 | Coupling nut | 1 |
| | | | | 64 | 31-10LW2 | Screw, lock washer | 1 |
| | | | | 65 | 31A2669 | Distributor rotor pin | 1 |

Y134A Fairbanks-Morse Magneto (Replaced By Y136A)

USE WITH MODEL TJD (RADIO SHIELDED) (see pg. 93)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|---|-----|------|-------------|--|-----|
| 1 | 31CZ2430A | End cap | 1 | 30 | 31E6120 | Coil clip | 1 |
| 2 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long ... | 2 | 31 | 31N2514C | Switch | 1 |
| 3 | 31-10S8D | End cap screw, no. 10-24 thread x 1/2" long ... | 2 | 32 | 31-8S14N | Switch screw, no. 8-32 thread x 7/8" long | 1 |
| 4 | 31A6032A | Vent screen | 1 | 33 | 31K2457A | Screw bushing | 1 |
| 5 | 31A1232 | Vent cover | 1 | 34 | 31-8LW5 | Screw lock washer | 1 |
| 6 | 31-6S6N | Vent screw, no. 6-32 thread x 3/8" long | 1 | 35 | 31-8N1 | Screw nut | 1 |
| 7 | 31-10S6G | Plate screw, no. 10-24 thread x 3/8" long ... | 2 | 36 | 31L2514C | Terminal wire assembly | 1 |
| 8 | 31A2636 | End cap plate | 1 | 37 | 31M2514 | Switch lever | 1 |
| 9 | 31K2498 | End cap gasket | 1 | 38 | 31C6018 | Insulated washer | 1 |
| 10 | 31D2474E | Distributor block | 1 | 39 | 31R2477C | Coil | 1 |
| 11 | 31-8S8D | Block screw, no. 8-32 thread x 1/2" long | 4 | 40 | 31M2765 | Magnetic rotor | 1 |
| 12 | 31A983B | Lead rod | 1 | 41 | 31-3K1 | Key | 1 |
| 13 | 31E2460B | Brush and spring | 1 | 42 | 31B1498B | Bearing snap ring | 1 |
| 14 | 31FY2765 | Distributor rotor | 1 | 43 | 31C5949 | Drive end bearing | 1 |
| 15 | 31A2766 | Rotor spring clip | 1 | 44 | 31B1498D | Shaft snap ring | 1 |
| 16 | 31C1498G | Fulcrum pin snap ring | 1 | 45 | 31TZ2425 | Housing | 1 |
| 17 | 31A2437A | Breaker point set | 1 | 46 | 31N195 | Name plate | 1 |
| 18 | 31-6S6Z | Terminal screw, no. 6-32 thread x 3/8" long | 1 | 47 | 31C6032B | Vent screen - housing | 2 |
| 19 | 31-8S6U | Support screw, no. 8-32 thread x 3/8" long | 1 | 48 | 31B6030A | Vent cover - housing | 2 |
| 20 | 31B5969 | Support screw washer | 1 | 49 | 31-6S4U | Cover screw, no. 6-32 thread x 1/4" long | 2 |
| 21 | 31G2788 | Cam wick | 1 | 50 | 31S2568 | Pawl stop pin | 1 |
| 22 | 31-8S5NA | Condenser screw, no. 8-32 thread x 3/8" long | 1 | 51 | 31SS14A | Coil set screw, 5/16"-24 thread x 7/8" long | 2 |
| 23 | 31SXY2433 | Condenser | 1 | 52 | 31A2492C | Seal inner washer | 1 |
| 24 | 31-6S6U | Support screw, no. 6-32 thread x 3/8" long | 1 | 53 | 31G3861 | Shaft seal | 1 |
| 25 | 31D2458 | Support screw lock washer ... | 1 | 54 | 31A2492A | Seal outer washer | 1 |
| 26 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 | 55 | 31AR2563C15 | Impulse coupling, complete ... | 1 |
| 27 | 31V4631 | Bearing support | 1 | 56 | 31D1498J | Pawl snap ring | 2 |
| 28 | 31A5950A | Cam end bearing | 1 | 57 | 31A2566 | Coupling pawl | 2 |
| 29 | 31-6S4U | Clip screw, no. 6-32 thread x 1/4" long | 1 | 58 | 31T5963 | Pawl spring | 2 |
| | | | | 59 | 31S2563 | Coupling hub | 1 |
| | | | | 60 | 31D2565 | Coupling spring | 1 |
| | | | | 61 | 31GW5957 | Coupling shell | 1 |
| | | | | 62 | 31F2572 | Coupling bushing | 1 |
| | | | | 63 | 31M2570 | Coupling nut | 1 |

**Y135S1 (Replaced By Y135AS1, FMS1B7S1) (Type FMS1B7S), Y135S5
 (Replaced By Y135AS3, FMS1B7S1) (Type FMS1B7S), Y135S3 (Replaced By
 Y135BS1, FMS1B7SU) (Type FMS1B7S) Magnetos**



Y135S1 for Std. ACN, BKN engines - with GD87C drive gear.
 Y135S5 for 28° spark adv. ACN, BKN engines - with GD87B drive gear.
 Y135S3 for AENL engines - with GD145 drive gear.

**Y135S1 (Replaced By Y135AS1), Y135S5 (Replaced By Y135AS3),
Y135S3 (Replaced By Y135BS1) Magnetos**

USE MODELS ACN, BKN WITH GD87C, GD87B, AENL WITH GD145 DRIVE GEAR (see pg. 96)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--|-----|------|----------|--|-----|
| 1 | ---- | Screw | 4 | 26 | ---- | Condenser clamp | 1 |
| 2 | ---- | End cap (FMS1B7S) | 1 | 27 | ---- | Condenser | 1 |
| 3 | ---- | End cap (FMS1B7S1, FMS1B7SU) | 1 | 28 | ---- | Screw, no. 8-32 thread x 1/2" long | 2 |
| 4 | PH597 | Grommet | 1 | 29 | ---- | Bearing support assembly | 1 |
| 5 | ---- | Name plate | 1 | 30 | ---- | Bearing | 1 |
| 6 | ---- | Switch assembly (FMS1B7S) | 1 | 31 | YM4 | Rotor assembly (NLA) | 1 |
| 7 | ---- | Switch assembly (FMS1B7S1, FMS1B7SU) | 1 | 32 | PL21 | Woodruff key | 1 |
| 8 | ---- | Nut, no. 8-32 thread | 3 | 33 | ---- | Snap ring | 1 |
| 9 | ---- | Lock washer, no. 8 | 1 | 34 | 31C5949 | Bearing | 1 |
| 10 | ---- | Insulating bushing (FMS1B7S) | 1 | 35 | ---- | Snap ring | 1 |
| 11 | ---- | Insulating bushing (FMS1B7S1, FMS1B7SU) | 1 | 36 | ---- | Coil wedge (FMS1B7S) | 2 |
| 12 | ---- | Ground spring (FMS1B7S) | 1 | 37 | YM5 | Coil | 1 |
| 13 | ---- | Insulated lever (FMS1B7S1, FMS1B7SU) | 1 | 38 | ---- | Housing | 1 |
| 14 | ---- | Insulating washer (1 used for FMS1B7S; 2 used for FMS1B7S1, FMS1B7SU) | 1 | 39 | ---- | Stop pin | 1 |
| 15 | ---- | Wire assembly (FMS1B7S) | 1 | 40 | ---- | Washer | 1 |
| 16 | ---- | Wire assembly (FMS1B7S1, FMS1B7SU) | 1 | 41 | 31G3861 | Seal | 1 |
| 17 | ---- | Screw, no. 8-32 thread x 7/8" long | 1 | 42 | ---- | Washer | 1 |
| 18 | QD852 | Gasket | 1 | 43 | YM6 | Coupling, 13° lag angle | 1 |
| 19 | ---- | Snap ring | 1 | 44 | ---- | Snap ring | 1 |
| 20 | ---- | Point set | 1 | 45 | ---- | Pawl | 1 |
| 21 | ---- | Support screw | 1 | 46 | ---- | Spring | 1 |
| 22 | ---- | Washer | 1 | 47 | ---- | Hub assembly, 13° lag angle | 1 |
| 23 | ---- | Terminal screw | 1 | 48 | ---- | Impulse spring | 1 |
| 24 | ---- | Tab (FMS1B7S) | 1 | 49 | ---- | Impulse shell | 1 |
| 25 | ---- | Condenser screw, no. 8-32 thread x 3/8" long | 1 | 50 | ---- | Washer | 1 |
| | | | | 51 | ---- | Coupling bushing | 1 |
| | | | | 52 | ---- | Impulse nut | 1 |
| | | | | 53 | ---- | Screw (FMS1B7S1, FMS1B7SU) | 2 |
| | | | | — | YQ19 | Points and condenser kit (includes 20, 23, 26, 27) | 1 |
| | | | | — | YQ20 | Repair kit (includes 1, 18-21, 23, 26, 27, 30, 33, 35) | 1 |

Y135S1 (Replaced By Y135AS1, FMS1B7S1) (Type FMS1B7S), Y135S5
(Replaced By Y135AS3, FMS1B7S1) (Type FMS1B7S), Y135S3 (Replaced By
Y135BS1, FMS1B7SU) (Type FMS1B7S) Magnetos

Service and Adjustment

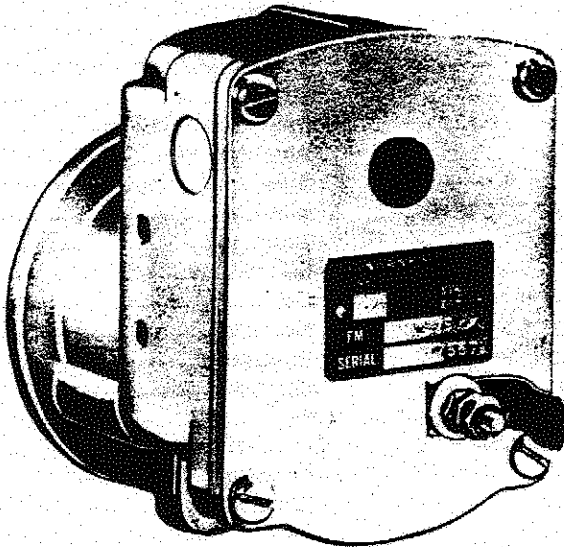


Fig. 1

GENERAL DESCRIPTION

This one-cylinder magneto, built specifically for application on Wisconsin single cylinder engines, has a two-pole magnetic rotor and a single lobe cam, producing one ignition spark per revolution. It is fitted with a dependable, single-pawl impulse coupling which facilitates 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.

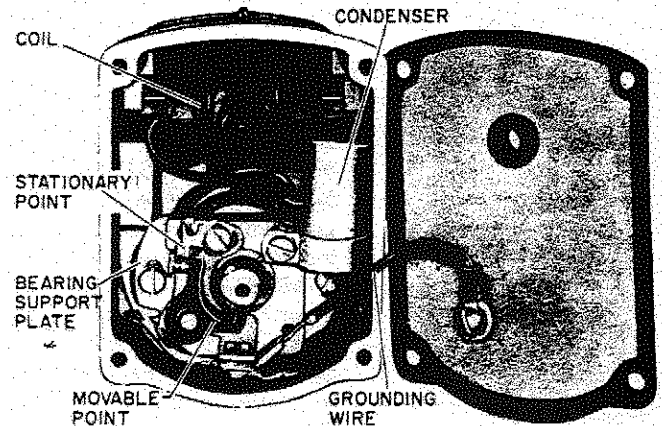


Fig. 2

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.

DISASSEMBLY

END CAP

Remove the magneto end cap. The ground wire is attached to the end cap and the breaker points. Move the end cap to the side to gain access to the wire assembly at the points. This wire assembly has a

**Y135S1 (Replaced By Y135AS1, FMS1B7S1) (Type FMS1B7S), Y135S5
(Replaced By Y135AS3, FMS1B7S1) (Type FMS1B7S), Y135S3 (Replaced By
Y135BS1, FMS1B7SU) (Type FMS1B7S) Magnetos (Cont.)**

push-on type connector and may be pulled apart to disconnect the ground wire. Remove the terminal screw, releasing the coil ground contact (the coil wire on the condenser side of the magneto), the condenser lead, the grounding wire tab, and the breaker arm spring. Pull the connectors, not the wires, to prevent damage. See Fig. 2

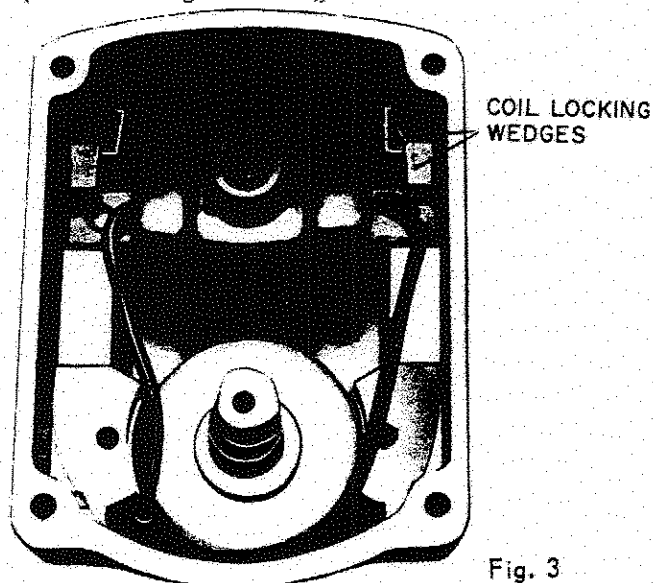


Fig. 3

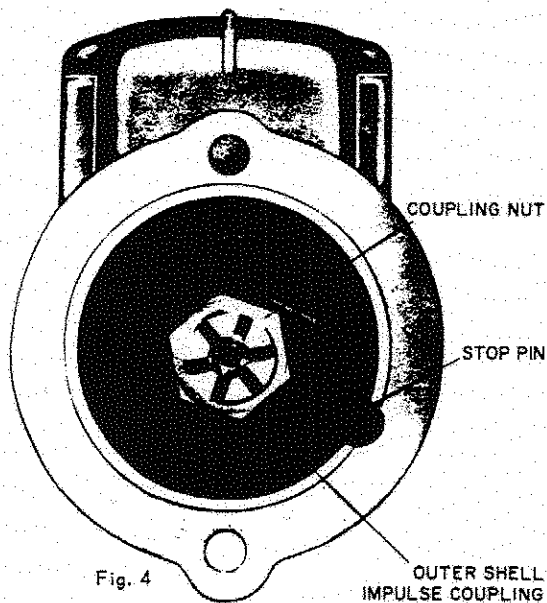


Fig. 4

BREAKER POINTS

Remove the fulcrum pin snap ring; lift the point set from the bearing plate. Inspect the points for pitting, oxidation or shorting. If the points are badly worn they should be replaced.

CONDENSER

Remove the condenser screw, which will also release the coil wire. Lift out the condenser and test for leakage, high resistance and correct capacity.

BEARING SUPPORT

Scribe a line to mark position of bearing plate in housing. The bearing support is the mounting plate for the breaker points and the condenser. Remove the two bearing support mounting screws and lift out the bearing support plate. Inspect the bearing for excessive wear.

COIL (Fig. 3)

With the bearing support removed, take out the two coil locking wedges with a blade type screw driver. Lift out the coil assembly. Test the coil for resistance in the primary and shorted secondary windings.

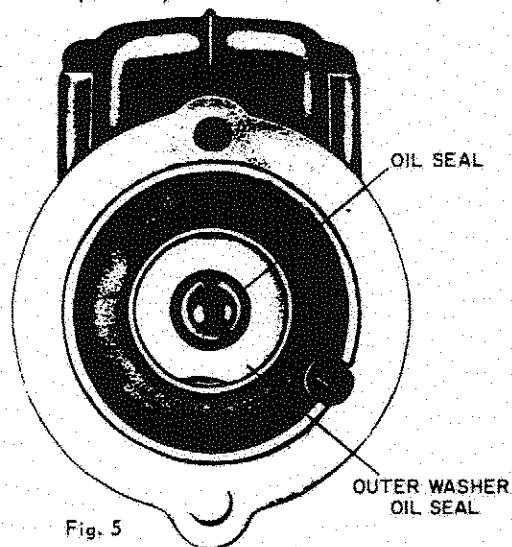


Fig. 5

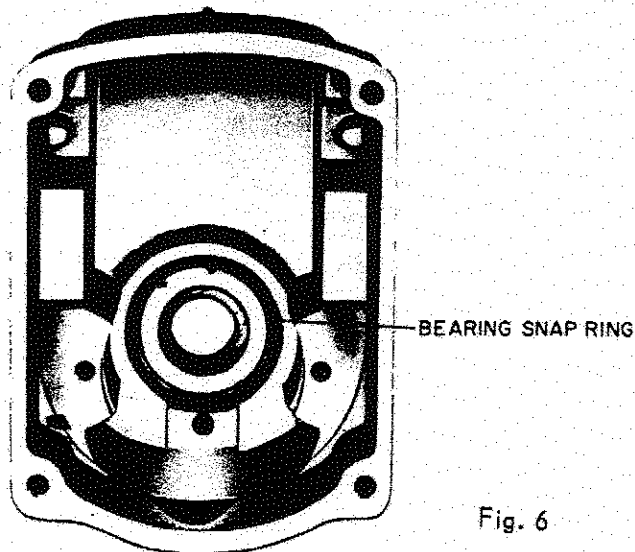


Fig. 6

**Y135S1 (Replaced By Y135AS1, FMS1B7S1) (Type FMS1B7S), Y135S5
(Replaced By Y135AS3, FMS1B7S1) (Type FMS1B7S), Y135S3 (Replaced By
Y135BS1, FMS1B7SU) (Type FMS1B7S) Magnetos (Cont.)**

IMPULSE COUPLING (Fig. 4)

Remove the coupling nut, bushing, plate washer, outer shell and spring assembly. Remove the coupling hub with a suitable puller. Inspect coupling pawls for excessive wear. Replace if necessary. Also remove stop pin with screwdriver and inspect for wear. Replace if necessary.

MAGNETIC ROTOR (Fig. 5)

Using a narrow screwdriver, remove the outer washer, oil seal, inner washer, and the shaft snap ring. Press the rotor out of the housing. Remove staking ridges from housing.

BEARING - DRIVE END (Fig. 6)

Remove the bearing snap ring. Using a socket or other suitable tool, press out the bearing; inspect the bearing for wear and rough operation. Replace if necessary.

BEARING SUPPORT ASSEMBLY BEARING

Place the bearing support assembly on the open jaws of a vise. Be sure the vise jaws are open only as far as is needed to allow the bearing to pass through. Using a flat punch, drive out the bearing.

REASSEMBLY

Before reassembly clean and inspect all parts. Replace all worn or defective parts.

BEARING - DRIVE END

If original bearing is being reused, pack bearing with IC9 bearing grease.

Using a socket or other suitable tool press the bearing into the housing until the bearing seats against the shoulder in the housing. Install the bearing snap ring.

BEARING SUPPORT ASSEMBLY BEARING

Place the bearing support assembly on a firm flat surface. Using a socket for support, press the cam end bearing, carefully centered, into the support plate.

MAGNETIC ROTOR

The rotor magnets used in this magneto are made of a stable alnico material which retains its charge for long periods of time under normal conditions; therefore recharging should not be required.

Press the rotor into the drive end bearing until it seats against the bearing. Install shaft snap ring,

new inner washer, new oil seal and new outer washer. Stake in place.

IMPULSE COUPLING

Key the coupling assembly onto the rotor shaft. Replace the plate washer, bushing and coupling nut.

COIL

Position the coil in the housing with the coil leads and hi-tension connector outward. Install the coil wedges and seat by lightly tapping into place with a lightweight hammer.

BEARING SUPPORT PLATE

Position the bearing support plate, matching the lines which were scribed at disassembly. Tighten screws.

CONDENSER

Install the condenser with the ground wire from the coil; tighten the screw securely.

BREAKER POINTS

Connect the coil ground contact, condenser lead, shutdown wire, and the breaker arm spring to the stationary point with the terminal screw. Do not tighten at this time. Install the stationary and movable points over the fulcrum pin and onto the bearing support plate. Be sure the stationary point is correctly positioned to lay flat on the bearing support plate. Install the support screw into the bearing support plate. Install the fulcrum pin snap ring. Do not lubricate the fulcrum pin. Position the coil wire, condenser lead, shutdown wire tab and the breaker arm spring so they do not contact any metal parts, and tighten the terminal screw.

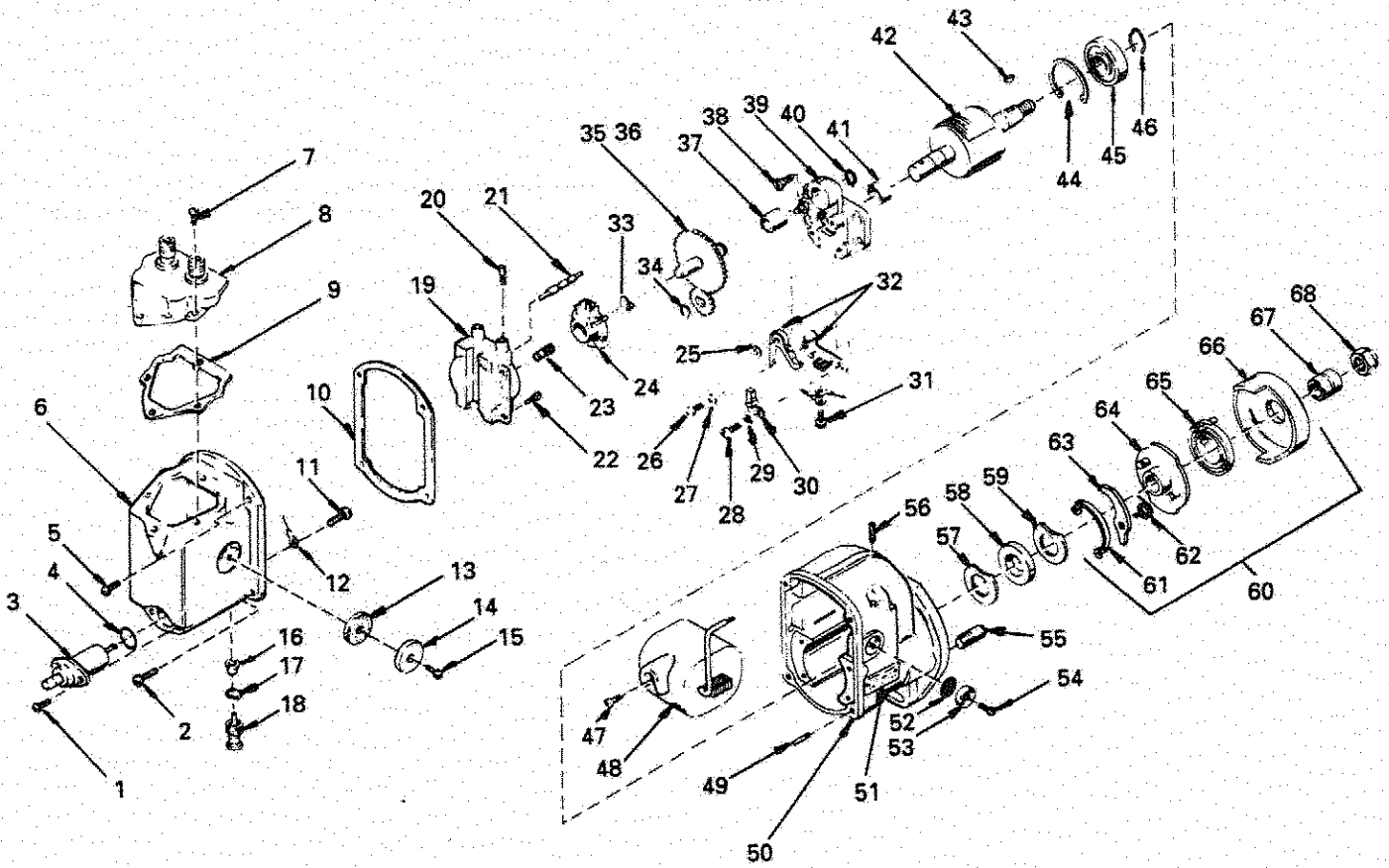
To adjust the points for correct clearance turn the rotor so that the highest point of the cam is under the rubbing block and the points are being held at their widest opening. Adjust this opening by moving the stationary point until a clearance of .015 is obtained. Tighten all screws securely. Rotate the cam several revolutions and recheck point opening. Lubricate the cam with a very light film of IC9 bearing grease. Avoid excessive greasing.

END CAP

Connect shutdown wire from end cap to tab at point assembly. Be sure not to contact any metal parts. The end cap gasket is all the seal required on this magneto. Install end cap and tighten the four screws.

Check operation of magneto on a magneto test bench following manufacturer's procedure.

Y136 Magneto (Type FMXE2B7H)



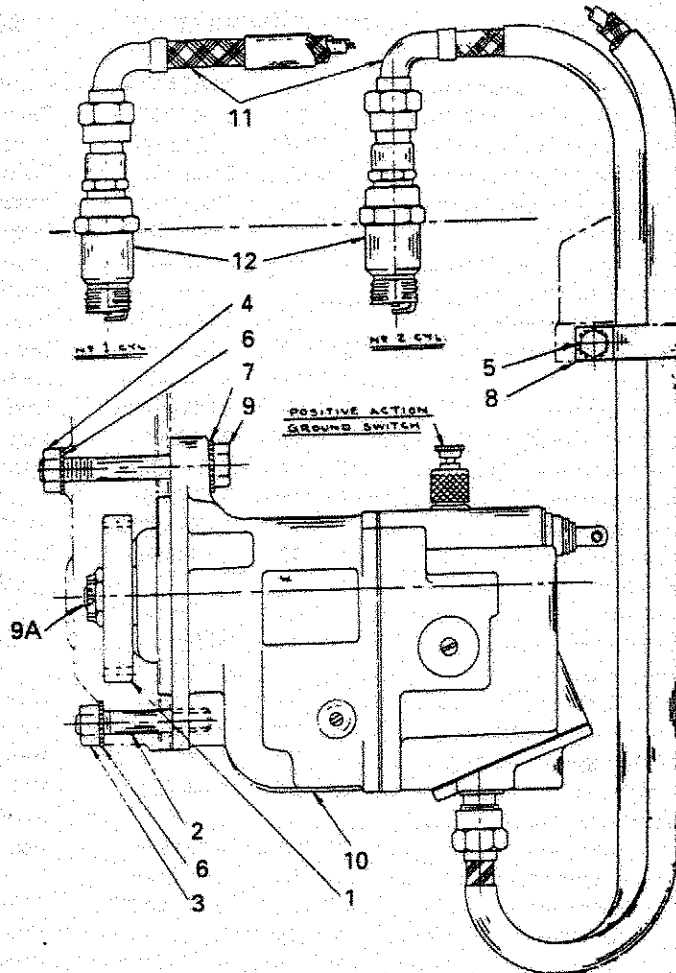
Y136 Magneto

USE WITH MODEL TJD (RADIO SHIELDED) (see pg. 101)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|-----------|---|-----|------|------------|---|-----|
| 1 | 31-6S4U | Condenser mounting screw, no. 6-32 thread x 1/4" long | 2 | 32 | 31A2437A | Point set | 1 |
| 2 | 31-10S20D | End cap screw, no. 10-24 thread x 1-1/4" long filister head | 2 | 33 | 31A2766 | Spring clip | 1 |
| 3 | 31WX2433 | Condenser | 1 | 34 | 31B1498B | Snap ring | 1 |
| 4 | 31P2473 | "O" ring | 1 | 35 | 31Q5952 | Rotor gear | 1 |
| 5 | 31-10S12D | End cap screw, no. 10-24 thread x 3/4" long filister head | 2 | 36 | 31Q5939 | Distributor shaft and gear | 1 |
| 6 | 31EB2430A | End cap | 1 | 37 | 31D5950C | Distributor bearing | 1 |
| 7 | 31-8S8D | Cover screw, no. 8-32 thread x 1/2" long | 4 | 38 | 31-8S6G | Support screw, no. 8-32 thread x 3/8" long | 4 |
| 8 | 31A800W | End cap cover | 1 | 39 | 31X4631 | Bearing support | 1 |
| 9 | 31B682A | Cover gasket | 1 | 40 | 31G1498 | Snap ring | 1 |
| 10 | 31K2498 | End cap gasket | 1 | 41 | 31A5950A | Cam end bearing | 1 |
| 11 | 31-8S5NA | Wire assembly screw | 1 | 42 | 31KW2480 | Rotor | 1 |
| 12 | 31T2499A | Wire assembly | 1 | 43 | 31-3K1 | Key | 1 |
| 13 | 31A6032A | Vent screen | 1 | 44 | 31B1498B | Snap ring | 1 |
| 14 | 31A1232 | Vent cover | 1 | 45 | 31C5949 | Drive end bearing | 1 |
| 15 | 31-6S6N | Cover screw, no. 6-32 thread x 3/8" long | 1 | 46 | 31B1498B | Shaft snap ring | 1 |
| 16 | 31F4373 | Ground switch bushing | 1 | 47 | 31-6S4U | Contact screw, no. 6-32 thread x 1/4" long | 1 |
| 17 | 31E2513A | Ground switch spring | 1 | 48 | 31RS2477C | Coil | 1 |
| 18 | 31GW2514 | Plunger and nut assembly | 1 | 49 | 31G2533 | Housing dowel | 1 |
| 19 | 31DX2474 | Distributor block | 1 | 50 | 31GR2425 | Housing | 1 |
| 20 | 31B3969 | Grounding spring | 2 | 51 | 31N195 | Name plate | 1 |
| 21 | 31F983B | Suppressor assembly | 1 | 52 | 31C6032B | Vent screen | 2 |
| 22 | 31-8S8D | Distributor screw, no. 8-32 thread x 1/2" long | 4 | 53 | 31B6030A | Vent cover | 2 |
| 23 | 31E2460B | Brush and spring | 1 | 54 | 31-6S4U | Vent screw, no. 6-32 thread x 1/4" long | 2 |
| 24 | 31X2765 | Distributor rotor | 1 | 55 | 31S2568 | Pawl stop pin | 1 |
| 25 | 31C1498G | Snap ring | 1 | 56 | 31SS14A | Coil set screw | 2 |
| 26 | 31-6S6U | Screw, no. 6-32 thread x 3/8" long | 1 | 57 | 31A2492C | Inner seal | 1 |
| 27 | 31D2458 | Washer, no. 6 | 1 | 58 | 31G3861 | Shaft seal | 1 |
| 28 | 31-8S6U | Support screw | 1 | 59 | 31A2492A | Outer seal | 1 |
| 29 | 31B5969 | Support washer | 2 | 60 | 31AR3563C | Coupling complete | 1 |
| 30 | 31G2788 | Cam wick | 1 | 61 | 31D1498J | Pawl snap ring | 2 |
| 31 | 31-6S6Z | Screw, no. 6-20 thread x 3/8" long, round head | 1 | 62 | 31T5963 | Pawl spring | 2 |
| | | | | 63 | 31Q2566 | Coupling pawl | 2 |
| | | | | 64 | 31S2563-27 | Hub assembly | 1 |
| | | | | 65 | 31D2565 | Coupling spring | 1 |
| | | | | 66 | 31GW5957 | Coupling shell | 1 |
| | | | | 67 | 31F2572 | Gear bushing | 1 |
| | | | | 68 | 31M2570 | Coupling nut | 1 |

EYC104 Magneto

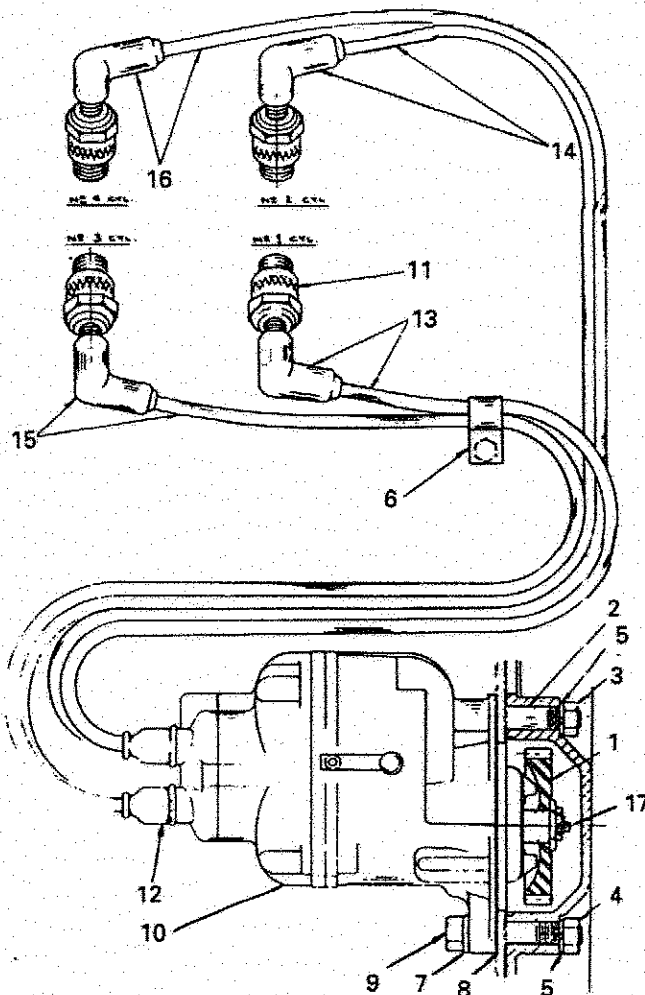
USE WITH MODEL THD (RADIO SHIELDED)



| ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|---|-----|
| 1 | GD93C3 | Gear | 1 |
| 2 | PC110 | Stud | 1 |
| 3 | PD11 | Nut | 1 |
| 4 | PD79 | Nut | 1 |
| 5 | PE34A | Lock washer | 1 |
| 6 | PE56A | Lock washer | 2 |
| 7 | PE76A | Lock washer | 1 |
| 8 | PG559 | Clip | 1 |
| 9 | XD113 | Screw | 1 |
| 9A | XI34 | Pin | 1 |
| 10 | Y136 | Magneto (Fairbanks-Morse no. FMXE2B7H) | 1 |
| 11 | YD300-32 | Ignition wire assembly | 2 |
| 12 | YD311 | Spark plug | 2 |

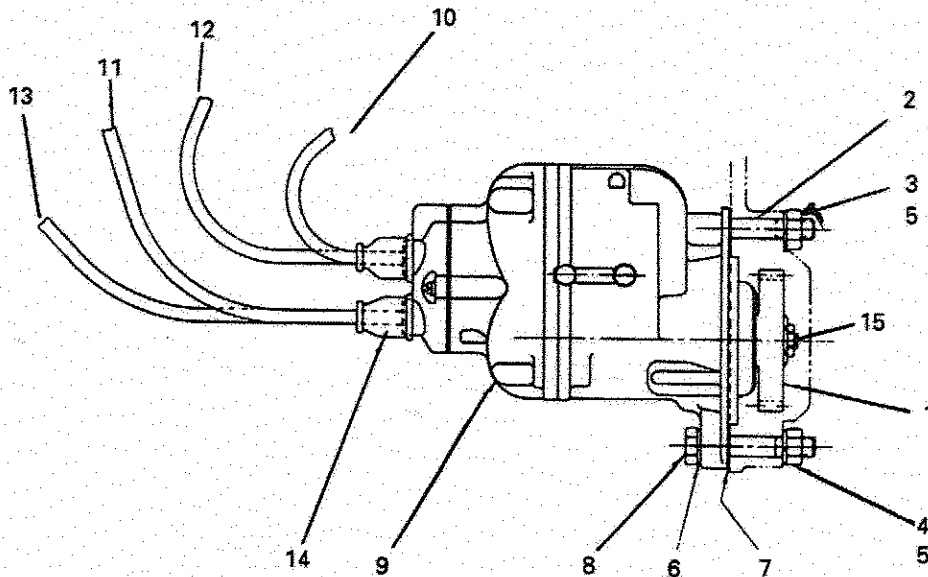
EYC108 Magneto

USE WITH MODEL VG4D



| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--|-----|------|----------|-----------------------------------|-----|
| 1 | GD103-1 | Gear | 1 | — | YQ8 | Points and condenser kit | 1 |
| 2 | PC429 | Stud | 1 | — | YQ9 | Overhaul kit | 1 |
| 3 | PD11 | Nut, 3/8" x 24 thread | 1 | 11 | YD6S1 | Spark plug, 18 mm (D16J) | 4 |
| 4 | PD79 | Nut, 3/8" x 16 thread | 1 | 12 | YD20 | Nipple | 4 |
| 5 | PE5 | Lock washer, 3/8" | 2 | 13 | YL339-32 | Ignition wire, no. 1 cylinder ... | 1 |
| 6 | PG314 | Clip | 2 | 14 | YL339-38 | Ignition wire, no. 2 cylinder ... | 1 |
| 7 | PH22A | Washer, 3/8" | 1 | 15 | YL339-34 | Ignition wire, no. 3 cylinder ... | 1 |
| 8 | QD616 | Gasket | 1 | 16 | YL339-42 | Ignition wire, no. 4 cylinder ... | 1 |
| 9 | XD33 | Screw, 3/8"-16 thread x 2-1/4" long | 1 | 17 | XI34 | Cotter pin | 1 |
| 10 | Y97S1 | Magneto (Fairbanks-Morse no. FMX4B7A) (replaces Y95S1) | 1 | | | | |

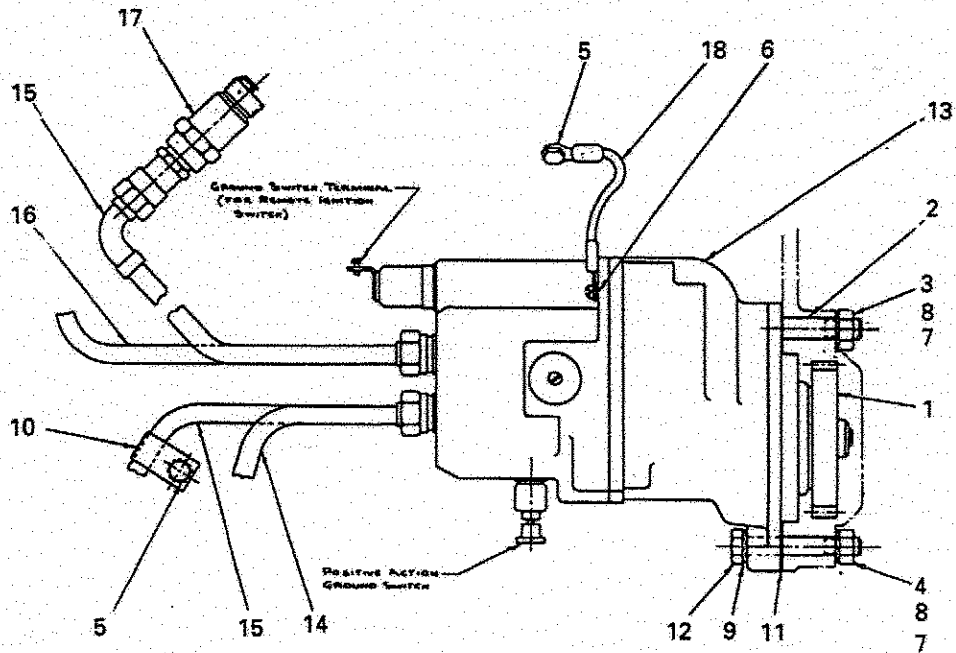
EYC109 Magneto
USE WITH MODEL W4-1770



| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|--|-----|------|----------|---|-----|
| 1 | GD93C4 | Gear | 1 | — | YQ5 | Points and condenser kit | 1 |
| 2 | PC110 | Stud | 1 | — | YQ2 | Overhaul kit | 1 |
| 3 | PD11 | Nut, 3/8"-24 thread | 1 | 10 | YL339-26 | Ignition cable, no. 1 cylinder | 1 |
| 4 | PD79 | Nut, 3/8"-16 thread | 1 | 11 | YL339-32 | Ignition cable, no. 3 cylinder | 1 |
| 5 | PE5 | Lock washer | 2 | 12 | YL339-34 | Ignition cable, no. 2 cylinder | 1 |
| 6 | PH22A | Washer | 1 | 13 | YL339-40 | Ignition cable, no. 4 cylinder | 1 |
| 7 | QD616 | Gasket | 1 | 14 | YD20 | Terminal protector | 4 |
| 8 | XD33 | Screw, 3/8"-16 thread x 2-1/4" long | 1 | 15 | XI34 | Cotter pin | 1 |
| 9 | Y97S2 | Magneto (Fairbanks-Morse no. FMX4B7A) | 1 | | | | |
| — | YQ8 | Points and condenser kit | 1 | | | | |
| — | YQ9 | Overhaul kit | 1 | | | | |
| — | Y95S2 | Magneto (WICO no. XHG4) (optional) | 1 | | | | |

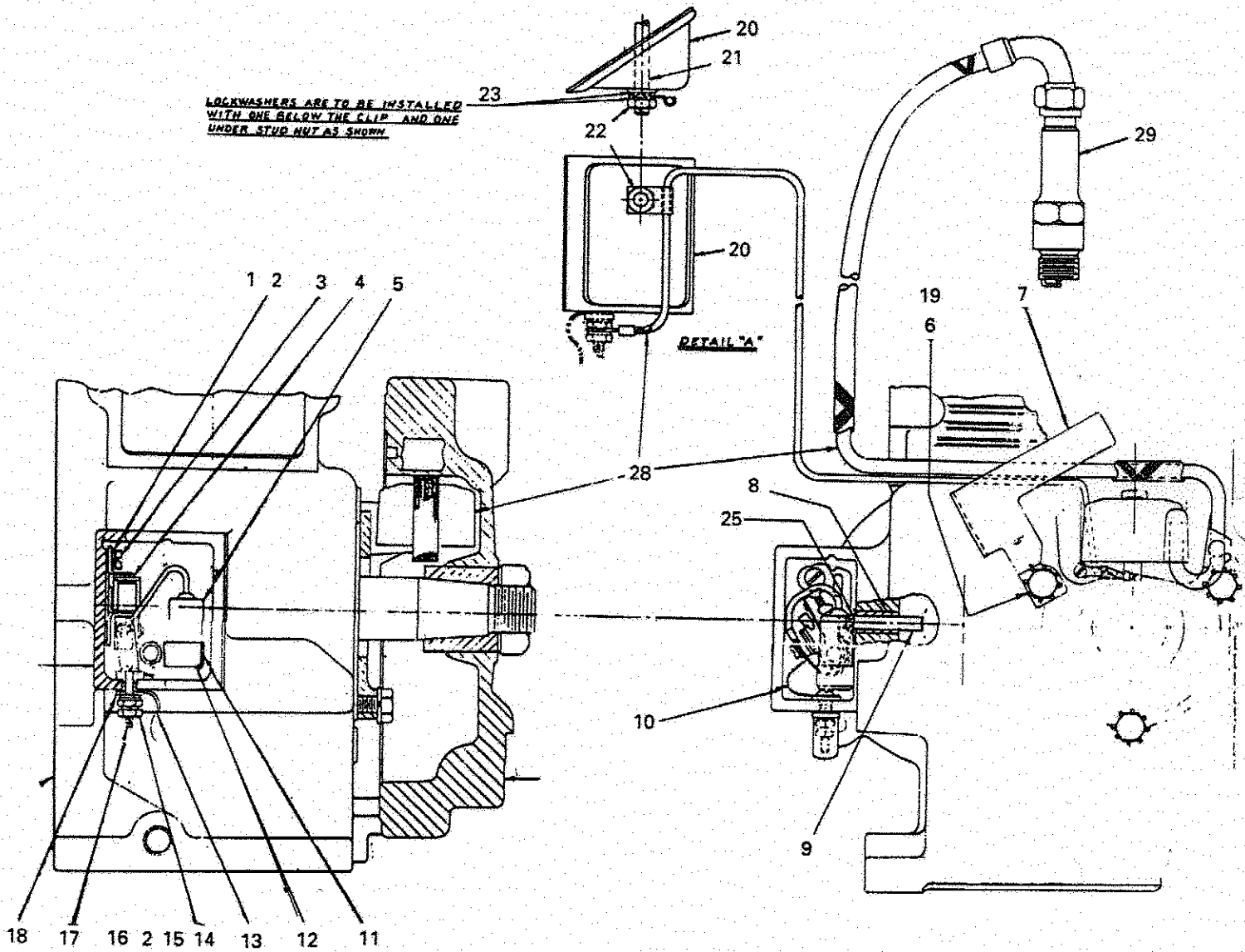
EYC130 Magneto

USE WITH MODELS VG4D, VH4D (RADIO SHIELDED)



| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|---|-----|------|----------|-----------------------------------|-----|
| 1 | GD103-1 | Gear..... | 1 | 13 | Y98CS1 | Magneto (VG4D) | 1 |
| 2 | PC429 | Stud..... | 1 | | Y98CS2 | Magneto (VH4D) | 1 |
| 3 | PD11 | Nut, 3/8"-24 thread..... | 1 | | | (includes GD93C4)..... | 1 |
| 4 | PD79 | Nut, 3/8"-16 thread..... | 1 | 14 | YD300-23 | Lead..... | 1 |
| 5 | PE34A | Lock washer..... | 5 | 15 | YD300-32 | Lead..... | 2 |
| 6 | PE45 | Lock washer..... | 1 | 16 | YD300-40 | Lead..... | 1 |
| 7 | PE46A | Lock washer..... | 6 | 17 | YD311 | Spark plug..... | 4 |
| 8 | PE56A | Lock washer..... | 4 | 18 | YL355-5 | Strap..... | 1 |
| 9 | PE76A | Lock washer..... | 1 | | XI34 | Cotter pin (not illustrated)..... | 1 |
| 10 | PG558 | Clip..... | 4 | | | | |
| 11 | QD616 | Gasket..... | 1 | | | | |
| 12 | XD33 | Screw, 3/8"-16 thread x 2-1/4" long..... | 1 | | | | |

EYC134 Magneto



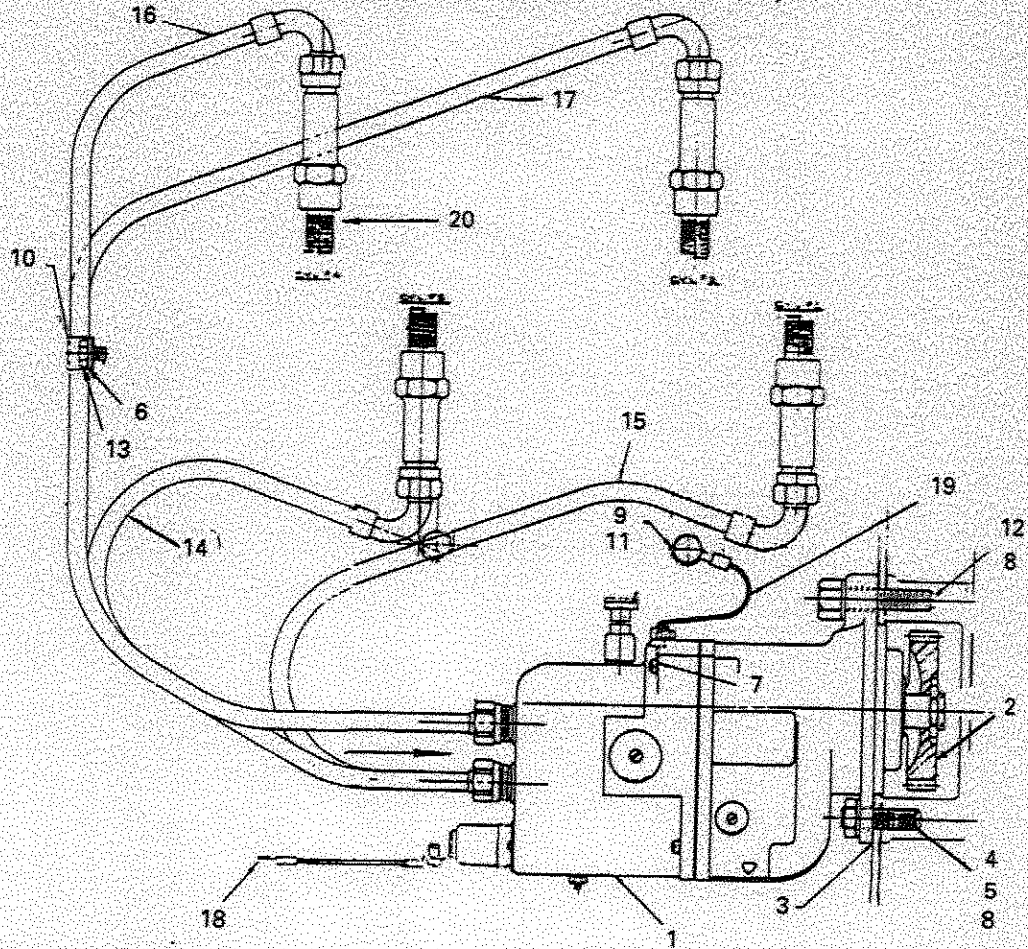
EYC134 Magneto

USE WITH MODEL TRA12D (RADIO SHIELDED) (see pg. 109)

| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|---|-----|------|----------|---|-----|
| 1 | PH236 | Plain washer | 1 | 15 | PE72 | Interior washer | 1 |
| 2 | PE89 | Lock washer | 2 | 16 | PH86B | Plain washer | 1 |
| 3 | XA4 | Screw, no. 8-32 thread x 3/8" long | 2 | 17 | YD321 | Connection stud | 1 |
| — | XD140 | Cap screw (not illustrated) | 1 | 18 | YD316 | Insulated washer | 1 |
| 4 | YD314A | Contact set | 1 | 19 | XD177 | Cap screw, 5/16"-18 thread x 1" long | 3 |
| 5 | YD315 | Condenser | 1 | 20 | SA130A | Cover | 1 |
| 6 | PE75 | Lock washer | 3 | 21 | PC590 | Stud | 1 |
| 7 | PG1144A | Clip | 1 | 22 | PD77 | Nut | 1 |
| 8 | PF157 | Bushing | 1 | 23 | PE74 | Lock washer | 2 |
| 9 | PA428LS1 | Push pin (includes PM221) | 1 | 28 | Y130A1S1 | Stator assembly, WICO Magneto (includes ME170-1, PH529, 90-11409; includes coil assembly) | 1 |
| 10 | YD326 | Terminal strip | 1 | | | | |
| 11 | YD325 | Clip | 1 | | | | |
| 12 | YD324 | Insulated washer | 1 | | | | |
| 13 | PG1132 | Grounding clip | 1 | | | | |
| 14 | PD153-2 | Nut, no. 8-32 thread | 2 | 29 | YD311 | Spark plug | 1 |

EYC137 Magneto

USE WITH MODEL V465D (RADIO SHIELDED)



| ITEM | PART NO. | DESCRIPTION | QTY | ITEM | PART NO. | DESCRIPTION | QTY |
|------|----------|---|-----|------|----------|--|-----|
| 1 | Y127S1 | Magneto assembly (includes 2, 3; includes XI34) | 1 | 12 | XD30 | Screw, 3/8"-16 thread x 1-1/2" | 1 |
| 2 | GD103A | Gear | 1 | 13 | XD4 | Screw, 1/4"-20 thread x 1/2" long | 1 |
| 3 | QD616 | Gasket | 1 | 14 | YD300-14 | Shielding assembly, no. 3 cylinder | 1 |
| — | XI34 | Cotter pin (not illustrated) | 1 | 15 | YD300-17 | Shielding assembly, no. 1 cylinder | 1 |
| 4 | PC604 | Stud, 3/8" thread x 7/16" long | 1 | 16 | YD300-32 | Shielding assembly, no. 4 cylinder | 1 |
| 5 | PD83 | Nut, 3/8"-24 thread | 1 | 17 | YD300-40 | Shielding assembly, no. 2 cylinder | 1 |
| 6 | PE34A | Lock washer, 1/4" | 1 | 18 | YL352-30 | Wire assembly | 1 |
| 7 | PE45 | No. 10 external tooth washer | 1 | 19 | YL353-5 | Wire assembly | 1 |
| 8 | PE56A | Lock washer, 3/8" | 2 | 20 | YD302 | Spark plug | 4 |
| 9 | PE75 | Lock washer, 5/16" | 1 | | | | |
| 10 | PG559 | Clip | 1 | | | | |
| 11 | PH77A | Washer, 11/32" I.D. | 1 | | | | |