

S-1200 Series High Tension Magneto

CONTINENTAL IGNITION SYSTEMS

SERVICE SUPPORT MANUAL



Technical Portions Approved by the FAA

Section 1. Introduction and Specifications

1-1. General

This manual provides complete maintenance instructions with illustrated parts list for S-1200 Series Magnetos, manufactured by Continental Motors. S-1200 Series Magnetos convert mechanical energy into a sequenced series of high-voltage pulses for reciprocating engine ignition.

This manual is subdivided with sub-heads as listed in the Table of Contents. Revision service will be provided, as required. This manual may be inserted as Chapter 74-10 of applicable Air Transport Association (ATA) format publications.

These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency to be met in connections with installation, operation, or maintenance. Should further information be desired or particular problems arise which are not covered sufficiently for purchaser's purpose, contact Continental Motors, Aircraft Products using the contact information provided under the heading "Contact Information" on page viii of this manual.

Good standard shop practices and safety precautions should be observed at all times to avoid damage to equipment and/or injury to personnel.

All maintenance instructions in this manual have been shop verified. Shop verified procedures are those by which the manufacturer has accomplished all Disassembly, Assembly, Testing and Troubleshooting by performing the functions described in this manual on equipment identical in configuration to that described.

Dimensions are provided in U.S. Standard Units. For reference, abbreviations are listed in Table 1-1.

Numbers in parentheses following part nomenclature refer to the illustrated parts in Figure 1 of the "Illustrated Parts List" unless otherwise specified.

For specific information regarding Continental Motors Ignition Harnesses, Ignition Switches, and Starting Vibrators used in conjunction with S-1200 Series Magnetos, consult the applicable service manual and all applicable service bulletins.

Service Bulletins issued subsequent to the date of this manual supersede and supplement the information contained in this manual. Such bulletins must be complied with whenever equipment covered in this manual is inspected, tested, adjusted, maintained or overhauled.

Table 1-1. Abbreviations

US Standard Unit	Abbreviation
Degrees Fahrenheit	°F
Foot Pound	ft-lbs.
Inch	in.
Inch Pound	in-lbs.
Pound (weight)	lb.
Standard Cubic Feet Per Hour	SCFH
Pounds per Square Inch, Gauge	psig

1-2. Specifications**Table 1-2. Table of Leading Particulars**

Subject	Data
Lubrication & Compounds	
Cam, Cam Follower Felt	Breaker Felt Lubricant, Part No. 10-400536-1
Distributor Block Bushing, Felt Washer	Distributor Block Lubricant, Part No. 10-391200
Housing Pole Shoes, Rotor Pole Pieces	Silicone-Free Rust Preventive
Impulse Coupling Spring	Light Oil
Magneto Shaft Taper	Part No. 646943
Oil Seal, Sleeve Bearing	SAE 30 Oil
Gear Teeth	Miller-Stephenson MS-122AD, CMI Part No. 10-400533
Testing	
Coming-in-speed	150 RPM
Spark gap setting	0.157 in. (4mm)
Tolerances	
Capacitor	0.375 μ farads $\pm$ 10% 0.004 ohm feed through (maximum)
Coil Resistance	
Primary	1 - 1.5 ohms
Secondary	20,000 - 26,000 ohms
Contact Point Clearance	
Main (4 and 6 cylinder)	0.016 $\pm$ 0.003 in.
Main (8 cylinder with retard contacts)	0.013 $\pm$ 0.001 in.
Main (8 cylinder without retard contacts)	0.015 $\pm$ 0.001 in.
Retard (4 and 6 cylinder)	0.016 $\pm$ 0.006 in.
Retard (8 cylinder)	0.015 $\pm$ 0.005 in.
Tachometer	0.018 $\pm$ 0.002 in.
"E" Gap (4 and 6 cylinder)	15° $\pm$ 2° Main Contact
"E" Gap (8 cylinder)	12° $\pm$ 1° Main Contact
Pressurized Magneto Leakage	0.0005 to 0.00025 lbs./min at 2.9 to 3.1 psig
Torques	
Contact Support Screws	20 to 25 in-lbs.
Distributor Block Studs	Start 4 to 8 in-lbs. Final 18 to 22 in-lbs.
Cam Screw ¹	21 to 25 in-lbs.
Drive Shaft Nut	180 to 300 in-lbs (15 to 25 ft-lbs.)
Capacitor Mounting Screws	8 to 12 in-lbs.
Flange Screws	65 to 85 in-lbs.
Retard Lead Screw	24 to 26 in-lbs.
Cover Securing Screw	30 to 35 in-lbs.
Ventilator Plug	10 to 15 in-lbs.
Timing Window Plug	10 to 15 in-lbs.
Harness Securing Nuts	18 to 22 in-lbs.
Switch and Retard Lead Nuts	15 to 17 in-lbs.
Pressurized Bushing/Orifice	60 to 80 in-lbs.
Miscellaneous	
Magneto Drive Speeds	4 cyl. - engine speed 6 cyl. - 1 1/2 engine speed 8 cyl. - engine speed

1. CAUTION: Self locking cam screw is single use. If loosened or removed for any reason, replace with a new self-locking screw.

Section 2. Description and Operation

2-1. General

S-1200 Series Magnetos are designed to generate and distribute high voltage ignition for four, six, and eight cylinder aircraft engines.

To obtain the retard spark necessary for starting, S-1225 and S-1227 Series Magnetos employ an impulse coupling, and S-1204, S-1208, S-1254, and S-1258 Magnetos include an additional contact assembly used in conjunction with a starting vibrator. Figure 2-1 shows the components used in a typical S-1200 Ignition System incorporating a starting vibrator. This system consists of a single contact assembly magneto (item 1), a dual contact assembly magneto (item 1), an ignition harness (item 2), a combination ignition and starter switch (item 3), and a starting vibrator (item 4).

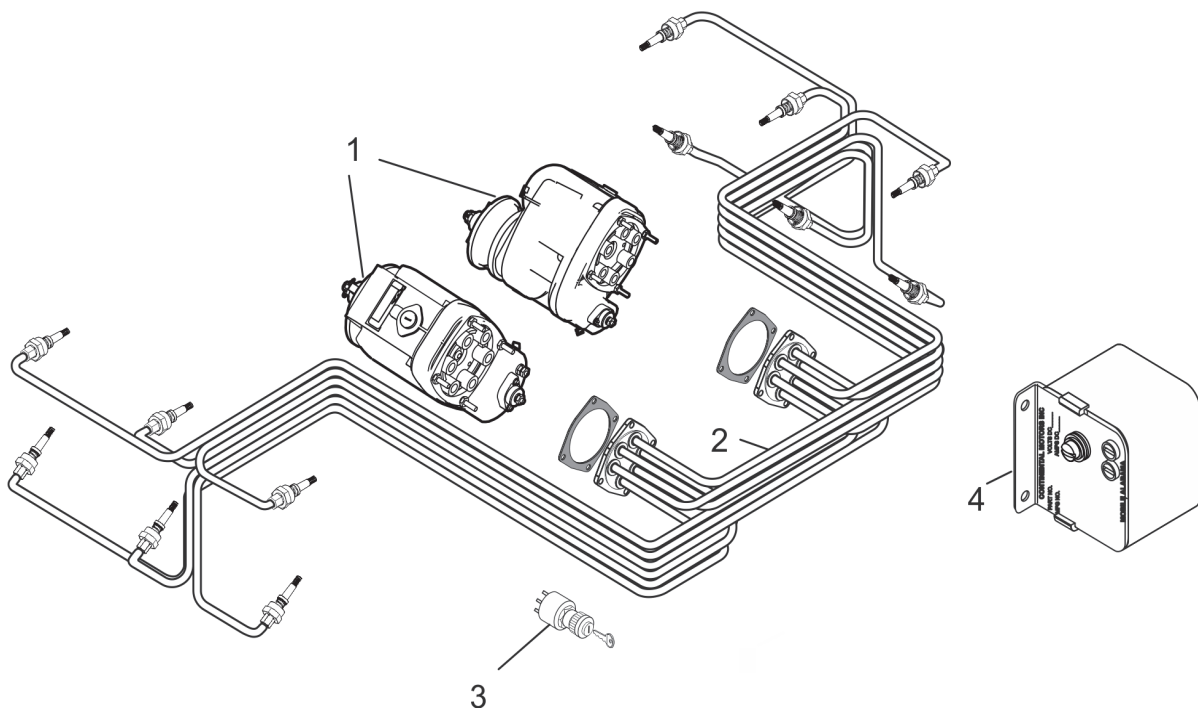


Figure 2-1. S-1200 Magneto and Associated Components

Magneto model numbers are read as follows:

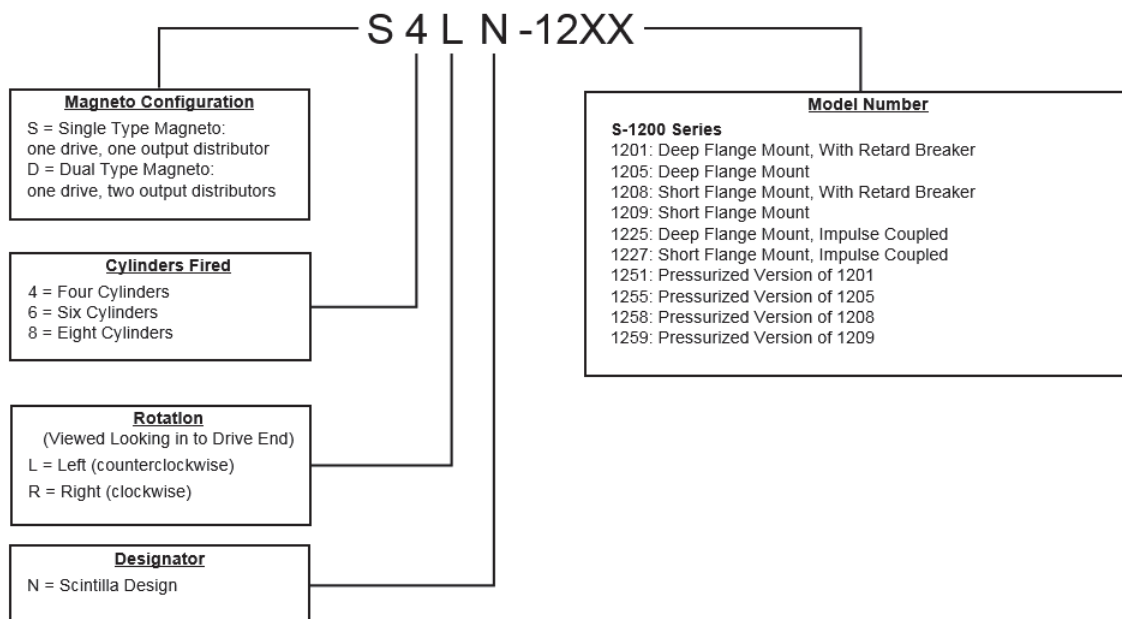


Figure 2-2. Magneto Part Number Elements

2-2. Detailed Description

The magneto is a self-contained unit. The rotating magnet turns on two anti-friction bearings, a roller bearing located at the contact assembly end and a ball bearing at the drive end. In four and six cylinder magnetos, a two-lobe cam is secured to the contact assembly end of the rotating magnet shaft. In a six cylinder magneto, the rotating magnet turns 1-1/2 times engine speed. Thus, six sparks are produced through 720 degrees of engine rotation. In a four cylinder magneto, the rotating magnet turns at engine speed. Therefore, four sparks are produced through 720 degrees of engine rotation. In eight cylinder magnetos, a four lobe cam is secured to the contact assembly end of the magneto shaft. Thus, eight sparks are produced through 720 degrees of engine rotation.

S-1225 and S-1227 Series four and six cylinder magnetos incorporate impulse couplings. The purpose of the impulse coupling is to: (1) rotate the magnet between impulse trips faster than engine cranking speed, thus generating a better spark for starting the engine, (2) automatically retard the spark during engine cranking, and (3) act as a drive coupling for the magneto.

S-1204, S-1208, S-1254, and S-1258 Dual Contact Assembly Magnetos (Figure 2-3) incorporate a retard contact assembly. This contact assembly is actuated by the same cam as the main contact assembly. It is positioned so its points open a specific number of degrees after the main contact points open. A battery-operated starting vibrator used with this magneto provides retarded ignition for starting, regardless of engine cranking speed. The retard ignition is in the form of a shower of sparks instead of a single spark, as obtained from an impulse coupling.

2-3. Maintenance and Overhaul Periods

NOTE: Refer to Section 11 for an exploded view of the Magneto.

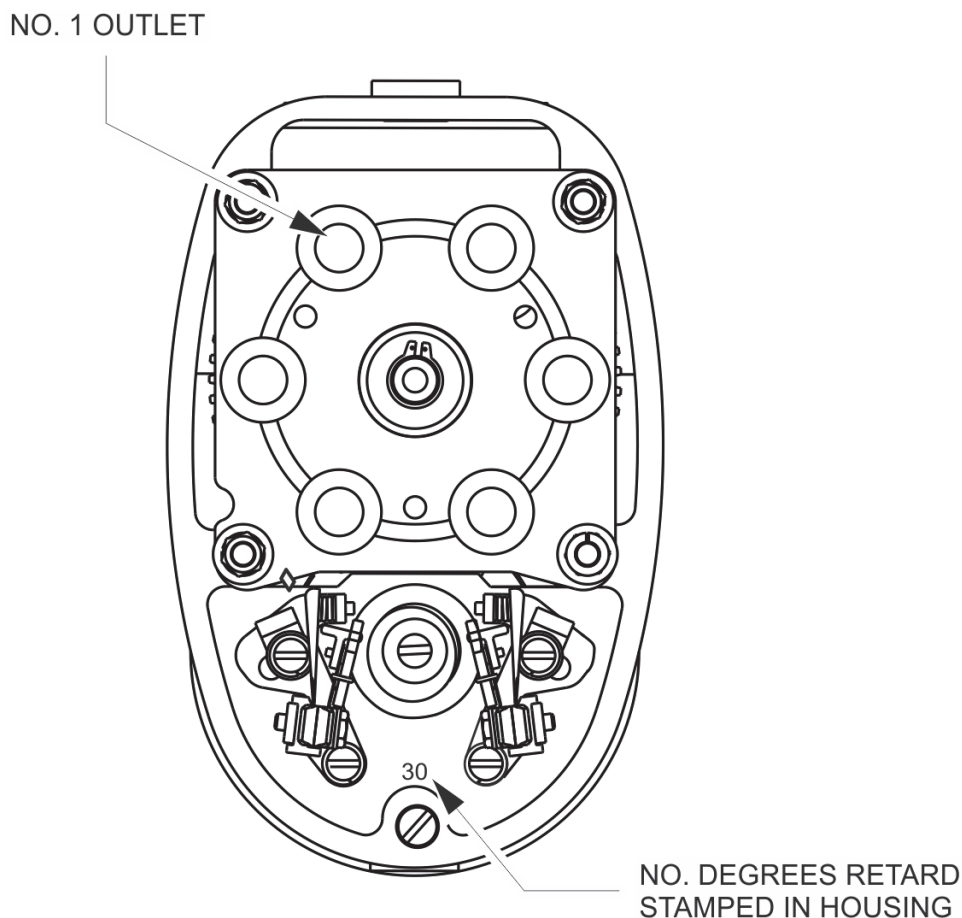


Figure 2-3. Cam End of Dual Contact Assembly Magneto

Magneto grounding circuit function and Magneto-to-engine timing must be inspected at each 100 hour, annual, or progressive inspection. Perform the grounding check according to instructions in Section 6-2.1 at each of these intervals, and perform the contact inspection according to the instructions in Section 6-2.2 any time magneto-to-engine timing is found to be outside the engine manufacturer's limits.

Inspect magnetos equipped with snap-ring impulse couplings (45) at the first 500 hours in service and every 500 hours thereafter according to instructions in Section 6-2.4. Inspect magnetos equipped with riveted impulse couplings (45) at the first 100 hours in service and every 100 hours thereafter according to instructions in Section 6-2.3.

Inspect all magnetos according to instructions in Section 6-2.4 at the first 500 hours in service and every 500 hours thereafter. If the magneto has more than 500 hours, inspection, as outlined above, must take place within the next 100 hours or at the next scheduled inspection period (whichever occurs first) and at 500-hour intervals thereafter. Upon completion of inspection, make an appropriate logbook entry signifying inspection compliance, referencing the serial numbers of the inspected magnetos.

Description and Operation

The magneto is an integral part of the engine and undergoes the same deterioration as the engine. Severe environmental conditions, engine over-speeds, sudden stoppage, immersion and other unusual circumstances may require complete or partial engine overhaul prior to the overhaul time recommended by the engine manufacturer. Under these circumstances, the magneto (regardless of “In Service” time) must be overhauled with particular attention focused on all rotating parts, bearings, and electrical components.

Magnetos with serial number older than F15FA000(R)¹ (June 1, 2015) must be overhauled or replaced at the expiration of five years since the date of original manufacture or last overhaul, or four years since the magneto was placed in service, whichever occurs first, without regard to operating hours.

In addition to the requirements listed in the two paragraphs above, S-1200 series magnetos with a serial number newer than F15FA000(R) (June 1, 2015) must be overhauled or replaced at the expiration of thirteen years since the date of original manufacture or last overhaul, or twelve years since the magneto was placed in service, whichever occurs first, without regard to operating hours.

1. See latest revision of Section 2-5, “Serial Number Interpretation” for information regarding serial numbers.

2-4. S-1200 Magneto Operation

2-4.1. General Theory

For four and six cylinder magnetos, the rotating magnet is of a two pole design. As the magnet is turned, the polarity continually changes, thereby producing flux reversals in the magneto coil core. The number of flux reversals during one complete revolution of the magnet is two.

For eight cylinder magnetos, the rotating magnet incorporates four poles. As the magnet is turned, the polarity continually changes, thereby producing flux reversals in the magneto coil core. The number of flux reversals during one complete revolution of the magnet is four.

With the contact assembly points closed, the flux reversals cause a current to be generated in the primary winding of the magneto coil. The flow of current through this coil produces a magnetic field around the coil. When the contact assembly points open, the magnetic field around the primary winding collapses, causing a high tension voltage to be induced in the secondary winding of the coil. This high tension voltage is conducted to the distributor gear electrode by means of a carbon brush. When the high voltage is applied to the distributor gear traveling electrode, it ionizes the gap to one of the terminals in the distributor block, jumps the gap and is conducted through the contact springs and through a lead to a spark plug.

2-4.2. Operation of S-1200 Magneto System with Starting Vibrator

A schematic diagram of a magneto circuit with a starting vibrator is shown in Figure 2-4. The starting vibrator supplies interrupted battery current to the left magneto. This type of vibrator should be used with one of the Continental Motors combination ignition and starter switches which controls the vibrator current flowing to the retard contact assembly and main contact assembly in the left magneto and grounds the right magneto in the START position. In Figure 2-4, all switches are shown in their normal OFF position. Figure 2-4 must only be used for following the electrical operation of the magneto circuit, not for installation purposes.

With the combination ignition and starter switch in its "START" position, the right magneto is grounded. The coil in relay K1 of the starter solenoid is energized; the closed relay contact provides a path for operating voltage to the starter. Battery current flows through vibrator points V1, coil L1 (and L2 in 24 volt models), through the BO (Booster Output) terminals to the switch, where it is split and flows to both the main and retard contact assemblies of the left magneto to ground. The magnetic field built up in coil L1 causes vibrator points V1 to open. Current stops flowing through coil L1, causing the magnetic field to collapse and vibrator points V1 to again close. This allows coil L1 (and L2 where applicable) to energize and vibrator points V1 to again open. This interrupted battery current will be carried to ground through the main and retard contact assemblies so long as they remain closed.

When the engine reaches its normal advance firing position, the main contact assembly of the magneto opens. However, the vibrator current is still carried to ground through the retard contact assembly, which does not open until the starting retard position of the engine is reached. When the retard contact assembly opens (main contact assembly is still

Description and Operation

open), the vibrator current flows through the terminal at the main contact assembly and then through the primary of transformer T1 (magneto coil) producing a magnetic field around the coil. Each time vibrator points V1 open, the current flow through the primary of transformer T1 ceases. This causes a high voltage to be induced in the secondary which fires the spark plug. A shower of sparks is therefore produced at the spark plug due to the opening and closing of vibrator points V1 while the main and retard contact assemblies are open.

When the engine fires and begins to pick up speed, the switch is released, which de-energizes relay K1 in the starter solenoid. This opens the vibrator circuit and retard contact circuit, rendering them dormant. The single contact assembly (right) magneto is no longer grounded, therefore both magnetos are simultaneously firing in full advance.

NOTE: Reference only; for actual schematic, see Aircraft Maintenance Manual.

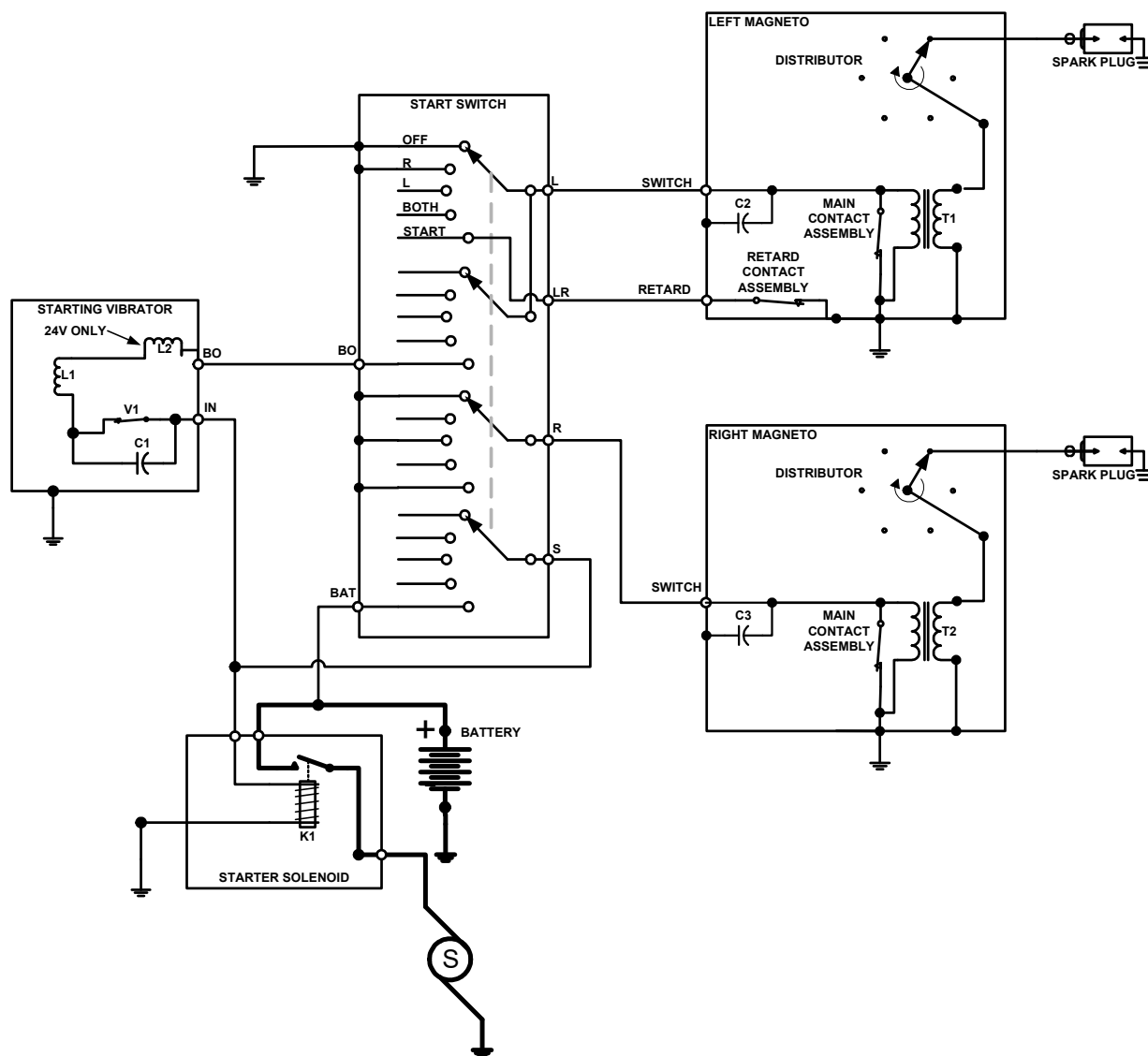


Figure 2-4. Sample Magneto Circuit with Starting Vibrator Schematic

2-5. Serial Number Interpretation

Serial numbers are currently used to identify magnetos built by Continental Motors. These serial numbers employ the coding system defined below. The build date derived from this code, rather than the magnitude of the numbers, determines the date of manufacture. Therefore, for Service Bulletin compliance, all magnetos manufactured, rebuilt or overhauled by Continental Motors may be considered to have a “higher” serial number than magnetos manufactured or “remanufactured” by the Bendix corporation.

Current Serial Numbers may be read as follows:

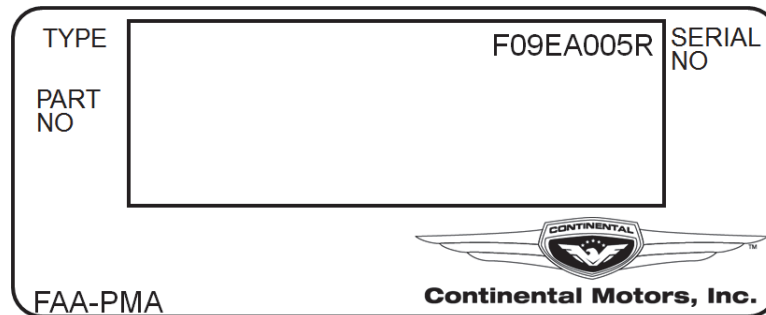


Figure 2-5. Magneto Identification Plate

Example: F09EA005R				
F	09	E	A005	R
Component ID D: S-20 E: S-200 F: S-1200 G: D-3000 H: Ignition Switches J: Ignition Vibrators K: Ignition Harness	↓ Year Manufactured 09 = 2009	↓ Month Manufactured A: January B: February C: March D: April E: May F: June G: July H: August I: September J: October K: November L: December	↓ Fifth unit produced in month. Begins with A001 at the start of each month. After unit 999, alpha character changes to B, etc.	Condition Blank = New R = Rebuilt (No letter for new)

2-6. Rebuilt Magnetos

Since May 1999, Continental Factory Rebuilt Magnetos have been marked with part numbers beginning with BL- (“Blue Label”) instead of the 10- prefix. For example, the part number of a factory rebuilt magneto typically reads BL-349290-1. Rebuilt data plates are blue in color and include the word “REBUILT.”

Magnetos marked with a BL prefix part number are FAA-PMA eligible for installation on the same engines for which the corresponding articles marked with a 10- part number are approved. Magnetos marked with a BL prefix are fully interchangeable with corresponding units marked with a 10- prefix. Likewise, to maintain BL- prefix magnetos, use the corresponding 10- prefix parts list data.

2-7. Storage and Transit

During periods of storage and/or transit, ensure that magnetos are adequately protected from hazards including but not limited to shock, mechanical damage, contamination, corrosive environment, extreme temperatures, and ultraviolet radiation.

Following periods of storage and/or transit, it is the installer’s responsibility to ensure that the magneto is undamaged and suitable for installation.

Maximum magneto storage intervals are included in the maximum overhaul intervals described in Section 2-3.

Section 3. Testing & Troubleshooting

3-1. General

Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Special Tools Required

A complete listing of special tools required for S-1200 Magneto Maintenance, Inspection and Overhaul is compiled in Section 10.

1. If an engine malfunction appears to be attributed to the ignition system, check the spark plugs and wiring first before removing the magnetos.

WARNING

Turn the Ignition Switch OFF, disconnect engine electrical power and confirm continuity between the magneto capacitor and aircraft ground before commencing maintenance or inspections to avoid uncommanded engine starts during maintenance. Do not stand or place equipment within the arc of the propeller.

2. Perform a Magneto Drop Check test according to instructions in the applicable Airplane Flight Manual (AFM)/Pilot's Operating Handbook (POH) to verify proper ignition system operation. RPM drop is expected when one magneto channel in a dual ignition system is turned off. Absence of an RPM drop may indicate:
 - The magneto timing has been advanced beyond the specified setting, or
 - a magneto primary lead is open (Hot Magneto), or
 - an Ignition switch is inoperative, or
 - the grounding circuit of the feed-through capacitor is open, or a combination of these factors.
3. An engine which does not exhibit RPM drop during the Magneto Drop Check must be shut down and the cause for the problem corrected before further flight. The normal magneto channel drop is specified in the appropriate AFM/POH and the Engine Maintenance and/or Overhaul Manual.
4. As a precautionary measure, test the Magneto grounding circuit prior to shutting down the engine using the following procedure:
 - a. With the engine at normal idle, rotate the switch key or lever momentarily to the OFF position.
 - b. If the grounding circuit is working as prescribed, the engine should quit.
 - c. If both magnetos did not ground out, investigate and correct the cause prior to continued engine operation and before the next flight.
 - d. Return the switch key or lever to the BOTH position and shut down the engine using normal procedures.

5. If problems persist, install a replacement magneto which is known to be in satisfactory condition and send the suspected unit to the overhaul shop for test and repair.
6. Should this not be possible, a visual inspection may disclose the source of trouble. Inspect as follows:
 - a. Remove harness securing screws and separate the cover from magneto. Inspect for presence of moisture and foreign matter on rubber grommets and high tension outlet side of the distributor block. Also check for broken or burned outlet towers. If either is present, remove magneto and replace as necessary.
 - b. Check the springs in the block towers for proper height. The end of the spring shall not be more than 0.422 inch from top of tower. Replace burned or otherwise short springs according to instructions in Section 9-2.11.
 - c. Inspect contact assemblies as specified in Section 6-2.2.

3-2. Post Overhaul Testing

1. Mount the magneto on a suitable test stand. Connect the high voltage outlet to spark gaps on the test stand using a standard harness assembly. Set spark gaps at 4 mm (0.157 in) as shown in Figure 3-1.

CAUTION: Do not operate magneto on test stand unless all high voltage leads are connected to spark gaps; an open high voltage circuit would subject magneto parts to damage.

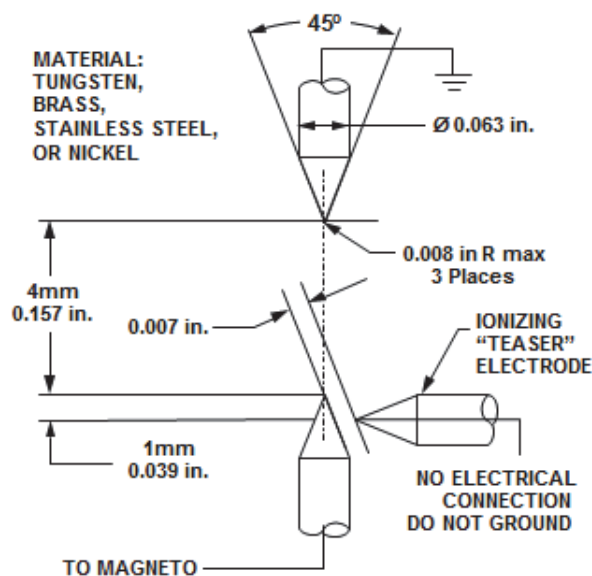


Figure 3-1. Spark Gap Setting

2. Determine the lowest speed at which the rotating magnet can be turned and still spark all gaps without missing (coming-in speed). Magnetos must spark consistently at 150 RPM. If coming-in speed is greater than 150 RPM, the trouble may be due to dirty contact points, a weak coil, a weak magnet, a damaged capacitor, or an improperly timed distributor gear. Clean the contact assembly, try a new coil or capacitor, recharge magnet, recheck distributor gear, recheck contact assembly adjustment, and repeat the test.
3. Observe electrical and mechanical performance at 150 and 1000 RPM. Perform high speed test run at 3000 RPM minimum. Do not exceed 5100 RPM. Magneto shall fire all gaps consistently and operate smoothly throughout its operating range.
4. Test magnetos equipped with impulse couplings. Couplings must engage fully at speeds up to 150 RPM minimum. Intermittent engagement is permissible up to 450 RPM, at which point the coupling must be fully disengaged. Remove and replace any couplings which do not meet this test.
5. For pressurized magnetos only, test flow rate as follows:
 - a. Install a sealed harness cover and gasket onto magneto. Apply 25 to 35 in-lb. torque to four attaching screws.
 - b. Install all applicable ground and retard terminals with sealing insulators.
 - c. Connect the magneto to the Pressurized Magneto Tester as shown in Figure 3-2. Using dry, filtered air at 2.9 to 3.1 psig, flow rate must be between 0.00005 and 0.00025 lbs./hr. If flow rate is below 0.00005 lbs./hr, inspect the orifice for blockage. If flow rate exceeds 0.00025 lbs./sec, determine and correct the source(s) of the leakage. Repeat test following any corrective action.

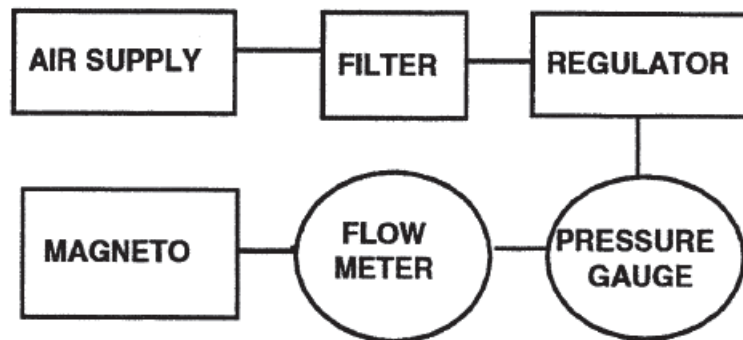


Figure 3-2. Pressurized Magneto Tester

3-3. Troubleshooting

CAUTION: If the self-locking (cam-securing) screw (31) is removed or loosened at any time, always replace with a new self-locking screw and torque 21 to 25 in-lbs.

Table 3-1. Troubleshooting Chart

Symptom	Probable Cause	Test
Hard Starting	Worn or fouled spark plugs; arcing ignition lead	Inspect and replace or repair as necessary.
	Impulse Coupling not operating properly	Remove and check for binding, worn or broken impulse coupling parts.
	Impulse Coupling is magnetized	Remove and demagnetize or replace impulse coupling. Inspect engine for magnetized components and demagnetize all such components.
	Low voltage at vibrator input	Measure voltage between vibrator terminal marked "IN" and the ground terminal while operating starter. Must be at least 8 volts on 12 volt systems, or 13 volts on 24 volt systems.
	Inoperative vibrator	If voltage is within specification, listen for buzzing of vibrator during starting. If no buzzing is heard, either the vibrator is inoperative or the circuit from the "OUTPUT" terminal on the vibrator to the switch and magneto points is open. Check both "SWITCH" and "RETARD" circuits. Check for good electrical continuity through switch and through magneto points.
	Retard contact assembly in retard (dual contact) magneto not operating electrically. Engine may kick back during cranking due to advanced ignition timing	Retard points may not be closing due to improper adjustment, or may not be electrically connected in the circuit due to a poor connection. Inspect retard points to see if they close. Check for proper contact at the "SWITCH" and "RETARD" terminals of retard (dual contact assembly) magneto and at the vibrator. Check wiring.
	No output from vibrator-magneto combination	Turn engine in direction of normal rotation until retard points just open on No. 1 cylinder position. Remove input connection from starter to prevent engine turning, and while holding the No. 1 plug lead 3/16 inch from ground, energize the vibrator by turning switch to START. Plug lead should throw a 3/16 inch spark. If spark is weak or missing, install new vibrator. If the malfunction persists, remove the magneto and check for improper internal timing or improperly timed distributor gears.
	Magneto improperly timed to engine	Check magneto-to-engine timing according to the Engine Manufacturer's instructions.
	Advance contact assembly out of adjustment (internal timing off)	Inspect contact assemblies according to instructions in Section 6-2.4, step 7. Adjust and replace parts as necessary.
	Retard points opening too late	Check timing of retard points according to instructions in Section 6-2.4, step 7.

Table 3-1. Troubleshooting Chart

Symptom	Probable Cause	Test
Engine Roughness	Worn or fouled spark plugs	Install new spark plugs.
	Worn ignition leads	Check plug leads for continuity and breakdown.
	Worn or fouled magneto contact assemblies	Check magneto contact assemblies for burning or dirt according to instructions in Section 6-2.2, step 1 through step 4.
	Carbon tracked distributor block	Replace distributor block (21)
Magneto Drop-off Check Out of Limits	Magneto timing incorrect	Check magneto-to-engine timing according to instructions in the Engine Manufacturer's instructions.
	Contact assemblies not opening properly	Inspect contact assemblies for proper opening according to instructions in Section 6-2.4, step 7.
	Main contact assembly out of adjustment (internal timing off)	Check magneto internal timing according to instructions in Section 6-2.4, step 7.
	Worn or damaged plugs or leads	Check plugs and leads.
	No drop-off noted -- open switch connection	Ensure electrical continuity from aircraft magneto switch to magneto main contact assembly.
	Carbon tracked distributor block	Replace distributor block (21)

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Section 4. Disassembly

4-1. General

Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Special Tools Required

A complete listing of special tools required for S-1200 Magneto Maintenance, Inspection, Testing and Overhaul is compiled in Chapter 10.

- J4033 Puller
- 11-1471 Drift
- 11-9815 Drift
- Pry Bar (locally fabricated)
- No. 2 Retaining Ring Pliers

Complete disassembly of the magneto is not necessary in all instances. Disassemble magneto only to the extent required for maintenance procedures involved.

4-2. Detailed Disassembly Procedures

NOTE: The following parts must be replaced 100% with new parts upon removal from the magneto, regardless of whether disassembly is for the purpose of inspection, parts replacement or overhaul: wedges (35), screws (54), retaining rings (18, 50), washers (55), bearings (59, 63), felt strip (23), capacitor (10), carbon brush (26), and pin (37). If installed, spring (47), gaskets (7, 58), washer (2), and packing (5) shall be replaced at each disassembly with new parts.

The following parts may be reused after maintenance inspections per Section 6-2.2 and Section 6-2.4, but must be replaced at overhaul: main and retard contact assemblies (30), felt washer (20), and gear kit (25).

4-2.1. Initial Inspection Disassembly

1. Remove cover retention screw and lock washer (1) and plain washer (2) (if installed) from cover (6). Remove four nuts (3), lock washers (4), and packing (5) (if installed), and carefully pull cover (6) away from housing (72). Remove and discard gasket (7), if installed. Pry lead terminals of capacitor (10) and retard lead (13) (if installed) from terminals of contact assembly(ies) (30).
2. Disassemble the distributor block (21) and distributor gear assembly (25) from housing (72) by removing the four double-end studs (16) and washers (4, 17). Pull the block (21) and gear assembly (25) from the housing (72).
3. Using No. 2 retaining ring pliers, remove the retaining ring (18) that secures the gear (25) to the block (21). Discard ring (18).
4. Remove the washer (19) and slide the gear (25) from the block (21). Remove washers (19, 24). Using a pointed tool, remove the felt washer (20) and felt strip (23) from the block (21). Remove carbon brush (26) from distributor gear (25).

4-2.2. General Overhaul Disassembly

1. Remove screws (9) and lift the capacitor (10) from the cover (6). Slide packing (11) off of the capacitor (10).
2. If a retard lead (13) is installed, remove the screw (12), washer (14), bushing (15), and nut (3) securing the lead (13) to the cover (6).
3. Pull out the fish paper strip (34) that holds the leads of the coil (36) away from the distributor gear (25). Remove the clip (28), if used. Disconnect the terminal of coil lead from main contact assembly (30).
4. Using a 12 to 16-inch pry bar (Figure 10-2), pry out the wedges (35) that secure the coil (36) in the housing (72). Discard wedges. Lift the coil (36) from the housing (72).

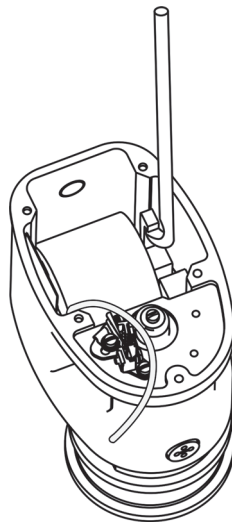


Figure 4-1. Removing Coil Wedges From Housing

CAUTION: Ensure the coil lead is not pinched or crushed when prying the wedges from the magneto.

5. Remove contact assemblies (30) from the magneto by taking out screws (27) and washers (29). Discard the contact assemblies.

NOTE: Tachometer contact assembly, identified by smaller (0.125 in. diameter) silver contact points, may be reused.
6. Using a pair of padded jaw pliers, grip the drive member on the drive end of the rotating magnet (61). While holding the rotating magnet, loosen the cam securing screw (31) and turn out half way.
7. Use a wedge removal pry bar or broad-bladed screwdriver to loosen the cam from the shaft. If using a stout screwdriver, place the end between the bottom of the cam and housing. Apply downward pressure to the screwdriver handle to loosen the cam from the taper of the shaft. Remove the screw (31), washer (32), and cam (33).

CAUTION: If you loosen or remove the self-locking screw (31), replace it with a new self-locking screw. Torque to 21-25 in.-lbs.

4-2.3. Drive Plate and Front End Hardware Disassembly

1. Remove the cotter pin (37) from the rotating magnet shaft (61).
2. While holding the drive member with a pair of padded jaw pliers, remove the nut (38). Lift off the lock washer (39), bushing (40), and washer (41), if used.
3. If the magneto has a drive plate (44), remove it using the J4033 puller. Protect shaft and threads by threading the nut (38) to cover the cotter pin hole.

4-2.4. Impulse Coupling Disassembly

WARNING

Using tools, methods, or procedures other than those specified herein for impulse coupling removal may damage magneto components.

NOTE: Use of the specified anti-seize compound during previous assembly will ease disassembly of the impulse coupling.

1. Using heavy gloves or a clean shop towel, grasp the coupling body (46) firmly. Pull outward on the coupling body only enough to release it from cam assembly (48).
2. Keep the coupling body (46) close against the cam (48) and allow the body to turn as the spring (47) unwinds. After one or two turns, the spring coils will wedge against projections on the body, restraining the spring from further unwinding.
3. Look into the hole in body (46) and note the location of the inner eye of the spring (47) where it engages with the mating recess in cam hub (Figure 4-2). If necessary, insert a screwdriver under the spring end and pry the spring eye out of the recess.
4. Remove the body (46) and spring (47) together. Uncoil the spring from the body and pry the spring eye from body recess so that the spring is disengaged. Discard the spring.

CAUTION: Do not allow puller jaws to apply pressure to the flyweights; resulting damage will require flyweight replacement.

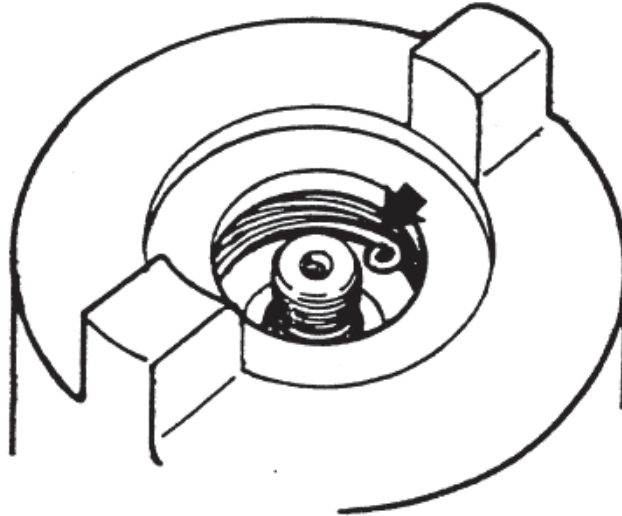


Figure 4-2. Spring Engaged with Cam

5. Install the nut (38) on the end of the rotating magnet (61) shaft to protect the cotter pin holes. Engage the puller over the shaft and align the jaws of the puller under the cam assembly as shown in Figure 4-3.

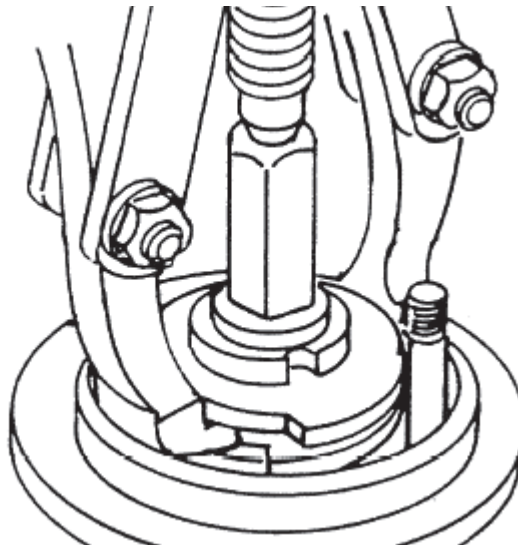


Figure 4-3. Impulse Coupling Cam Removal

6. Tighten the puller handle to remove the coupling (45) from the shaft. If the cam assembly (11) does not release readily, apply penetrating oil between the cam assembly (11) and the shaft. After applying puller force, it may take a few minutes for the tapered parts to release. If torque, time and penetrating oil are not adequate to affect disassembly, it is permissible to apply heat to release the coupling. While the puller is still fully tightened, hold the tip of hot heavy-duty soldering iron in contact with the cam assembly hub. Solder wetting of the tip at the point of contact with the cam hub will assist in heat transfer to the parts. Re-tighten puller after about a minute of heat application. If the coupling does not release with maximum hand torque applied to the puller handle, apply penetrating thread release compound between the cam assembly (48) and the shaft.

7. While the puller is fully tightened, hold the hot tip of the heavy-duty soldering iron in contact with the hub of the cam assembly (48). Solder wetting of the tip at the point of contact with the cam hub will assist in heat transfer to the parts. After about a minute of heat application, re-tighten the puller.

CAUTION: Do not strike the puller with a hammer. If the puller is struck with a hammer, magneto ball bearings must be replaced.

Do not tighten the puller handle further after the impulse coupling cam releases from shaft. This could damage a flyweight if the flyweight is caught under the woodruff key.

8. Remove the puller. Holding the toe (see Figure 6-3 for flyweight terminology) of the flyweight inward, lift the cam from the shaft.
9. Remove woodruff key(s) (49) from the rotating magnet shaft (61); discard the woodruff key(s).

4-2.5. Rotating Magnet Disassembly

1. Remove the retaining ring (50) from the magnet shaft (61) with the No. 2 Retaining Ring Pliers. Discard the ring.
2. Pull off the flat washer (51) and the bowed washer (52).
3. Remove and discard the flange securing screws (54) and the washers (55).
4. Separate the flange (56) and rotating magnet assembly from the housing by hand.

4-2.6. Flange Disassembly

1. Fabricate two support bars similar to the one shown in Figure 10-3.
2. Position the fabricated bars between the casting of the magnet assembly and the flange (56).
3. Set the bars and magnet assembly in one of the slots in the base of an arbor press. The slot should be large enough to allow the magnet casting to pass through but small enough to hold the fabricated bars.
4. Install the nut (38) on the end of the rotating magnet shaft (61) to support and protect the cotter pin holes.
5. Using an arbor press, push the rotating magnet (61) from the flange (56). This operation will also remove the oil slinger (53) from the shaft. Discard the slinger. Remove the retainer (60) from the rotating magnet.
6. Position the flange (56) over one of the recesses of an arbor press. The recess should be small enough to hold the flange but large enough to allow the bearing (59) to pass through.
7. Place the 11-1471 Drift (or equivalent) against the inner face of the bearing (59). Using an arbor press, push the bearing from the flange (56) and discard the bearing (59).

4-2.7. Pinion Drive Disassembly

The pinion gear (62) does not typically require replacement at overhaul because it is a sintered iron gear and runs against a nylon distributor gear. However, if the rotating magnet (61) requires replacement, both the magnet (61) and the gear (62) should be discarded. Do not reuse a pinion gear (62) after it has been removed from the rotating magnet (61). If the teeth of the gear (62) are damaged but the rotating magnet (61) can be reused, remove the gear (62):

1. Fabricate two support bars (Figure 10-4).
2. Position the fabricated bars between the magnet assembly casting and the pinion gear (62).
3. Position the bars and magnet assembly in one of the slots in the web or base of an arbor press. The slot must be large enough to allow the casting magnet to pass through but small enough to hold the fabricated bars.
4. Protect the end of the shaft (61) with a brass or aluminum drift. Using an arbor press, remove the gear (62) from the rotating magnet. Discard the gear (62).

4-2.8. Housing Disassembly

1. Remove the ventilator (64) and orifice (65) or plug (66) from the housing (72).
2. Remove the hex plug (73) and bushing (69) or timing plug (68) from the housing (72).
3. Place the magneto housing (72) on the base plate of an arbor press with the drive end down. Using the “R” (for “Remove”) end of the 11-9815 Drift, press out the roller bearing (63) (Figure 4-4) and discard.

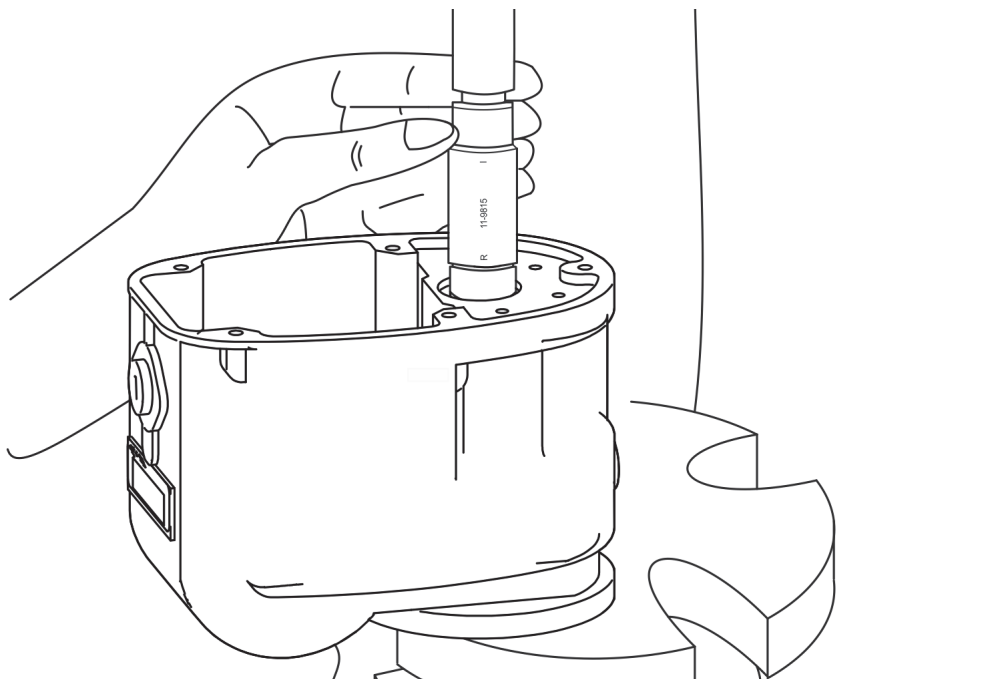


Figure 4-4. Pressing Roller Bearing Out of Housing

Section 5. Cleaning

5-1. General

NOTE: Index numbers in parentheses refer to the exploded view of the magneto and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Using a clean, dry, lint-free cloth, wipe accessible areas of the housing (72) and other external surfaces free of grease, oil film or other contaminants.

5-2. Detailed Magneto Cleaning Procedures

1. Clean contact points (30) using any hard finished paper (i.e., a typical business card), close contacts on cleaning paper, then open breakers and remove paper. Do not drag paper through closed contacts. Do not use emery cloth.

CAUTION: When utilizing compressed air, wear OSHA approved protective eye wear. Never exceed 30 psi when using compressed gases for cleaning purposes. (OSHA 1910.242(b)).

2. All other parts of magneto except the capacitor (10), retard lead (13), distributor block (21), cam (33), and coil (36) may be washed in a standard cleaning solvent and dried with compressed air. Blow out holes in ventilator plug (46) with compressed air.

CAUTION: Do not immerse the cam (33) or distributor block (21) in solvent; solvents will damage these items.

3. Clean the capacitor (10), retard lead (13), cam (33), coil (36), and contact compartment by wiping with a clean dry cloth.

CAUTION: Isopropyl Alcohol (IPA) is flammable - Do not use near an ignition source. Use only with adequate ventilation. Use appropriate personal protective equipment to protect eyes, skin and clothing from exposure. Avoid breathing IPA vapors. Store IPA only in approved containers.

4. Clean the distributor block (21) with a clean, dry, lint-free cloth. Carefully wipe the internal and external surfaces of the distributor block clean and free of all contaminants. If the dry, lint-free cloth is insufficient, moisten the cloth with isopropyl alcohol and wipe the accessible surfaces of the distributor block free of contaminants. Do not allow alcohol to contact the bronze bushing.
5. Install MS90376-10Y protective caps to cover both ends of the distributor block bronze bushing. This masking will prevent contamination of the bearing during the second stage of the cleaning operation.
6. Hold the distributor block (21) with the outlet towers in a vertical plane. Using a 1/2 inch bristle brush dipped in isopropyl alcohol, clean in and around the distributor block outlet towers and the distributor block electrodes, allowing the cleaning fluid to flush out any remaining contaminants from the inside of the distributor block.

Cleaning

CAUTION: When utilizing compressed air, wear OSHA approved protective eye wear. Never exceed 30 psi when using compressed gases for cleaning purposes. (OSHA 1910.242(b))

7. Use dry, oil-free compressed air to blow the distributor block (21) dry.
8. Remove the protective caps from the bronze bushing.

Section 6. Periodic Maintenance

6-1. General

Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Special Tools Required

- 10-400536-1 High Temperature Lubricant
- 11-8465 Rotor Holding Tool
- 11-8150-1 Timing Kit
- E-50 Timing Light (or equivalent)

1. Use a 4 to 5 power magnifying glass for all visual inspections.

NOTE: The following parts must be replaced 100% with new parts upon removal from the magneto, regardless of whether disassembly is for the purpose of inspection, parts replacement, or overhaul: Screws (54), Retaining Ring (18, 50), Washer (55), Bearings (59, 63), Felt Strip (23), Nameplate (71), Pin (37), and Capacitor (10). If installed, the Spring (47) and Gaskets (7, 58) must also be replaced.

The following parts may be reused after maintenance inspections per Section 6-2.2 and Section 6-2.4, but must be replaced at overhaul: Main and Retard Contact Assemblies (30), Felt Washer (20), and Gear Kit (25).

2. Periodic Maintenance Intervals

- a. Perform a visual inspection of surrounding components whenever engine maintenance requires access to the magneto internal components.
- b. Perform the inspection detailed in Section 6-2.2 any time that magneto-to-engine timing is found to be outside the engine manufacturer's limits.
- c. Perform the inspection detailed in Section 6-2.3 at the first 500 hours in service and every 500 hours thereafter for magnetos with impulse couplings (Figure 1) (45) installed or at the first 100 hours in service and every 100 hours thereafter for magnetos with riveted impulse couplings installed.
- d. Perform the inspection detailed in Section 6-2.4 for all magnetos at the first 500 hours in service and every 500 hours thereafter.
- e. Make appropriate log book entries signifying compliance with Section 6-2.1, Section 6-2.2, Section 6-2.3, or Section 6-2.4, referencing the magneto serial numbers on which the inspections were conducted on.

6-2. Detailed Maintenance Procedures

6-2.1. Hot Magneto Test

1. Prior to engine shut-down, and prior to performing any maintenance on the engine, perform the Magneto RPM Drop-Off Test as detailed in the Pilot's Operating Handbook (normally found under Preflight Engine Run-Up Procedures).
2. If no RPM drop is noted when a magneto is individually selected, either the magneto selected is timed far in advance, or a discontinuity exists between the other magneto primary circuit and airframe ground. Either condition must be remedied before further flight and before moving the propeller by hand.
3. Stop the engine using normal procedures as detailed in the Pilot's Operating Handbook.

NOTE: An ohmmeter or continuity tester may indicate false continuity to ground through the magneto coil windings or contact points. Instead, position the magneto shaft to open the contact points and use a magneto timing light to troubleshoot the magneto grounding circuit.

4. If there is evidence of discontinuity in the magneto grounding circuit, inspect circuit connections for cleanliness and tightness, inspect wire and feed-through capacitors for continuity, and inspect switch(es) for correct electrical operation. Repair or replace malfunctioning parts, as necessary, as specified in the appropriate service manual.

6-2.2. Contact Assemblies

1. Remove the cover (6) from the housing (72) according to instructions in Section 4-2.1.
2. Examine the capacitor (10) and contact point leads (30) for condition and security. Inspect insulation for chafing or discoloration. Discoloration could indicate thermal breakdown. If insulation is nicked, chafed or cut, replace the affected component.
3. Turn the magneto drive shaft (61) until the cam follower of the main contacts rests on the high lobe of the cam (33), holding the points in their open position. Using a fiber or plastic rod with a screwdriver-shaped end, prod the contact points as illustrated in Figure 6-1. If contact points are loose, replace the contact assembly (30). Repeat the procedure for retard and tachometer point contacts, if installed.

NOTE: Do not attempt to burnish, stone or dress contact points. Do not clean contact points with emery cloth. If the contact assembly points appear to be unserviceable, replace the entire contact assembly.

4. Examine contact points for wear or burning. Figure 6-2 shows how a typical contact point will look when the surfaces are separated for inspection. Desired contact surfaces have a dull gray, sandblasted (almost rough) or frosted appearance, over the area where electrical contact is made, indicating the points are wearing evenly and mating properly. Replace burned, pitted, peaked or otherwise damaged contact assemblies.

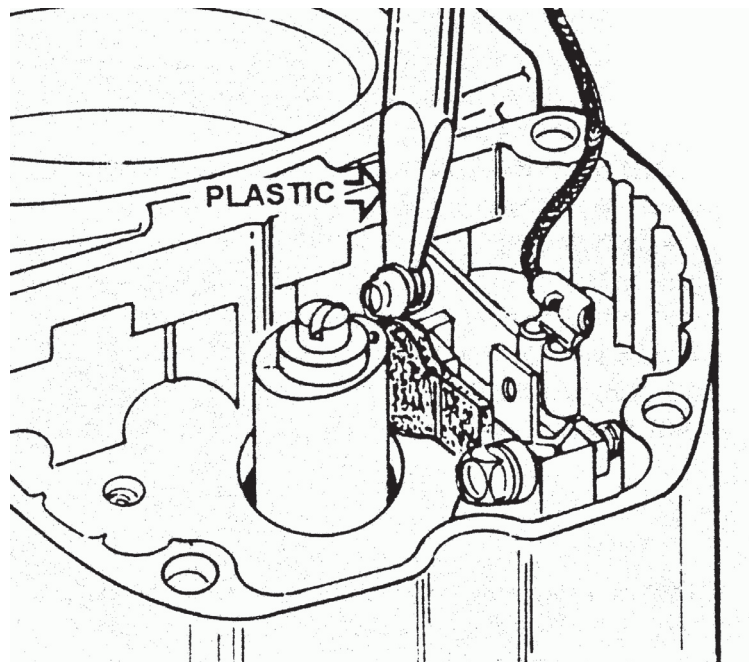


Figure 6-1. Check Contact Point Security

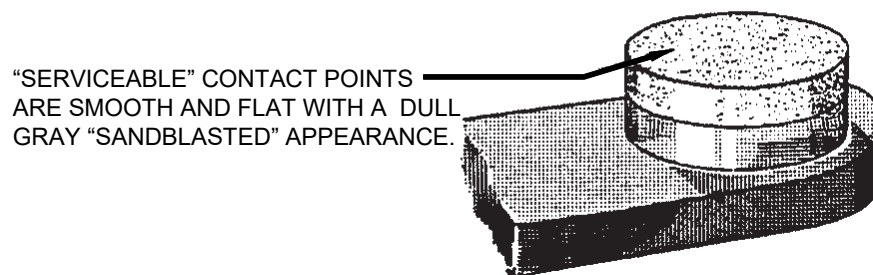


Figure 6-2. Normal Contact Point

5. Check the condition of the cam follower felt. Squeeze the felt tightly between the thumb and forefinger. If no oil residue is left on the fingers, lubricate the felt with 2-3 drops of 10-400536-1 Lubricant. Allow approximately 30 minutes for the felt to absorb the oil. Blot excess oil from the felt with a clean cloth. Too much oil may foul contact points and cause excessive burning.
6. Clean dirty breaker points according to instructions in step 1 of Section 5-2.
7. Check magneto-to-engine timing as follows:
 - a. If necessary, ensure that the magneto impulse coupling flyweights are not engaged on the stop pins (57). Connect the E-50 Timing Light, or equivalent, across the main contact assembly.

- b. Slowly bring the engine up to number one cylinder advance firing position according to the engine manufacturer's instructions. At this instant, the timing light should go out, indicating that the magneto is properly timed to the engine. If the timing light remains illuminated, remove the magneto from the engine and perform internal timing check and inspection according to instructions in Section 6-2.4, step 7.

6-2.3. Impulse Couplings

NOTE: Impulse coupling inspection is unnecessary for magnetos that do not utilize impulse couplings, such as are used in Shower-of-Sparks ignition installations. Many Continental engines offer optional Shower-of-Sparks configurations (S6RN-1201 and S6RN-205 magnetos) as detailed in their respective Type Certificate Data Sheet (TCDS). Continental holds PMA to install S6LN-1208 and S6LN-1209 Shower-of-Sparks magnetos on many Lycoming® engine installations. See the latest revision of Continental Ignition Application Data, X44001 for part number details. Where applicable, see OEM airframe wiring and parts catalogs for details on Starting Vibrator installations, or refer to Continental Motors Service Information Letter SIL671 for details on STC conversion to install Starting Vibrators to complete Shower-of-Sparks installations.

For all S-1225 and S-1227 series magnetos, inspect snap ring impulse couplings (45) at the first 500 hours in service and every 500 hours thereafter, or inspect riveted impulse couplings (45) at the first 100 hours in service and every 100 hours thereafter. Snap ring cam assemblies may be distinguished by the S mark on both sides of the toe of each flyweight as shown in Figure 6-3.

1. Check flyweight and axle for wear:

WARNING

Lock the rotor on drive-shaft end only. Do not use gear locking devices. Clamping the gear may result in gear tooth damage and subsequent magneto failure.

- a. Rotate the impulse coupling (45) so the flyweight axles are next to the stop pins (57). Position flyweight as shown in Figure 6-3. Lock rotor in place using an 11-8465 Rotor Holding Tool.

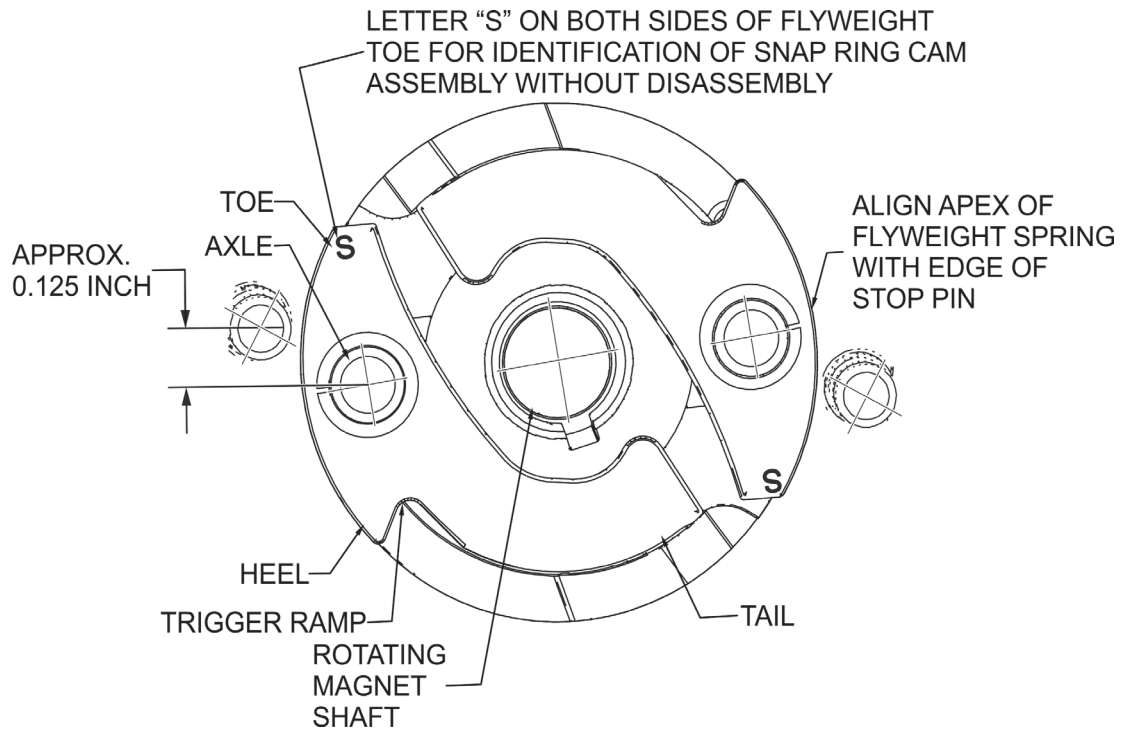


Figure 6-3. Flyweight Terminology

WARNING

A polished area on the heel of the flyweight (Figure 6-4) is an indication of severe wear and cause for immediate rejection of the cam assembly.

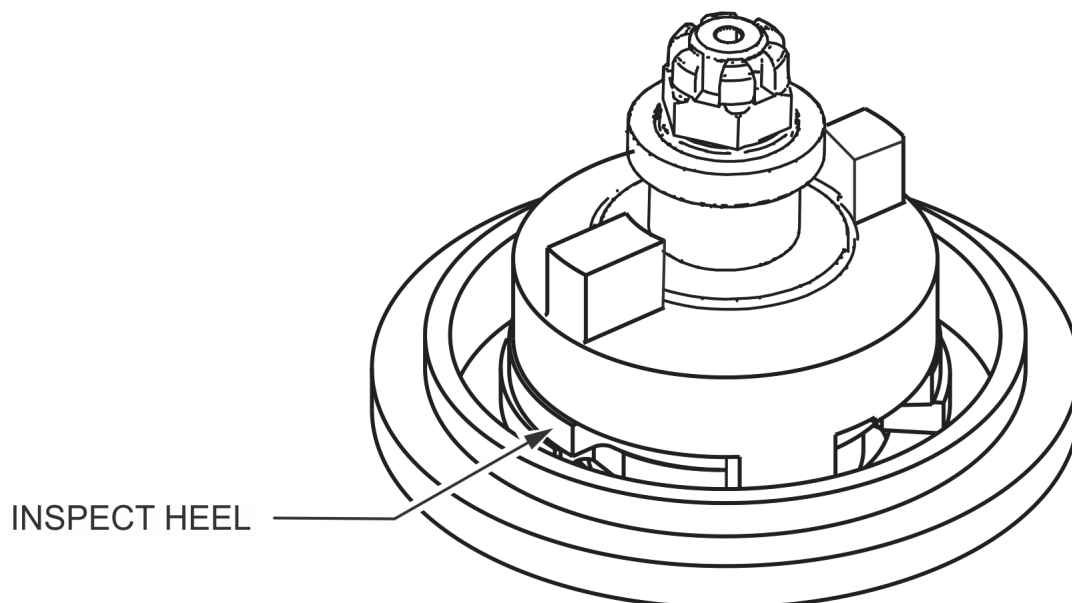


Figure 6-4. Heel Inspection

NOTE: Dimensions in Figure 6-5 are approximate.

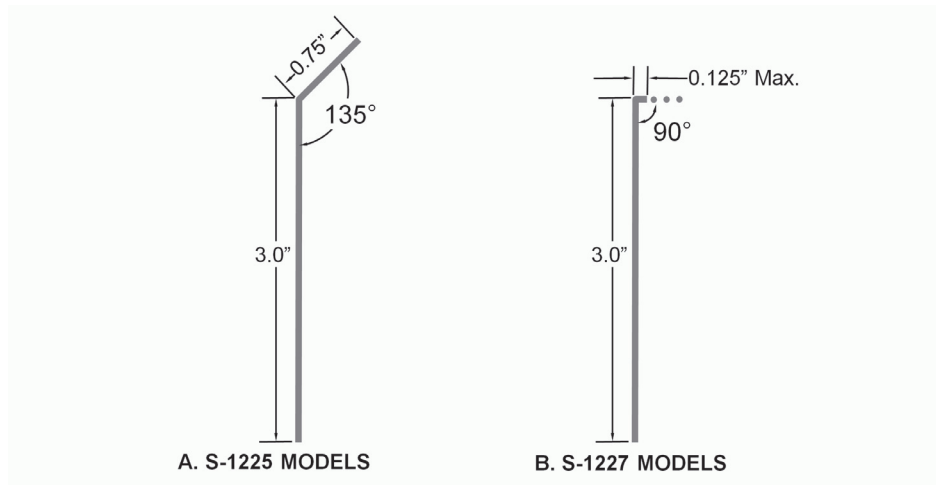


Figure 6-5. Wire Hook Configuration

- b. For Model S-1225 magnetos, push on the flyweight trigger ramp (See Figure 6-6A) using bent wire as shown in Figure 6-5A. Proceed to step (d).
 - c. For Model S-1227 magnetos, form wire into hook as shown in Figure 6-5B. Reach between the cam and the flyweight with the wire hook as near as possible to the stop pin. Pull outward on the flyweight as shown in Figure 6-6B.
 - d. Insert a feeler gauge between the stop pin and flyweight to determine clearance ("X" of Figure 6-6) while the flyweight is forced outward. Maintain constant outward force on the flyweight while measuring clearance to ensure accuracy.
 - e. Remove the wire to relax the flyweight. Add a 0.014" feeler gauge blade to the "X" value measured in step d (Figure 6-7). Ensure the flyweight tail remains against the body trip dog, as shown. Attempt to pass the "X" value plus "0.014" feeler gauges between the flyweight and stop pin. If feeler gauges pass, remove and discard worn cam assembly.
2. If the impulse coupling is found to be unacceptable as a result of any of the preceding checks described, replace the worn or damaged components or the entire impulse coupling assembly.
 3. Examine the stop pins in the magneto flange or housing when inspecting the impulse coupling assembly. A shiny spot at the flyweight contact point is acceptable, a step catch at this point is unacceptable. A damaged or worn stop pin is cause for replacement of the magneto stop pin, or flange, depending on extent of damage or wear.

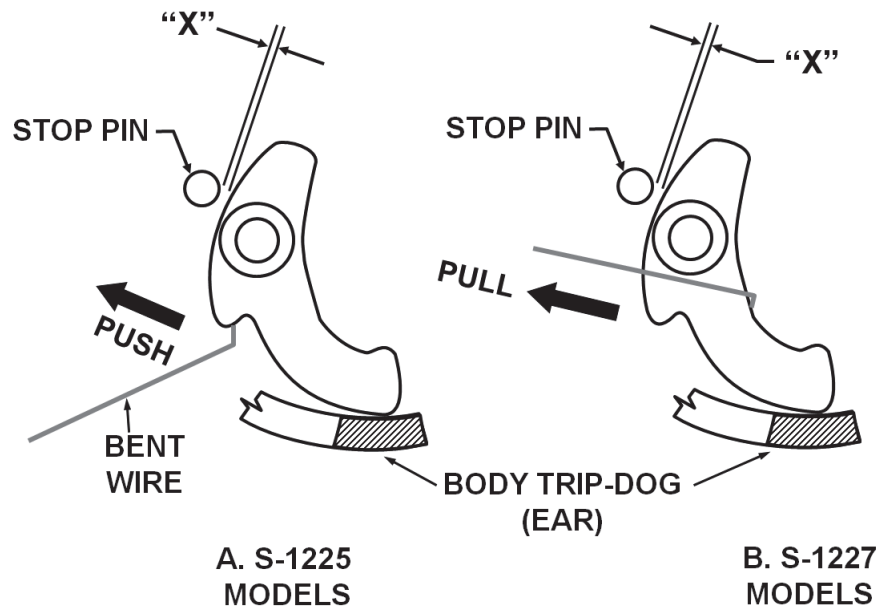


Figure 6-6. Flyweight to Axle Wear Check

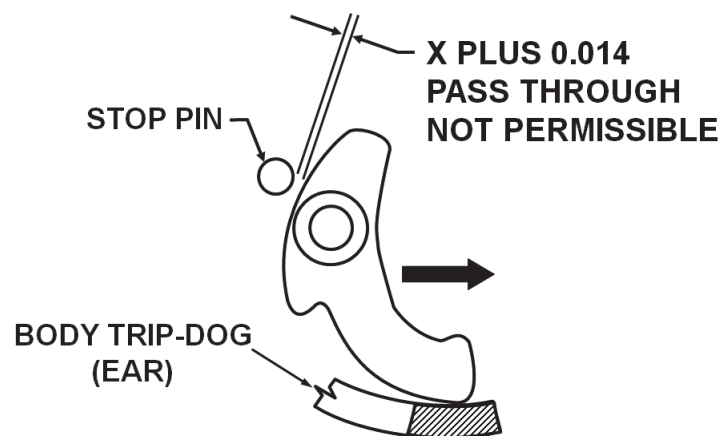


Figure 6-7. X Value Measurement

6-2.4. 500 Hour Inspection

1. Disassemble the magneto according to instructions in Section 4-2.1.
2. Inspect and treat the distributor block (21) according to instructions in Section 7-2.3.
3. Inspect the distributor gear assembly (25) and carbon brush (26):
 - a. Wipe the distributor gear and axle (25) free of all oil film and other contaminants. Inspect for damage or unusual wear; replace as necessary.
 - b. Determine if the gear is the old or new design. The new gear has a narrow stainless strap connected to the electrode in place of a wide copper strap (Figure 6-8). If gear is old design, discard gear and replace with new type.

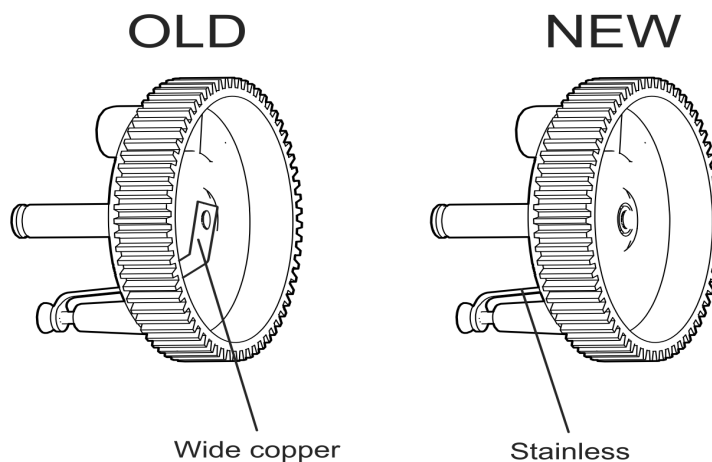


Figure 6-8. Old and New Distributor Gears

- c. Discard all gears that do not have any date code molded into them. Discard all gears marked with date codes 65 to 78 inclusive.
- d. If the distributor gear (25) matches the current production design, inspect the following characteristics of the distributor gear:
 - (1). Inspect the gear for discoloration. If the surface of the gear is chalky or crazed, discard and replace the gear. If the color of the gear has turned brown or the gear teeth are turning brown, the gear has been exposed to extreme heat. Discard and replace the gear.
 - (2). Inspect the gear for missing or damaged teeth. If portions of the gear teeth are broken or missing, discard and replace the gear.
 - (3). If the axle or electrode exhibit wear or damage, or there is evidence of looseness between the axle and gear or the strap and gear, discard and replace the gear assembly. If the electrode surface is slightly carbonized, smooth off with a nylon scouring pad.
 - (4). Deleted.

- e. Remove the carbon brush and spring (26) from the hole in the gear axle (21). Clean the hole with a pipe cleaner. Check carbon brush (26) for side loading or unusual wear. Measure carbon brush (26) from spring shoulder to working end of brush. Overall length shall be 0.375 in. minimum. Replace worn brushes, as necessary, with new brush and spring assembly (26). Seat new brush (26) and spring in gear (21) axle hole and compress brush to within 1/8 inch of the gear, then release slowly. Brush (26) shall move freely within the hole in the axle.
 - f. Generously apply MS-122AD Teflon® dry lubricant spray to the distributor gear (25) teeth.
 - g. Ensure that washers (19, 24) are in place on the gear axle and in good condition. Ensure that the nylon washer (24) is positioned against distributor gear (25). Insert the dry distributor gear axle into the distributor block bearing. Complete assembly of the block (21) and gear (25) using washer (19) and a new retaining ring (18).
4. Inspect the housing (72) for damage. Clean housing with a clean, dry, lint-free cloth.
 5. Inspect the coil (36):
 - a. Using a dry, lint-free cloth, clean contaminants from accessible surfaces of coil (36).
 - b. Inspect exposed coil surfaces for cracks or burning. Replace cracked or burned coils.
 - c. Ensure that the coil outlet tab is parallel with the housing (72) to cover mating surface. Bend the tab with a finger, as necessary, to align the tab.
 - d. If the carbon brush (26) has caused wear in the coil outlet tab, indicated by a visible depression in the tab, remove the coil (36) from housing (72) according to instructions in Section 4-2.2, and repair the coil (36) according to instructions in Section 8-2.2. Install the coil (36) in the housing (72) according to instructions in Section 9-2.10.
 6. Install the distributor block (21) and distributor gear (25) assembly in the magneto housing (72) according to instructions in Section 9-2.13.
 7. Inspect contact assemblies (30) and related components:
 - a. The contact assembly area shall be free of moisture, dirt, oil or grease residue. Clean as necessary.
 - b. Inspect the assembly according to instructions in Section 6-2.2, step 1 through step 6.

CAUTION: If the self-locking (cam-securing) screw (31) is removed or loosened at any time, always replace with a new self-locking screw and torque 21 to 25 in-lbs.

- c. Ensure cam securing screw (31) is tightened to a torque value of 21 to 25 in-lbs.
- d. Check magneto internal timing:
 - (1). Loosen the nut that secures the drive member of magnet shaft. Install the 11-8465 Rotor Holding Tool under the nut and flat washer, as shown in Figure 9-6. Tighten the nut securely.

WARNING

Rotor is to be locked on drive-shaft end only. Do not use distributor gear lock devices. Use of such devices may result in gear tooth damage and subsequent magneto failure.

NOTE: Tighten the 11-8465 Rotor Holding Tool adjusting knob only enough to hold magnet shaft firmly in desired position.

- (2). Remove the timing inspection plug (68) from the top of the magneto. Turn the rotating magnet (61) in normal direction of rotation until the applicable timing mark on the distributor gear (25) is aligned in the timing window. Turn the magnet (61) backward until the magnet finds its neutral position. Tighten the 11-8465 Holding Tool adjusting knob until the pressure applied to the housing flange prevents the rotor (61) from turning freely. With the magnet (61) held in the neutral position, install the 11-8150-1 Timing Kit timing plate and pointer assemblies (Figure 9-7) in the magneto contact compartment. Align the pointer assembly with the "0°" mark on the timing plate.
- (3). Loosen the 11-8465 Holding Tool adjusting knob and turn the rotating magnet (61) in normal direction of rotation until the pointer indexes with respective "E" gap mark ($15^{\circ} \pm 2^{\circ}$ for 4 and 6 cylinder magnetos, $12^{\circ} \pm 1^{\circ}$ for 8 cylinder magnetos). Using the E-50 Timing Light or equivalent, verify that main contact points just open at "E" gap position.
- (4). Turn the rotating magnet (61) until the contact assembly (30) cam follower is on the high point of the cam lobe. Tighten the 11-8465 Holding Tool adjusting knob and measure the contact point gap for clearance, per Table 1-2. If the dimension does not fall within limits, readjust the contact points per Table 1-2 and verify the points open within "E" gap tolerance per Table 1-2. If the points do not open within tolerance, replace contact assembly. When timing adjustment is complete, torque the contact assembly securing screws (27) to 20 to 25 in-lbs.
- (5). On dual contact assembly magnetos, the retard contact assembly is adjusted to open a predetermined number of degrees after the main contact assembly opens. The degree of retard for any particular magneto is marked in the bottom of the contact compartment (Figure 2-3). Add degrees retard to the number of degrees past neutral where the main contacts just open. Unlock the holding tool and turn the rotating magnet (61) in the normal direction of rotation until pointer of timing kit indexes this total. Lock the holding tool in this position. Using a timing light, adjust retard contact assembly to just open. Tolerance of retard is $+2/-0^{\circ}$. Unlock the holding tool. Turn the rotating magnet until the cam follower is on the high point of the cam lobe. Measure

magnet until the cam follower is on the high point of the cam lobe. Measure retard contact clearance per Table 1-2. If the dimension is not within limits, readjust the retard contact assembly and verify that the points will open within the retard degree tolerance. Replace the contact assembly if the retard degree tolerance and contact clearance cannot be met. When timing adjustment is complete, torque the contact assembly securing screws (27) to 20 to 25 in-lbs.

- (6). If a tachometer is used, adjust the tach contacts to a maximum opening per Table 1-2 when on the highest point of the cam lobe. Inspect the tach contact points, associated parts, and wiring according to instructions in Section 9-2.14. When timing adjustment is complete, torque the contact assembly securing screws (27) to 20 to 25 in-lbs.

CAUTION: When utilizing compressed air, wear OSHA approved protective eye wear. Never exceed 30 psi when using compressed gases for cleaning purposes. (OSHA 1910.242(b)).

- (7). Inspect the magneto cover (6) for damage. Check the capacitor (10) for case or flange looseness, and for evidence of lead chafing. Using clean, dry compressed air, clean as necessary and replace worn, damaged or unserviceable components. See appropriate procedures in Section 9-2, if capacitor replacement is necessary.
8. Inspect capacitors (10). Remove and discard all capacitors with part numbers 10-349276, 10-400604, and 10-400558. Remove and discard part number 10-400615 capacitors with batch codes 03-44 through 04-17 only. Inspect capacitor for general condition and secure installation. Form the capacitor and coil leads according to the instructions in Section 9-2.16 and install the magneto cover (6), with a new gasket (7) if required, on the housing (72) according to instructions in Section 9-2.17.
9. Install the magneto on the engine and adjust the "Magneto-to-Engine" timing according to the engine manufacturer's instructions.
10. Reinstall the ignition harness adapter plate to the magneto. Tighten the four nuts evenly and torque 18 to 22 in-lbs.
11. Complete installation by properly attaching the aircraft primary wiring and any other miscellaneous hardware items removed.

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Section 7. General Overhaul

7-1. General

Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Special Tools Required

- 10-391200 Distributor Block Lubricant
- 11-8465 Rotor Holding Tool
- 11-8150-1 Timing Kit
- E-50 Timing Light (or equivalent)
- Suitable Digital Multimeter

1. Use a 4 to 5 power magnifying glass for all visual inspections.

NOTE: The following parts must be replaced 100% with new parts upon removal from the magneto, regardless of whether disassembly is for the purpose of inspection, parts replacement or overhaul: Screws (54), Retaining Ring (18, 50), Washer (55), Bearings (59, 63), Felt Strip (23), Nameplate (71), Pin (37), and Capacitor (10). If installed, the Spring (47) and Gaskets (7, 58) must also be replaced.

The following parts may be reused after maintenance inspections per Section 6-2.2 and Section 6-2.4, but must be replaced at overhaul: Main and Retard Contact Assemblies (30), Felt Washer (20), and Gear Kit (25).

2. “General Overhaul,” as specified in Section 7-2, must be performed at the shortest interval of the following, as applicable.
 - a. Overhaul magnetos at the same interval as engine overhaul.
 - b. The magneto is an integral part of the engine and undergoes the same deterioration as the engine. Severe environmental conditions, engine over-speeds, sudden stoppage, immersion and other unusual circumstances may require complete or partial engine overhaul prior to the overhaul time recommended by the engine manufacturer. Under these circumstances, the magneto (regardless of “In Service” time) must be overhauled with particular attention focused on all rotating parts, bearings, and electrical components.
 - c. Magnetos with serial number older than F15FA000(R)¹ (June 1, 2015) must be overhauled or replaced at the expiration of five years since the date of original manufacture or last overhaul, or four years since the magneto was placed in service, whichever occurs first, without regard to operating hours.

1. See Section 2-5, “Serial Number Interpretation” for information regarding serial numbers.

- d. In addition to the requirements listed in the two paragraphs above, S-1200 series magnetos with a serial number newer than F15FA000(R)² (June 1, 2015) must be overhauled or replaced at the expiration of thirteen years since the date of original manufacture or last overhaul, or twelve years since the magneto was placed in service, whichever occurs first, without regard to operating hours.

7-2. Detailed Overhaul Procedures

7-2.1. Magneto Disassembly

Disassemble the magneto completely according to instructions in Section 4.

7-2.2. Cam and Washer Inspection

1. Visually inspect the cam (33). New design cams are identified by a 0.06 inch indentions on the face (Figure 7-1). If the cam does not have a 0.06 inch indentation on its face, replace it with a new design cam. If the cam is a new design but exhibits scratches or wear, replace it with a new assembly.

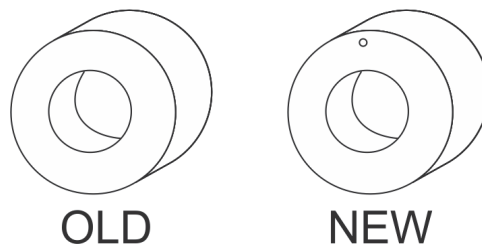


Figure 7-1. Old and New Cams

2. Wipe the cam (33) with a clean, lint-free cloth.
3. Submerge the cam (33) completely in a vat of 10-391200 Distributor Block Lubricant heated to 200°F for 30 minutes.
4. While the cam (33) is still submerged in the oil bath, allow the cam and oil to cool to room temperature together.
5. After cooling, remove the cam (33) from the oil bath, wipe with a lint-free cloth and place the cam in service or store the cam in a sealed plastic bag until needed.

7-2.3. Distributor Block Inspection

NOTE: Current design distributor blocks (21) are made of brown polyester material and have part number and batch code molded into the surface on the tower side. Older blocks made of black or green material must be discarded and replaced at overhaul.

2. See Section 2-5, "Serial Number Interpretation" for information regarding serial numbers.

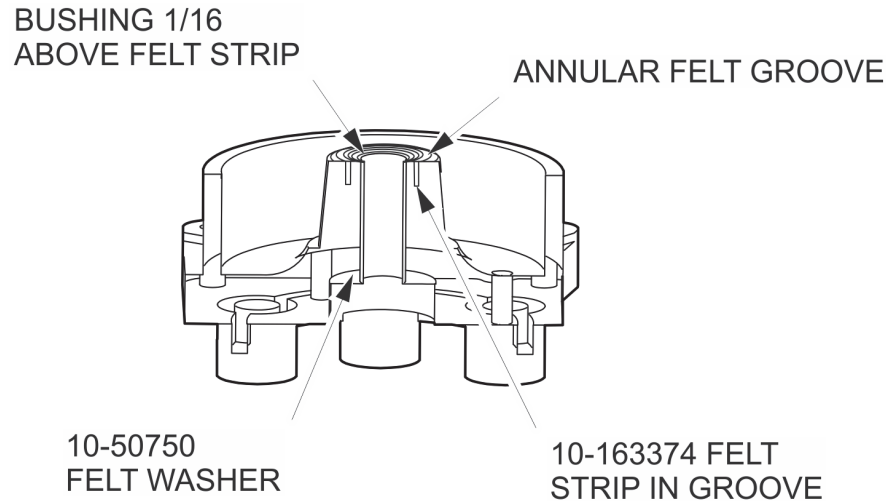


Figure 7-2. Distributor Block Cutaway

1. Inspect the batch codes of all brown polyester distributor blocks. Discard and replace 4 and 8 cylinder distributor blocks with batch codes 84-01 through 86-01 or 06-01 through 14-99. Discard and replace 6 cylinder distributor blocks with batch codes 84-01 through 86-01 or 06-01 through 15-01.
2. Measure the distributor block bushing for an inside diameter 0.376-0.377 over the entire length of the bushing with a three point micrometer. If the bushing inside diameter exceeds 0.377, discard and replace the distributor block.
3. Examine the distributor block (21) for cracks, particularly around high tension terminal towers, mounting holes and the nose in the center of electrode side. Discard and replace cracked distributor blocks.
4. Clean the distributor block (21) according to instructions in Section 5-2, step 4.
5. Inspect contact springs (22), on the tower side of the distributor block (21). If a contact spring appears fuzzy or white, or exhibits signs of burning, rust or corrosion, remove with needle nose pliers and discard. Check springs for proper height by measuring down from the top of tower. If the measurement exceeds 0.422 inch (Figure 7-3), the spring may be deformed or improperly installed. Using a scribe, or similar pointed instrument, wiggle the top of spring in a circular motion to ensure only the bottom turn of the spring is captive in the block insert groove. Recheck spring height; if measurement still exceeds 0.422 inch, remove and replace spring.

Procedure continues on next page...

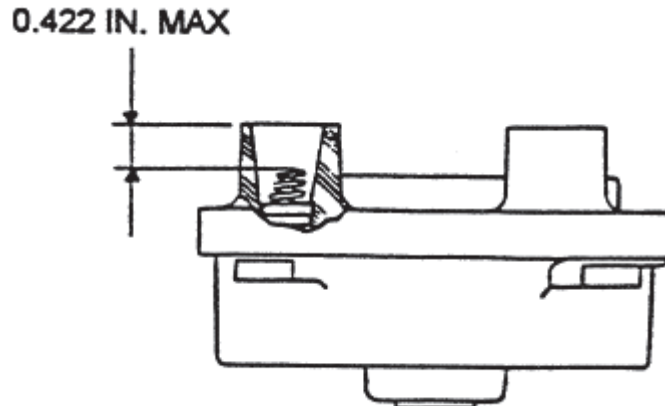


Figure 7-3. Contact Spring Height

6. Using a small scraper or knife, clean the distributor block (21) electrodes to remove any carbonized deposits. Do not attempt to grind or machine the electrodes.
7. Impregnate bronze bushing:
 - a. Insert a stopper in one end of the bushing and fill the bushing with 10-391200 Distributor Block Lubricant.
 - b. Using care not to spill oil, place the distributor block (21) in an oven and bake the distributor block at 190-210°F (88-99°C) for two to three hours.
 - c. Remove the distributor block (21) and oil from the oven and allow them to cool to room temperature together (the bushing absorbs residual oil as it cools).
 - d. Carefully remove the stopper and allow excess oil to drain from bushing.

CAUTION: Do not lubricate the felt strip (23) with Distributor Block Lubricant.

8. Install a new dry felt strip (23) in groove on electrode side of distributor block (21). When strip is properly installed (Figure 7-2), approximately 0.125 inch of the bushing shall be exposed above the felt strip.
9. Before installing new felt washer (20) into the distributor block (21), saturate the washer with 10-391200 Distributor Block Lubricant. Blot excess oil from the washer until the flat surfaces take on a “frosted” appearance, and seat the felt washer in the recess on the tower side of the distributor block.

7-2.4. Coil Inspection

1. Ensure the coil (36) matches current design specifications. The coil must exhibit red or blue epoxy compound and part number 10-391088. Discard all old style coils that do not meet this description. In service, blue coils routinely discolor to olive drab, deep red, or black. Such discoloration is not cause for rejection.
2. Visually inspect the coil (36):
 - a. Discard coils with damaged leads, loose terminals, or terminals that do not meet criteria shown in Figure 7-4.

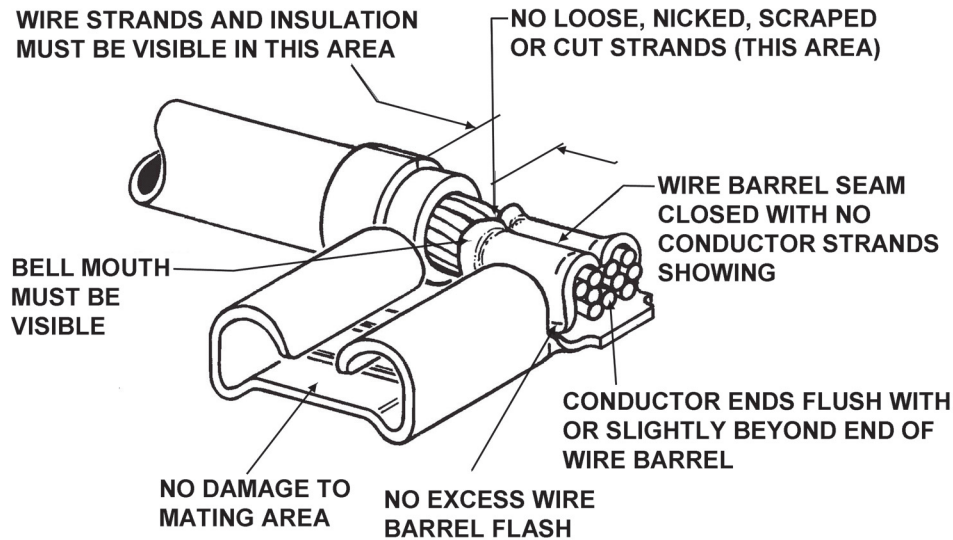


Figure 7-4. Flag Terminal Inspection Criteria

- b. Inspect high tension tab for wear caused by contact with the carbon brush (26), indicated by a visible depression in the tab. If tab is worn, repair coil according to instructions in Section 8-2.2
- c. Visually inspect the coil case; discard the coil if the epoxy case exhibits cracks or the beginning of cracks.
- d. Using a suitable Digital Multimeter or equivalent, measure primary resistance between coil leads and laminations. Primary resistance shall be 1.0 to 1.5 ohms. Measure secondary resistance between the ground lead and high tension tab. Secondary resistance shall be between 20,000 to 26,000 ohms. Replace coils that do not meet specifications.

7-2.5. Impulse Coupling and Related Component Inspection

1. Visually inspect the bushing (40):
2. Inspect for wear or deformation. Look particularly at the surface where the lock washer (39) or nut seat (38) contacts the bushing (40). If bushing wear or deformation is present, replace bushing (40).

NOTE: In step 3, only shouldered bushings will feature the undercut at the transition. All current bushings are machined steel.

3. Replace sintered iron bushing (40) with a machined steel bushing (40). Machined steel bushings have an undercut 0.062 wide by 0.005 inch deep immediately behind the bushing shoulder (Figure 7-5). Refer to the "Illustrated Parts List" in Chapter 11 for correct part numbers. Upon compliance with this step, Magneto Part Number 10-349365-2 converts to Part Number 10-349365-3. Over-stamp the magneto nameplate (71) with the new magneto part number. Identify all other part number magnetos complying with this step by stamping a 0.125 inch high letter "B" in the lower left hand corner of the nameplate. Discard sintered iron bushings.

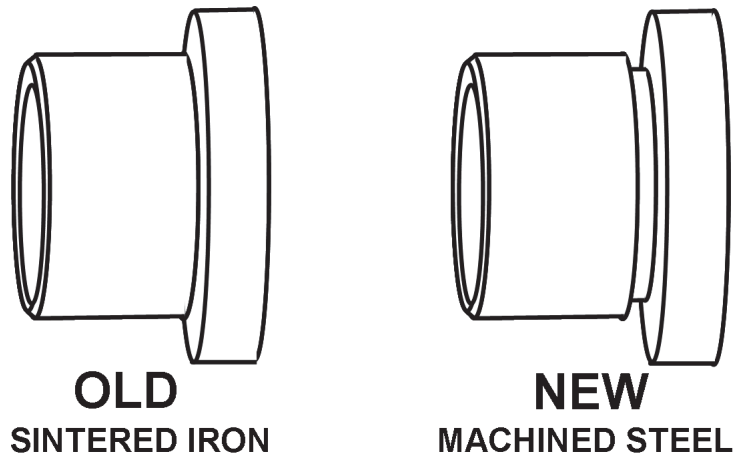


Figure 7-5. Drive Bushings

4. At overhaul, discard and replace all riveted impulse coupling cam assemblies with snap ring cam assemblies. See Section 6-2.3 and Figure 6-3 for further information on snap ring coupling identification.
5. Visually inspect flyweight, snap rings, and flyweights, particularly in area around the axle bore, for cracks. Discard the cam assembly (48) if cracks are present.

WARNING

Never attempt to repair any part of a rejected cam and flyweight assembly (11).

6. Inspect the impulse coupling body drive lugs (46). If wear is noted (Figure 7-6), measure difference between worn and unworn areas of drive lug surface. If difference exceeds 0.015 in., replace the impulse coupling body.

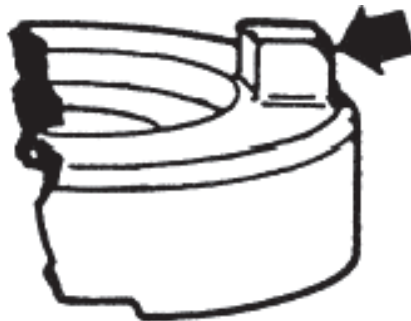


Figure 7-6. Worn Drive Lug

7. Inspect impulse coupling trip dogs (46) for grooves worn by the tail of flyweight or wear at the triggering ramp or cam stop contact areas (Figure 7-7). If either ear shows a perceptible groove or a ridge can be felt when a fingernail is drawn across the surface, reject the impulse coupling body.

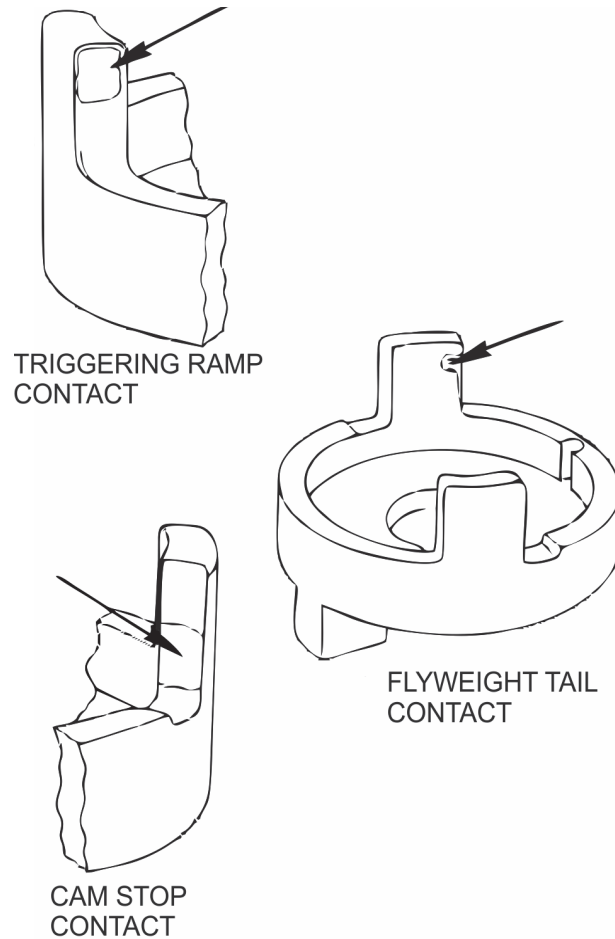


Figure 7-7. Impulse Coupling Body Wear Points

7-2.6. Magneto Housing, Cover and Flange Inspection

1. Discard all 4 and 6 cylinder housings (72) that do not include three cast-in braces supporting the flange, as shown in Figure 7-8.

Procedure continues on next page...

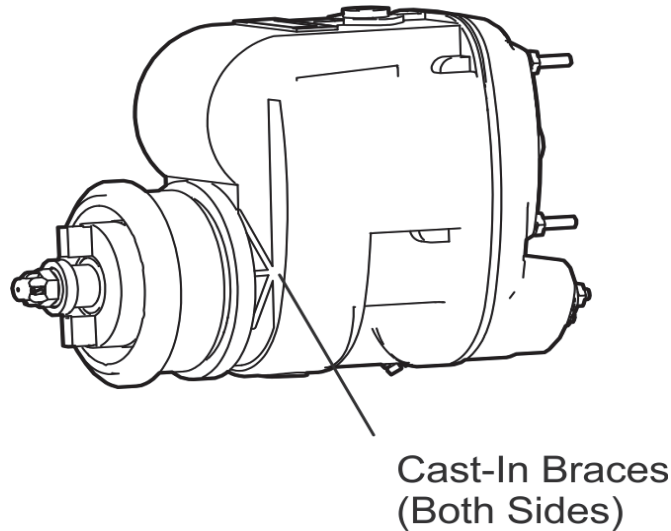


Figure 7-8. Required Housing Cast-In Features

2. Examine housing (72) for cracks, stripped threads, or other damage. Check the bearing (59) outer race seats in the housing (72) and flange (56) for wear or “peening” due to operation with loose bearings. Measure the bearing bore at four points with 90° of separation. If bearing bores are worn, peened, or exceed Table 7-1 dimensions, replace the housing (72). If an interference (press-fit) condition is not obtained after installation of new bearing (59), replace the housing (72).

Table 7-1. Bearing Seat Limits

Bearing Seat Location	Diameter
Housing (72)	.7475 Maximum
Flange (56)	1.5751 Maximum
Rotating Magnet (61), Front	0.6692 Minimum
Rotating Magnet (61), Rear	0.4998 Minimum

3. Perform a Fluorescent Penetrant Inspection on the cleaned, non-ferrous magneto flange (56) according to ASTM E1417 methods. ASTM E1208, ASTM E1209, or ASTM E1219 methods may be used. Inspection must be performed by qualified technicians certified to perform the inspection.
 - a. Look for cracks or indications of cracks. Scrap cracked magneto flanges (56).
 - b. Follow the fluorescent penetrant manufacturer's instructions for the equipment and materials required to perform the inspection, safety precautions, and disposal of used inspection media.
 - c. Follow the fluorescent penetrant manufacturer's instructions to remove penetrant residue from the inspected, serviceable parts.

WARNING

Do not attempt to repair worn bearing bores by any means. If bearing bores are oversize, replace the flange. Do not reuse a flange if it has been staked, punched, or knurled.

4. Replace the flange (56) if evidence of corrosion or galling is found at the mating surfaces.
5. Inspect the cover (6) for cracks, stripped threads, or other damage. Replace cracked or damaged covers, or covers with stripped threads.
6. Inspect the impulse coupling stop pin (57). If the stop pin is loose, bent, damaged, or shows signs of wear, remove and replace it:
 - a. Remove pin (57) using an arbor press, drift, and adequate support to protect flange from damage.
 - b. Measure the size of the stop pin (57) bore:
 - (1). A 0.2485 inch gauge pin (57) should start, but not enter, the bore deeper than 0.120 inch below the face of the housing (72). Install spare oversize stop pin as shown in Figure 7-9. It is permissible to replace one or both pins in a flange. Both pin holes, however, must have pins installed.

NOTE: Spare pins are 0.005 inch and feature groove as shown in Figure 7-9.

Groove indicates
spare pin

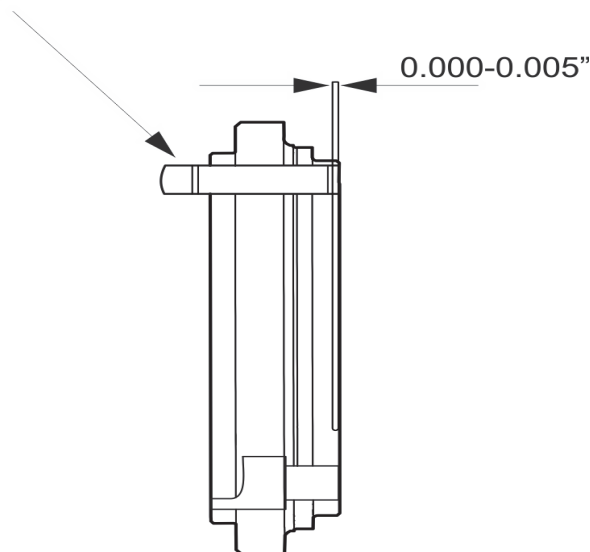


Figure 7-9. Installing Stop Pins in Flange

WARNING: Installation of salvaged, standard size impulse coupling stop pins is not permitted and will result in the stop pin not having the correct interference fit.

- (2). If the 0.2485 inch gauge pin enters the bore deeper than 0.120 inch, the bore exceeds allowable limits. Replace the flange.
- (3). Fluorescent penetrant inspection is required after stop pin installation.
- 7. For covers (6) installed on magnetos part numbers 10-349220-1, 10-349220-2, 10-349260-1, 10-349260-2, 10-349350-1, and 10-349350-2 which do not display a letter **M** stamped on the nameplate after the part number, modify the magneto cover as specified in Section 8-2.1.
- 8. Inspect retard/tach and lead assembly (13) for damage. Inspect the terminals for proper attachment to leads, per Figure 7-4. Examine leads for damaged insulation. Replace damaged leads.

7-2.7. Rotating Magnet Inspection

- 1. Inspect the rotating magnet (61) for damaged threads, cracks in the magnet casting, scored or otherwise damaged laminations, and wear or galling in the bearing race seat area, cam, and gear seat areas. Measure each bearing seat (59, 63) at 90° intervals. If either bearing seat (59, 63) exceeds limits shown in Table 7-1, replace the rotating magnet (61).
- 2. Visually inspect the drive end of the rotor shaft (61) for grooves or scratches that might allow oil to pass under the bearing (59). If an interference (press-fit) condition is not obtained after installation of new bearing (59), replace the rotating magnet (61).
- 3. Rear bearing (63) journal must be bright and free from damage. Using firm hand pressure, attempt to twist the gear on the magnet shaft (61). No rotational play is permissible. Discard the rotating magnet (61) if any of these conditions are found.

Section 8. Repair

8-1. General

Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Refer to Table 10-2 for a list of tools and materials required for magneto repair.

8-2. Detailed Repair Procedures

8-2.1. Cover Modification Procedure

Follow the cover modification procedure below for magneto part numbers 10-349220-1, 10-349220-2, 10-349260-1, 10-349260-2, 10-349350-1, and 10-349350-2 which do not display a letter **M** stamped on the nameplate (71) after the part number.

1. Disassemble the cover (6) from the housing (72) as specified in Section 4-2.8.
2. Lay out the positions for the moisture drains (Figure 8-1 and Figure 8-2). Positions 1 and 2 are in line with the stud holes in the cover (6) and position 3 is centered between 1 and 2. Using a small round file, create the three semi-circular recesses as detailed in Figure 8-3.

NOTE: The moisture drains must be on the lower side of each cover (6) when it is reinstalled on its related magneto assembly on the engine.

3. Lay out the position for drilling a 0.094 in. $\pm$ 0.005 inch hole in the center of the ledge of the cover (6). Drill one hole in the cover using a 3/32 inch or No. 42 drill (Figure 8-2).

CAUTION: To prevent the drill from penetrating the cover and hitting the housing of the capacitor, mask the drill bit for maximum allowable depth of 1/4 in.

Procedure continues on next page...

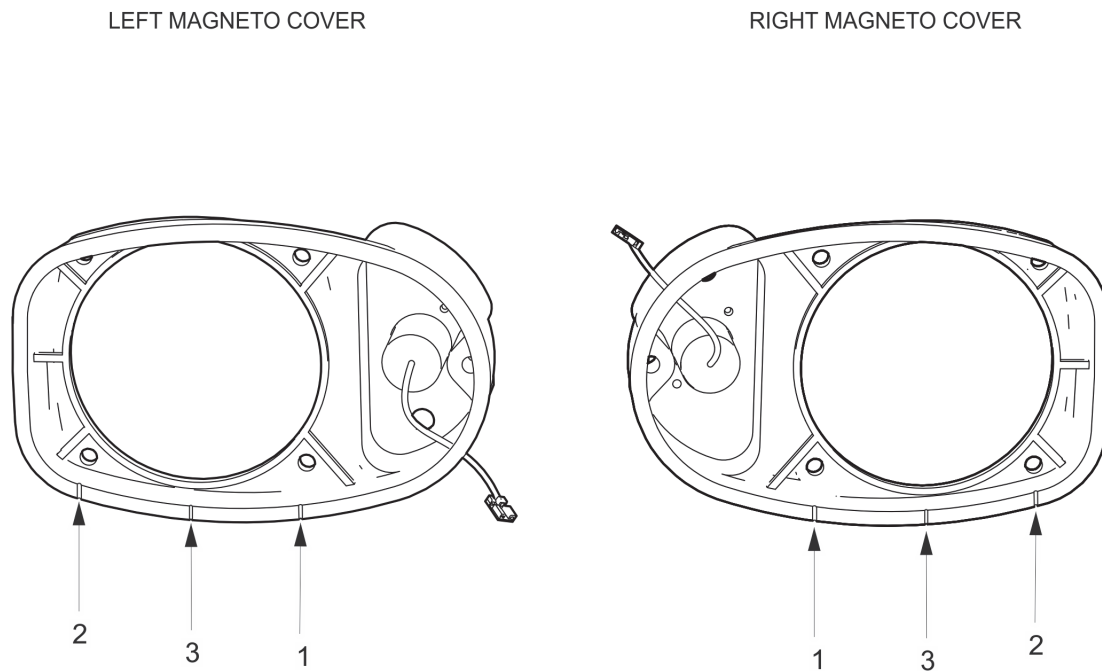


Figure 8-1. Location of Drain Holes - Inside View

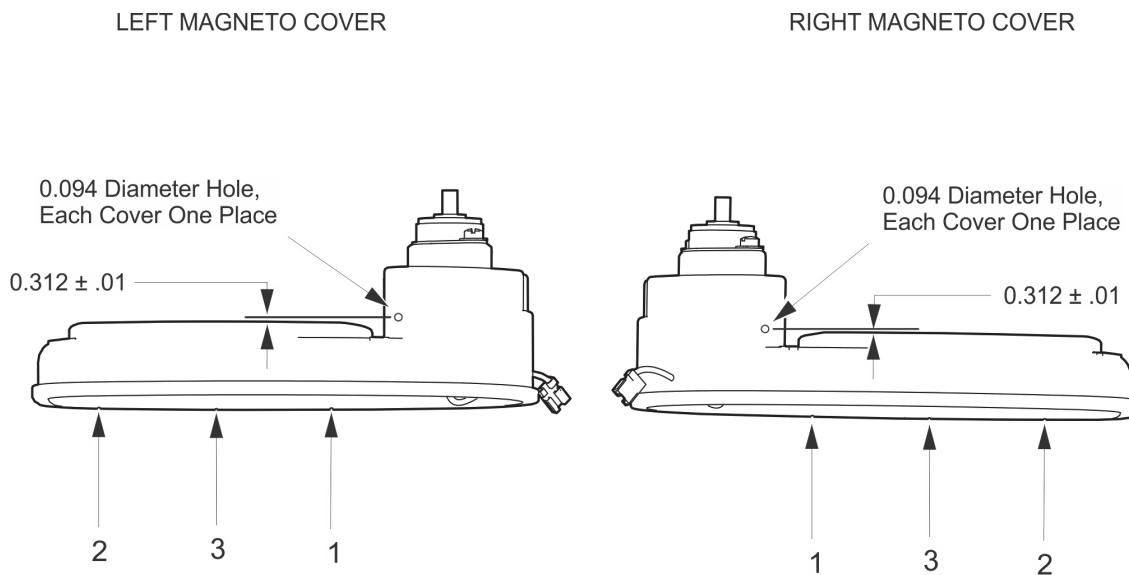


Figure 8-2. Location of Drain Holes - Side View

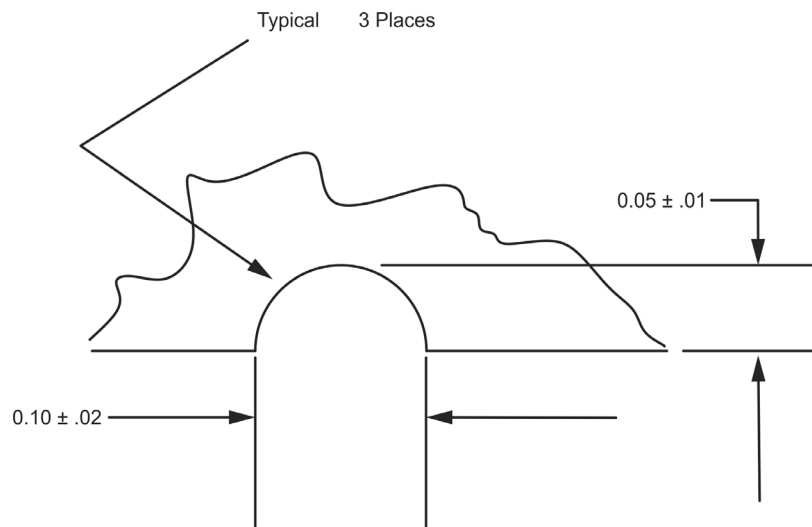


Figure 8-3. Moisture Drain Slot Configuration

4. Remove any burrs left during the filing and drilling operations on the covers (6). Clean the metal shavings. Apply a thin coat of black enamel to the bare metal exposed during the filing of the moisture drains. Do not get paint on the adjacent cover-to-magneto mounting surface.
5. Using a putty knife, spatula, or similar tool, apply sealant to the outside of the vent screen so that it fills the vent screen recess flush with the adjacent cover surface. Acceptable sealants are listed in Table 10-1.
6. Update the magneto part number on the nameplate (71) according to Table 8-1.

Table 8-1. Magneto Part Numbers

No Water Drains	Modified Cover
Old Magneto Part Number	New Magneto Part Number
10-349220-1	10-349220-5
10-349220-2	10-349220-4
10-349260-1	10-349260-6
10-349260-2	10-349260-7
10-349350-1	10-349350-4 (Drains face down for left mount)
	10-349350-5 (Drains face down for right mount)

8-2.2. Coil Pad Repair

1. Place a piece of phenolic or metal between the terminal pad and the coil (36) to prevent damage to the coil. Drill a 1/8 inch diameter hole (Figure 8-4) through the center of the high tension terminal pad.

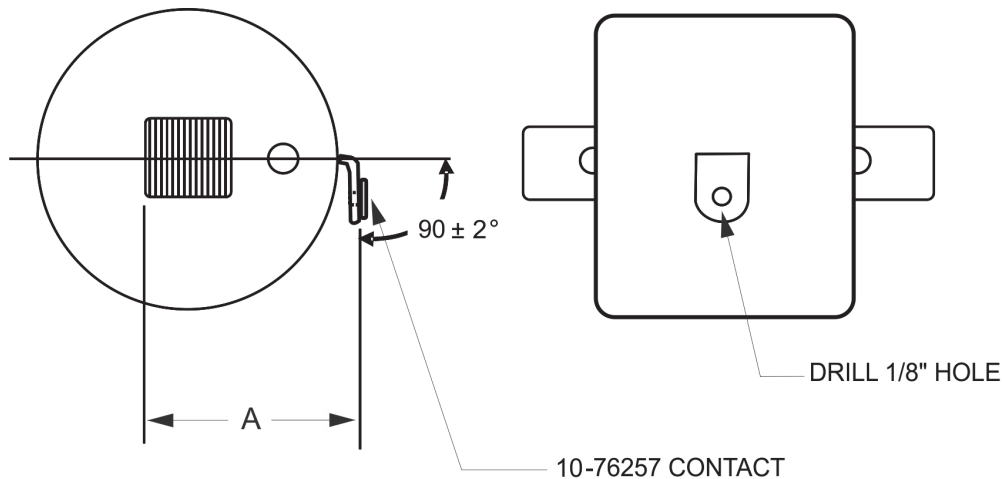


Figure 8-4. Coil Pad Repair

CAUTION: Isopropyl Alcohol (IPA) is flammable - Do not use near an ignition source. Use only with adequate ventilation. Use appropriate personal protective equipment to protect eyes, skin and clothing from exposure. Avoid breathing IPA vapors. Store IPA only in approved containers.

2. Clean the face of the terminal. Pre-tin the face of the terminal with 50/50 solder and non-corrosive flux. Then, pre-tin the entire protrusion side of the 10-76257 contact.
3. Position the contact so the protrusion extends through the 0.125 inch hole in the terminal pad. Flow solder between the coil pad terminal and the 10-76257 contact with a soldering iron. Check the finished joint for good electrical bonding; the soldered joint between the coil terminal pad and the contact should be smooth and even.
4. After the terminal has cooled, inspect the installed contact. The terminal angle should be $90 \pm 2^\circ$ off the horizontal axis of the coil core and the distance from the coil core to the outside of the 10-76257 contact must be 1.678 - 1.728 inches as illustrated in Figure 8-4.
5. Inspect the coil according to instructions in Section 7-2.4.

Section 9. Assembly

9-1. General

NOTE: Index numbers in parentheses refer to the exploded view of the magneto in Figure 1 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Refer to Table 10-1 for a list of materials and tools required during assembly. Refer to Figure 1 in Section 11 for magneto exploded view. Numbers in parenthesis following part names correspond to the index numbers in the exploded view.

WARNING

Adhere to the fastener torque specifications in the assembly instructions. Failure to properly torque fasteners places the airworthiness of the entire assembly in question.

NOTE: The following parts must be replaced 100% with new parts upon removal from the magneto, regardless of whether disassembly is for the purpose of inspection, parts replacement or overhaul: Screws (54), Retaining Ring (18, 50), Washer (55), Bearings (59, 63), Felt Strip (23), Identification Data Plate (71), Pin (37), and Capacitor (10). If installed, the Spring (47) and Gaskets (7, 58) must also be replaced.

The following parts may be reused after maintenance inspections per Section 6-2.2 and Section 6-2.4, but must be replaced at overhaul: Main and Retard Contact Assemblies (30), Felt Washer (20), Capacitor (10), and Gear Kit (25).

Section 10. Special Tools, Equipment and Supplies

Refer to Table 10-1 for a list of special tools, fixtures, equipment and consumable supplies. Figure 10-2 provides fabrication instructions for a pry bar (AISI 1040 Cold Rolled Steel, heat treated to 30 - 35 Rc) to remove magneto wedges. Figure 10-3 and Figure 10-4 provide fabrication instructions for fixtures required for magneto service. All linear dimensions are in inches, unless specified otherwise.

NOTE: Tools specified in this manual are listed for the convenience of users wishing to purchase tools. At the time of publication, each tool listed is available from the corresponding supplier. Use of alternate tools is acceptable, as long as such tools are capable of equal or greater performance than the listed tool.

10-1. Special Tool and Consumable Supply List

Table 10-1. Special Tools and Consumable Supplies

Part Number and Description	Application	Source
Special Tools		
11-1471 Drift	Remove and install bearing (59) and install gear (62)	Kell-Strom
11-8150-1 Timing Kit	Check magneto internal timing	Kell-Strom
11-8465 Rotor Holding Tool	Hold rotor to check magneto internal timing	Kell-Strom
11-8627 Spring Seating Kit	Seat tower springs (22) in distributor block (21)	Kell-Strom
11-8822 Drift	Compress bowed washer (52) and seat retaining ring (50)	Kell-Strom
Suitable Magneto Test Stand, or equivalent	For off-engine magneto testing	Kell-Strom
Suitable Magnet Charger	Magnetize rotor (54)	Kell-Strom
11-9815 Drift	Remove and install roller bearing (63)	Kell-Strom
11-10090 Air Flow Tester	Test magneto pressurization system	Kell-Strom
Digital Multimeter	Test coil	Commercial, off the shelf
J4033 Puller	Remove drive plate or cam	Snap-On
E-50 Timing Light (or equivalent)	Check magneto-to-engine timing	Eastern Technology Corp.
SRPC 3800 Retaining ring pliers	Remove and install retaining ring	Snap-On
Consumable Supplies		
10-400550-1 Magneto Grease	Pack bearings	Continental
10-391200 Distributor Block Lubricant	Distributor block bushings	Continental
MS-122AD Teflon Dry Lubricant	Lubricate distributor gear teeth	Miller-Stephenson
10-76257, Contact	Contact	Continental
10-86527 High Temperature Lubricant	Contact assemblies, cam follower felt	Continental
646943, Anti-seize Lubricant	Prevent drive members from locking on rotating magnet shaft taper	Continental
646942, Gasket Maker	Aids positioning of gasket during assembly	Continental
Dykem Stain Red DNC	Mark distributor gears	Dykem
Permabond 910 Industrial Grade Adhesive	Bond Data Plate to Housing	Permabond

Table 10-2. Supplier Contact Information

Company	Address	Telephone	Internet site
Dykem	ITW Dykem 805 E. Old 56 Highway Olathe, KS 66061	800-443-9536	buydykem.com
Eastern Technology Corporation	42 Nelson St. East Hartford, CT	860-528-9821	easterntech.com
Kell Strom Tool Company	214 Church Street Wethersfield, CT 06109	860-529-6851 800-851-6851	kell-strom.com
Loctite	1201 Trout Brook Crossing Rocky Hill, CT 06067	800-567-8483	henkelna.com
Miller-Stephenson Chemical Company	6348 Oakton St. Morton Grove, IL 60053	847-966-2022 800-992-2424	miller-stephenson.com
Permabond International	14 Robinson St. Pottstown, PA 19464	732-868-1372 800-714-0170	permabond.com
Snap-On Tools	2801 80th St. Kenosha, WI 53143	877-762-7664 (US) 888-451-8665 (CAN) 01536 413877 (UK) 1800 811 480 (AU)	snapon.com

10-2. Illustrated Special Tools and Fixtures

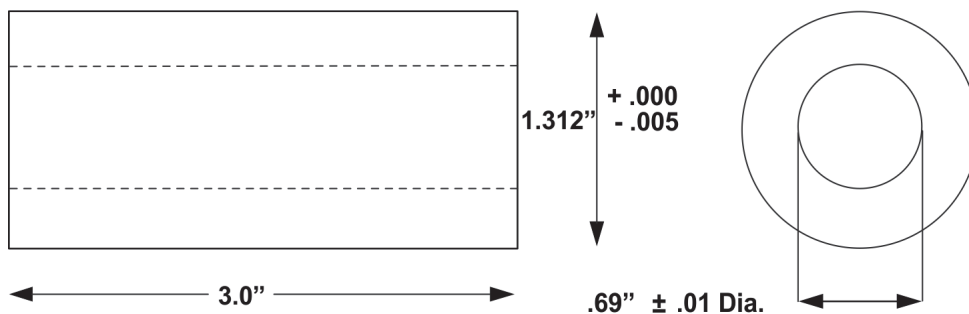


Figure 10-1. 11-1471 Drift

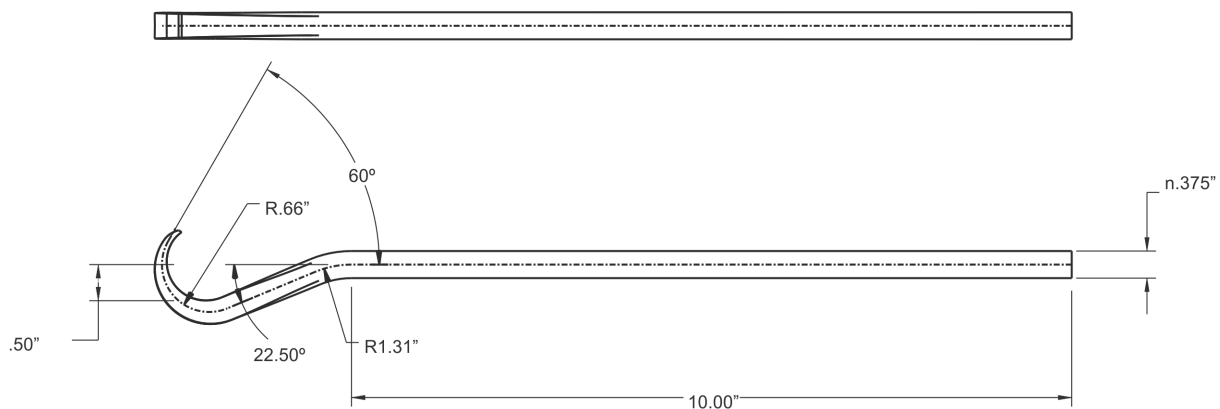


Figure 10-2. Fabricated Pry Bar (Cold Rolled Steel) - Magneto Wedges

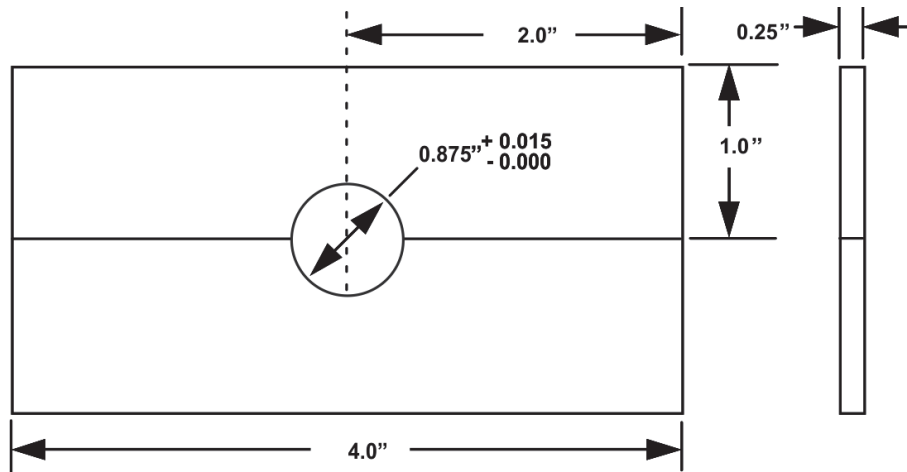


Figure 10-3. Fabricated Support Bars (Cold Rolled Steel) - Drive End Bearing

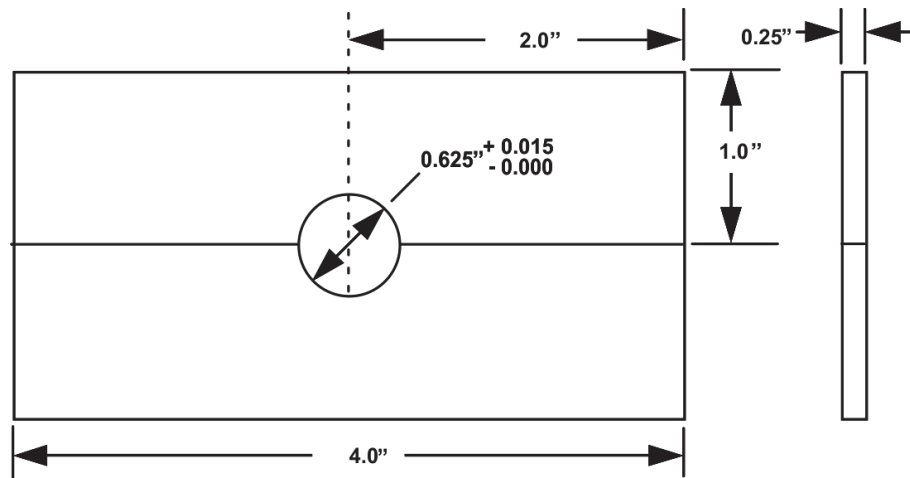


Figure 10-4. Fabricated Support Bars (Cold Rolled Steel) - Small Gear

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Section 11. Illustrated Parts List

NOTE: Since May 1999, Continental Factory Rebuilt Magnetos have been marked with part numbers beginning with BL- (“Blue Label”) instead of the 10- prefix. For example, the part number of a factory rebuilt magneto typically reads BL-349350-4. Rebuilt data plates are blue in color and include the word “REBUILT.” Magnetos marked with a BL prefix are fully interchangeable with corresponding units marked with a 10- prefix. Likewise, to maintain BL- prefix magnetos, use the corresponding 10- prefix parts list data.

11-1. Equipment Covered

Table 11-1. Equipment Covered

Magneto Part Number	Model Number	Degrees Lag/Retard	Applicable Parts List
10-349220-4	S6LN-1201	30	Table 11-4
10-349220-5	S6RN-1201	30	Table 11-4
10-349260-3	S6RN-1205	-	Table 11-4
10-349260-6	S6RN-1205	-	Table 11-4
10-349260-7	S6LN-1205	-	Table 11-4
10-349285-1	S4LN-1208	25	Table 11-3
10-349285-7	S4LN-1208	15	Table 11-3
10-349290-1	S6LN-1208	37.5	Table 11-5
10-349290-2	S6LN-1208	30	Table 11-5
10-349290-3	S6RN-1208	30	Table 11-5
10-349290-4	S6RN-1208	25	Table 11-5
10-349290-9	S6RN-1208	25	Table 11-5
10-349290-17	S6RN-1208	37.5	Table 11-5
10-348290-18	S6LN-1209	37.5	Table 11-5
10-349300-4	S8LN-1208	15	Table 11-8
10-349305-1	S4LN-1209	-	Table 11-3
10-349305-3	S4RN-1209	-	Table 11-3
10-349310-1	S6LN-1209	-	Table 11-5
10-349310-4	S6RN-1209	-	Table 11-5
10-349310-8	S6LN-1209	-	Table 11-5
10-349310-10	S6LN-1209	-	Table 11-5
10-349310-11	S6RN-1209	-	Table 11-5
10-349310-14	S6RN-1209	-	Table 11-5
10-349310-15	S6LN-1209	-	Table 11-5
10-349320-4	S8LN-1209	-	Table 11-8
10-349320-5	S8LN-1209	-	Table 11-8
10-349350-4	S6RN-1225	30	Table 11-6
10-349350-5	S6RN-1225	30	Table 11-6
10-349350-6	S6LN-1225	30	Table 11-6
10-349350-7	S6LN-1225	30	Table 11-6
10-349365-3	S4LN-1227	25	Table 11-3
10-349365-6	S4RN-1227	25	Table 11-3

Table 11-1. Equipment Covered

Magneto Part Number	Model Number	Degrees Lag/Retard	Applicable Parts List
10-349365-9	S4LN-1227	15	Table 11-3
10-349365-10	S4RN-1227	15	Table 11-3
10-349370-2	S6RN-1227	38	Table 11-6
10-349370-4	S6LN-1227	35	Table 11-6
10-349420-1	S6RN-1251	30	Table 11-7
10-349420-2	S6LN-1251	30	Table 11-7
10-349460-1	S6RN-1255	-	Table 11-7
10-349460-2	S6LN-1255	-	Table 11-7
10-349490-1	S6LN-1258	25	Table 11-7
10-349490-2	S6LN-1258	25	Table 11-7
10-349490-3	S6RN-1258	25	Table 11-7
10-349500-1	S8LN-1258	15	Table 11-8
10-349510-1	S6RN-1259	-	Table 11-7
10-349510-2	S6LN-1259	-	Table 11-7
10-349510-3	S6RN-1259	-	Table 11-7
10-349520-1	S8LN-1259	-	Table 11-8

11-2. Superseded and Discontinued Magnetos

Table 11-2. Superseded and Discontinued Magnetos

Old Part No.	Superseded By
10-349215-1	Inactive
10-349215-2	Inactive
10-349220-1	10-349220-5
10-349220-2	10-349220-4
10-349235-1	Request ¹
10-349235-2	10-349285-7 ²
10-349235-3	10-349285-7 ²
10-349235-4	10-349285-7 ²
10-349235-5	10-349285-7 ²
10-349235-6	10-349285-7 ²
10-349255-1	Inactive
10-349255-2	Inactive
10-349260-1	10-349260-6
10-349260-2	10-349260-7
10-349260-4	Inactive
10-349285-2	Inactive
10-349285-3	Inactive
10-349285-4	Inactive
10-349285-5	10-349285-7
10-349285-6	Inactive
10-349290-6	Inactive
10-349290-7	Inactive
10-349290-8	Inactive
10-349300-3	Inactive
10-349300-6	10-349300-4
10-349305-2	Inactive
10-349305-4	Inactive

Table 11-2. Superseded and Discontinued Magnetos

Old Part No.	Superseded By
10-349305-5	Inactive
10-349305-6	Inactive
10-349310-2	10-349320-4
10-349310-3	Inactive
10-349310-5	Inactive
10-349310-6	Inactive
10-349310-7	Inactive
10-349310-11	Inactive
10-349320-6	10-349320-4
10-349350-1	10-349350-4 Left ³ or 10-349350-5 Right ³
10-349350-2	10-349350-6 Left ³ or 10-349350-7 Right ³
10-349345-1	Inactive
10-349365-1	Inactive
10-349365-2	10-349365-3
10-349365-5	Inactive
10-349370-1	Inactive
10-349370-3	Inactive
10-349370-5	Inactive
10-349370-6	Inactive
10-349370-7	Inactive
10-349370-11	Inactive

1. Superseding part number will be supplied upon request.
2. Refer to Lycoming® Service Letter 1346A for additional information.
3. Position on engine.

11-3. Illustrated Parts List by Magneto Series**Table 11-3. S4LN, S4RN-1208, -1209, -1227 Magnetos**

Index	Description	Part No.	10-349285-1	10-349285-7	10-349305-1	10-349305-3	10-349365-3	10-349365-6	10-349365-9	10-349365-10
1	Screw , w/lock washer	10-35937-24	1	1	1	1	1	1	1	1
3	Nut	MS35650-302	5	5	4	4	4	4	4	4
4	Washer , Lock	MS35338-43	10	10	9	9	9	9	9	9
6	Cover , Magneto	10-349393-1	1	1						
		10-349393-2			1	1	1	1	1	1
8	Tubing , Flex	10-180046-28	1	1						
9	Screw , w/lock washer	10-35935-6	2	2	2	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1	1	1	1
11	Packing , Preformed	10-349263	1	1	1	1	1	1	1	1
12	Screw , w/lock washer	10-35937-12	1	1						
13	Lead , Retard/Tach	10-400050	1	1						
14	Washer , Insulating	10-16092	1	1						
15	Bushing , Insulating	10-125996	1	1						
16	Stud , Double End	10-349221	4	4	4	4	4	4	4	4
17	Washer , Flat	10-78655	4	4	4	4	4	4	4	4
18	Ring , Retaining	MS16624-2037	1	1	1	1	1	1	1	1
19	Washer , Flat	10-349511	2	2	2	2	2	2	2	2
20	Washer , Felt	10-50752	1	1	1	1	1	1	1	1
21	Block , Distributor (4 cylinder)	10-391584	1	1	1	1	1	1	1	1
22	Spring , Helical Coil	10-50737	4	4	4	4	4	4	4	4
23	Strip , Felt	10-163374	1	1	1	1	1	1	1	1
24	Washer , Nylon	10-391309	1	1	1	1	1	1	1	1
25	Kit , Distributor Gear	10-400405	1	1	1	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1	1	1	1
27	Screw , w/lock washer	10-35936-7	4	4	3	2	3	2	3	2
28	Clip , Cable	10-5752			1		1		1	
29	Washer , Plain	10-14268	2	2	1	1	1	1	1	1
30	Contact Assembly	10-382585	1 ¹	1 ¹	1		1		1	
		10-382584	1	1		1		1		1
31	Screw , w/lock washer	10-391213	1	1	1	1	1	1	1	1
32	Washer , Plain	10-51354	1	1	1	1	1	1	1	1
33	Cam , Two Lobe Breaker	10-349243-2	1	1	1	1	1	1	1	1
34	Strip , Fish Paper	10-349326	1	1	1	1	1	1	1	1
35	Wedge , Coil	10-349219	2	2	2	2	2	2	2	2
36	Coil , Magneto, High Tension	10-391088-1	1	1	1	1	1	1	1	1
37	Pin , Cotter	10-90751-18	1	1	1	1	1	1	1	1
38	Nut , Drive Shaft	10-163151	1	1	1	1				
		10-51643					1	1	1	1
39	Washer , Lock	10-3793					1	1	1	1

Table 11-3. S4LN, S4RN-1208, -1209, -1227 Magnetos

Index	Description	Part No.	10-349285-1	10-349285-7	10-349305-1	10-349305-3	10-349365-3	10-349365-6	10-349365-9	10-349365-10
40	Bushing , Shouldered	10-163049					1	1	1	1
41	Washer , Plain	10-4093	1	1	1	1				
	Special	10-51370					1	1	1	1
45	Impulse Coupling									
	25° CCW	10-400317					1			
	25° CW	10-400308						1		
	15° CCW	10-400327							1	
	15° CW	10-400312								1
46	Body , Impulse Coupling	10-52903					1		1	
		10-51333						1		1
47	Spring , Spiral	10-51324					1	1	1	1
48	Cam Assembly	10-400167-3							1	
		10-400167-7					1			
		10-400166-5						1		
		10-400166-1								1
49	Key , Woodruff	10-90788-5	1	1	1	1	2	2	2	2
50	Ring , Retaining	MS16624-2062	1	1	1	1	1	1	1	1
51	Washer , Flat	10-349328	1	1	1	1	1	1	1	1
52	Washer , Bowed	10-349249	1	1	1	1	1	1	1	1
53	Slinger , Oil	10-349248	1	1	1	1	1	1	1	1
54	Screw , Cap, Socket Head	10-349652	3	3	3	3	3	3	3	3
55	Washer , Plain	10-53397	3	3	3	3	3	3	3	3
56	Flange , Short	10-349392-2	1	1	1	1				
		10-349392-5						1		1
		10-349392-6					1		1	
57	Pin , Stop	10-349438R					2	2	2	2
59	Ball , Bearing	10-400567	1	1	1	1	1	1	1	1
60	Retainer , Ball Bearing	10-349247	1	1	1	1	1	1	1	1
61	Magnet , Rotating	10-349351-1					1	1	1	1
		10-349351-3	1	1	1	1				
62	Gear , Spur (Pinion)	10-349241	1	1	1	1	1	1	1	1
63	Bearing , Roller	10-400561	1	1	1	1	1	1	1	1
64	Plug , Ventilator	10-157134	1	1	1	1	1	1	1	1
68	Plug , Timing	10-157135	1	1	1	1	1	1	1	1
71	Nameplate , Magneto	10-400009	1	1	1	1	1	1	1	1
72	Housing , Magneto	10-400671-2	1							
		10-400671-3			1	1	1	1	1	1
		10-400671-1		1						

1. Primary contact assembly.

Table 11-4. S6LN, S6RN-1201 and -1205 Magnetos

Index	Description	Part No.	10-349220-4	10-349220-5	10-349260-3	10-349260-6	10-349260-7
1	Screw , w/lock washer	10-35937-24	1	1	1	1	1
3	Nut	MS35650-302	5	5	4	4	4
4	Washer , Lock	MS35338-43	10	10	10	9	9
6	Cover , Magneto	10-349393-8				1	1
		10-349393-9			1		
		10-349393-10	1	1			
8	Tubing , Flex	10-180046-28	1				
9	Screw , w/lock washer	10-35935-6	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1
11	Packing , Preformed	10-349263	1	1	1	1	1
12	Screw	10-35937-12	1	1	1		
13	Lead , Retard, Tach	10-400050	1	1	1		
14	Washer , Insulating	10-16092	1	1	1		
15	Bushing , Insulating	10-125996	1	1	1		
16	Stud , Double End	10-349221	4	4	4	4	4
17	Washer , Flat	10-78655	4	4	4	4	4
18	Ring , Retaining	MS16624-2037	1	1	1	1	1
19	Washer , Flat	10-349511	2	2	2	2	2
20	Washer , Felt	10-50752	1	1	1	1	1
21	Block , Distributor	10-391586	1	1	1	1	1
22	Spring , Helical Coil	10-50737	6	6	6	6	6
23	Strip , Felt	10-163374	1	1	1	1	1
24	Washer , Nylon	10-391309	1	1	1	1	1
25	Kit , Distributor Gear	10-400406	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1
27	Screw	10-35936-7	4	4	4	3	3
28	Clip , Cable	10-5752				1	1
29	Washer , Plain	10-14268	2	2	1	1	1
30	Contact Assembly	10-382585	1 ¹	1			1
		10-382584	1	1 ¹	1 ¹	1	
		10-349971			1		
31	Screw , w/lock washer	10-391213	1	1	1	1	1
32	Washer , Plain	10-51354	1	1	1	1	1
33	Cam , Two Lobe Breaker	10-349243-2	1	1	1	1	1
34	Strip , Fish Paper	10-349326	1	1	1	1	1
35	Wedge , Coil	10-349219	2	2	2	2	2
36	Coil , Magneto, High Tension	10-391088-1	1	1	1	1	1
37	Pin , Cotter	10-90751-18	1	1	1	1	1
38	Nut , Drive Shaft	10-51643	1	1	1	1	1
39	Washer	10-3793	1	1	1	1	1

Table 11-4. S6LN, S6RN-1201 and -1205 Magnetos

Index	Description	Part No.	10-349220-4	10-349220-5	10-349260-3	10-349260-6	10-349260-7
40	Bushing , Keyed	10-163048					
41	Washer , Plain	10-4093	1	1	1	1	1
43	Gasket	AEL12681					
44	Plate , Drive	10-163003	1	1	1	1	1
	Coupling , Magneto	AEL73000					
49	Key , Woodruff	10-90788-5	1	1	1	1	1
50	Ring , Retaining	MS16624-2062	1	1	1	1	1
51	Washer , Flat	10-349328	1	1	1	1	1
52	Washer , Bowed	10-349249	1	1	1	1	1
53	Slinger , Oil	10-349248	1	1	1	1	1
54	Screw , Cap, Socket Head	10-349652	3	3	3	3	3
55	Washer , Plain	10-53397	3	3	3	3	3
56	Flange , Long	10-349392-1	1	1	1	1	1
59	Bearing , Ball	10-400567	1	1	1	1	1
60	Retainer , Ball Bearing	10-349247	1	1	1	1	1
61	Magnet , Rotating	10-349351-2	1	1	1	1	1
62	Gear , Spur (Pinion)	10-349242	1	1	1	1	1
63	Bearing , Roller	10-400561	1	1	1	1	1
64	Plug , Ventilator	10-157134	1	1	1	1	1
67	Nut	MS51967-5					
68	Plug , Timing	10-157135	1	1	1	1	1
70	Washer , Lock, Internal	AE51413-5					
71	Nameplate , Magneto	10-400009	1	1	1	1	1
72	Housing , Magneto	10-400671-2					
		10-400671-3	1	1	1	1	1

1. Primary contact assembly.

Table 11-5. S6LN, S6RN-1208 and -1209 Magnetos

Index	Description	Part No.	10-349290-1	10-349290-2	10-349290-3	10-349290-4	10-349290-9	10-349290-17	10-349290-18	10-349310-1	10-349310-4	10-349310-8	10-349310-10	10-349310-11	10-349310-14	10-349310-15
1	Screw, w/lock washer	10-35937-24	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	Nut	MS35650-302	5	5	5	5	5	5	5	4	4	5	4	4	4	4
4	Washer, Lock	MS35338-43	10	10	10	10	10	10	10	9	9	9	9	9	9	9
6	Cover, Magneto	10-349393-1	1	1	1			1	1							
		10-349393-2								1	1				1	1
		10-349393-3										1				
		10-349393-4				1	1									
		10-349393-5									1		1	1		
8	Tubing, Flex	10-180046-28	1	1			1	1	1			1				
9	Screw, w/lock washer	10-35935-6	2	2	2	2	2	2	2	2	2	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	Packing, Preformed	10-349263	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	Screw	10-35937-12	1	1	1	1	1	1	1			1				
13	Lead, Retard, Tach	10-400050	1	1	1	1	1	1	1			1				
14	Washer, Insulating	10-16092	1	1	1	1	1	1	1			1				
15	Bushing, Insulating	10-125996	1	1	1	1	1	1	1			1				
16	Stud, Double End	10-349221	4	4	4	4	4	4	4	4	4	4	4	4	4	4
17	Washer, Flat	10-78655	4	4	4	4	4	4	4	4	4	4	4	4	4	4
18	Ring, Retaining	MS16624-2037	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	Washer, Flat	10-349511	2	2	2	2	2	2	2	2	2	2	2	2	2	2
20	Washer, Felt	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	Block, Distributor	10-391586	1	1	1	1	1	1	1	1	1	1	1	1	1	1
22	Spring, Helical Coil	10-50737	6	6	6	6	6	6	6	6	6	6	6	6	6	6
23	Strip, Felt	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1
24	Washer, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	Kit, Distributor Gear	10-400406	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	Screw	10-35936-7	4	4	4	4	4	4	4	3	2	4	3	2	3	3
28	Clip, Cable	10-5752								1			1		1	1
29	Washer, Plain	10-14268	2	2	2	2	2	2	2	1	1	2	1	1	1	1
30	Contact Assembly	10-382585	1 ¹	1 ¹	1	1	1	1	1 ¹	1		1 ¹	1			1
		10-382584	1	1	1 ¹	1 ¹	1 ¹	1 ¹	1		1			1	1	
	(Tachometer)	10-349970										1				
31	Screw, w/lock washer	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1
32	Washer, Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	Cam, Two Lobe Breaker	10-349243-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34	Strip, Fish Paper	10-349326	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	Wedge, Coil	10-349219	2	2	2	2	2	2	2	2	2	2	2	2	2	2
36	Coil, Magneto, High Tension	10-391088-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Table 11-5. S6LN, S6RN-1208 and -1209 Magnetos

Index	Description	Part No.	10-349290-1	10-349290-2	10-349290-3	10-349290-4	10-349290-9	10-349290-17	10-349290-18	10-349310-1	10-349310-4	10-349310-8	10-349310-10	10-349310-11	10-349310-14	10-349310-15
37	Pin, Cotter	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1
38	Nut, Drive Shaft	10-163151		1	1	1	1				1		1	1		
		10-163178	1					1	1	1		1			1	1
39	Washer	10-3793														
40	Bushing, Keyed	10-163048	1					1	1	1		1			1	1
41	Washer, Plain	10-4093		1	1	1	1				1		1	1		
43	Gasket	AEL12681							1							1
44	Coupling, Magneto	AEL73000							1							1
49	Key, Woodruff	10-90788-5	2	1	1	1	1	2	2	2	1	2	1	1	2	2
50	Ring, Retaining	MS16624-2062	1	1	1	1	1	1	1	1	1	1	1	1	1	1
51	Washer, Flat	10-349328	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	Washer, Bowed	10-349249	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	Slinger, Oil	10-349248	1	1	1	1	1	1	1	1	1	1	1	1	1	1
54	Screw, Cap, Socket Head	10-349652	3	3	3	3	3	3	3	3	3	3	3	3	3	3
55	Washer, Plain	10-53397	3	3	3	3	3	3	3	3	3	3	3	3	3	3
56	Flange, Short	10-349392-2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	Bearing, Ball	10-400567	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	Retainer, Ball Bearing	10-349247	1	1	1	1	1	1	1	1	1	1	1	1	1	1
61	Magnet, Rotating	10-349351-1	1					1	1	1		1			1	1
		10-349351-3		1	1	1	1				1		1	1		
62	Gear, Spur (Pinion)	10-349242	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63	Bearing, Roller	10-400561	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64	Plug, Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67	Nut	MS51967-5							2							2
68	Plug, Timing	10-157135	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	Washer, Lock, Internal	AE51413-5							2							2
71	Nameplate, Magneto	10-400009	1	1	1	1	1	1	1	1	1	1	1	1	1	1
72	Housing, Magneto	10-400671-2				1	1									
		10-400671-3		1	1					1	1	1	1	1	1	1
		10-400671-4	1					1	1							

1. Primary contact assembly.

Table 11-6. S6LN, S6RN-1225 and -1227 Magnetos

Index	Description	Part No	10-349350-4	10-349350-5	10-349350-6	10-349350-7	10-349370-2	10-349370-4
1	Screw , w/lock washer	10-35937-24	1	1	1	1	1	1
3	Nut	MS35650-302	4	4	4	4	4	4
4	Washer , Lock	MS35338-43	9	9	9	9	9	9
6	Cover , Magneto	10-349393-2					1	1
		10-349393-8		1		1		
		10-349393-11	1		1			
9	Screw , w/lock washer	10-35935-6	2	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1	1
11	Packing , Preformed	10-349263	1	1	1	1	1	1
16	Stud , Double End	10-349221	4	4	4	4	4	4
17	Washer , Flat	10-78655	4	4	4	4	4	4
18	Ring , Retaining	MS16624-2037	1	1	1	1	1	1
19	Washer , Flat	10-349511	2	2	2	2	2	2
20	Washer , Felt	10-50752	1	1	1	1	1	1
21	Block , Distributor	10-391586	1	1	1	1	1	1
22	Spring , Helical Coil	10-50737	6	6	6	6	6	6
23	Strip , Felt	10-163374	1	1	1	1	1	1
24	Washer , Nylon	10-391309	1	1	1	1	1	1
25	Kit , Distributor Gear	10-400406	1	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1	1
27	Screw , w/lock washer	10-35936-7	2	2	3	3	2	3
28	Clip , Cable	10-5752			1	1		1
29	Washer , Plain	10-14268	1	1	1	1	1	1
30	Contact Assembly	10-382585			1	1		1
		10-382584	1	1			1	
31	Screw , w/lock washer	10-391213	1	1	1	1	1	1
32	Washer , Plain	10-51354	1	1	1	1	1	1
33	Cam , Two Lobe, Breaker	10-349243-2	1	1	1	1	1	1
34	Strip , Fish Paper	10-349326	1	1	1	1	1	1
35	Wedge , Coil	10-349219	2	2	2	2	2	2
36	Coil , Magneto, High Tension	10-391088-1	1	1	1	1	1	1
37	Pin , Cotter	10-90751-18	1	1	1	1	1	1
38	Nut , Drive Shaft	10-51643	1	1	1	1	1	
		10-163178						1
39	Washer , Lock	10-3793	1	1	1	1	1	
40	Bushing , Keyed	10-163048						1
41	Washer , Plain	10-116860						1
	Special	10-52307	1	1	1	1	1	

Table 11-6. S6LN, S6RN-1225 and -1227 Magnetos

Index	Description	Part No	10-349350-4	10-349350-5	10-349350-6	10-349350-7	10-349370-2	10-349370-4
45	Impulse Coupling							
	30° CW	10-400309	1	1				
	30° CCW	10-400319			1	1		
	35° CW	10-400341					1	
	35° CCW	10-400320						1
46	Body, Impulse Coupling	10-76232	1	1			1	
		10-70371			1	1		1
47	Spring, Spiral	10-51324	1	1	1	1	1	1
48	Cam Assembly	10-400166-7	1	1				
		10-400166-9					1	
		10-400167-8			1	1		
		10-400167-9						1
49	Key, Woodruff	10-90788-5	1	1	1	1	1	2
50	Ring, Retaining	MS16624-2062	1	1	1	1	1	1
51	Washer, Flat	10-349328	1	1	1	1	1	1
52	Washer, Bowed	10-349249	1	1	1	1	1	1
53	Slinger, Oil	10-349248	1	1	1	1	1	1
54	Screw, Cap, Socket Head	10-349652	3	3	3	3	3	3
55	Washer, Plain	10-53397	3	3	3	3	3	3
56	Flange						1	
	Short	10-349392-5					1	
	Short	10-349392-6						1
	Long	10-349392-3	1	1				
	Long	10-349392-4			1	1		
57	Pin, Stop	10-349438R	2	2	2	2	2	2
59	Bearing, Ball	10-400567	1	1	1	1	1	1
60	Retainer, Ball Bearing	10-349247	1	1	1	1	1	1
61	Magnet, Rotating	10-349351-1						1
		10-349351-2	1	1	1	1	1	
62	Gear, Spur (Pinion)	10-349242	1	1	1	1	1	1
63	Bearing, Roller	10-400561	1	1	1	1	1	1
64	Plug, Ventilator	10-157134	1	1	1	1	1	1
68	Plug, Timing	10-157135	1	1	1	1	1	1
71	Nameplate, Magneto	10-400009	1	1	1	1	1	1
72	Housing, Magneto	10-400671-3	1	1	1	1	1	1

Table 11-7. S6LN, S6RN-1251, -1255, -1258, and -1259 Magnetos

Index	Description	Part No.	10-349420-1	10-349420-2	10-349460-1	10-349460-2	10-349490-1	10-349490-2	10-349490-3	10-349510-1	10-349510-2	10-349510-3
1	Screw, Self-Locking	NAS1351-3LE24P	1	1	1	1	1	1	1	1	1	1
2	Washer, Plain	10-55501	1	1	1	1	1	1	1	1	1	1
3	Nut	MS35650-302	5	5	4	4	5	5	5	4	4	4
4	Washer, Lock	MS35338-43	10	10	9	9	10	10	10	9	9	9
5	Packing	10-90351-9	8	8	8	8	8	8	8	8	8	8
6	Cover, Magneto	10-391514-1	1	1			1	1	1			
		10-391514-2			1	1				1	1	1
7	Gasket, Cover	10-391389	1	1	1	1	1	1	1	1	1	1
8	Tubing, Flex	10-180046-28	1	1		1	1					
9	Screw, w/lock washer	10-35935-6	2	2	2	2	2	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1	1	1	1	1	1
11	Packing, Preformed	10-349263	1	1	1	1	1	1	1	1	1	1
12	Screw	10-35937-12	1	1			1	1	1			
13	Lead, Retard/Tach	10-400050	1	1			1	1	1			
14	Washer, Insulating	10-16092	1	1			1	1	1			
15	Bushing, Insulating	10-125996	1	1			1	1	1			
16	Stud, Double End	10-349221	4	4	4	4	4	4	4	4	4	4
17	Washer, Flat	10-78655	4	4	4	4	4	4	4	4	4	4
18	Ring, Retaining	MS16624-2037	1	1	1	1	1	1	1	1	1	1
19	Washer, Flat	10-349511	2	2	2	2	2	2	2	2	2	2
20	Washer, Felt	10-50752	1	1	1	1	1	1	1	1	1	1
21	Block, Distributor	10-391586	1	1	1	1	1	1	1	1	1	1
22	Spring, Helical Coil	10-50737	6	6	6	6	6	6	6	6	6	6
23	Strip, Felt	10-163374	1	1	1	1	1	1	1	1	1	1
24	Washer, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1
25	Kit, Distributor Gear	10-400406	1	1	1	1	1	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1	1	1	1	1	1
27	Screw	10-35936-7	4	4	2	3	4	4	4	2	3	2
28	Clip, Cable	10-5752				1					1	
29	Washer, Plain	10-14268	2	2	1	1	2	2	2	1	1	1
30	Contact Assembly	10-382585	1	1 ¹		1	1 ¹	1 ¹	1		1	
		10-382584	1 ¹	1	1		1	1	1 ¹	1		1
31	Screw, w/lock washer	10-391213	1	1	1	1	1	1	1	1	1	1
32	Washer, Plain	10-51354	1	1	1	1	1	1	1	1	1	1
33	Cam, Two Lobe, Breaker	10-349243-2	1	1	1	1	1	1	1	1	1	1
34	Strip, Fish Paper	10-349326	1	1	1	1	1	1	1	1	1	1
35	Wedge, Coil	10-349219	2	2	2	2	2	2	2	2	2	2
36	Coil, Magneto, High Tension	10-391088-1	1	1	1	1	1	1	1	1	1	1
37	Pin, Cotter	10-90751-18	1	1	1	1	1	1	1	1	1	1

Table 11-7. S6LN, S6RN-1251, -1255, -1258, and -1259 Magnetos

Index	Description	Part No.	10-349420-1	10-349420-2	10-349460-1	10-349460-2	10-349490-1	10-349490-2	10-349490-3	10-349510-1	10-349510-2	10-349510-3
38	Nut , Drive Shaft	10-163151					1			1		
		10-51643	1	1	1	1						
		10-163178						1	1		1	1
39	Washer , Lock	10-3793	1	1	1	1						
40	Bushing , Keyed	10-163048						1	1		1	1
41	Washer , Plain	10-4093	1	1	1	1	1			1		
42	Gasket	10-391391	1	1	1	1	1	1	1	1	1	1
44	Plate , Drive	10-163003										
49	Key , Woodruff	10-90788-5	1	1	1	1	1	2	2	1	2	2
50	Ring , Retaining	MS16624-2062	1	1	1	1	1	1	1	1	1	1
51	Washer , Flat	10-349328	1	1	1	1	1	1	1	1	1	1
52	Washer , Bowed	10-349249	1	1	1	1	1	1	1	1	1	1
53	Slinger , Oil	10-349248	1	1	1	1	1	1	1	1	1	1
54	Screw , Cap, Socket Head	10-349652	3	3	3	3	3	3	3	3	3	3
55	Washer , Plain	10-53397	3	3	3	3	3	3	3	3	3	3
56	Flange											
	Short	10-349392-2					1	1	1	1	1	1
	Long	10-349392-1	1	1	1	1						
58	Gasket , Magneto Flange	10-391401	2	2	2	2	2	2	2	2	2	2
59	Bearing , Ball	10-400567	1	1	1	1	1	1	1	1	1	1
60	Retainer , Ball Bearing	10-349247	1	1	1	1	1	1	1	1	1	1
61	Magnet , Rotating	10-349351-1						1	1		1	1
		10-349351-2	1	1	1	1						
		10-349351-7					1			1		
62	Gear , Spur (Pinion)	10-349242	1	1	1	1	1	1	1	1	1	1
63	Bearing , Roller	10-400561	1	1	1	1	1	1	1	1	1	1
65	Orifice , Threaded	10-382861					1	1	1	1	1	1
69	Bushing , Hex, Threaded	10-382815	2	2	2	2	1			1		
71	Nameplate , Magneto	10-400009	1	1	1	1	1	1	1	1	1	1
72	Housing , Magneto	10-400671-2					1	1	1			
		10-400671-3	1	1	1	1				1	1	1
73	Plug , Hex	10-51391						1	1		1	1

1. Primary contact assembly.

Table 11-8. S8LN-1208, -1209, -1258, and -1259 Magnetos

Index	Description	Part No.	10-349300-4	10-349320-4	10-349320-5	10-349500-1	10-349520-1
1	Screw , w/lock washer	10-35937-24	1	1	1		
	Screw , Self-Locking	NAS1351-3LE24P				1	1
2	Washer , Plain	10-55501				1	1
3	Nut	MS35650-302	5	4	5	5	4
4	Washer , Lock	MS35338-43	10	9	10	10	9
5	Packing	10-90351-9				8	8
6	Cover , Magneto	10-349393-1	1				
		10-349393-2		1			
		10-349393-3			1		
		10-391514-1				1	
		10-391514-2					1
7	Gasket , Cover	10-391389				1	1
8	Tubing , Flex	10-180046-28	1		1	1	
9	Screw , w/lock washer	10-35935-6	2	2	2	2	2
10	Capacitor	10-400615	1	1	1	1	1
11	Packing , Preformed	10-349263	1	1	1	1	1
12	Screw	10-35937-12	1		1	1	
13	Lead , Retard/Tach	10-400050	1		1	1	
14	Washer , Insulating	10-16092	1		1	1	
15	Bushing , Insulating	10-125996	1		1	1	
16	Stud , Double End	10-349221	4	4	4	4	4
17	Washer , Flat	10-78655	4	4	4	4	4
18	Ring , Retaining	MS16624-2037	1	1	1	1	1
19	Washer , Flat	10-349511	2	2	2	2	2
20	Washer , Felt	10-50752	1	1	1	1	1
21	Block , Distributor	10-391588	1	1	1	1	1
22	Spring , Helical Coil	10-50737	8	8	8	8	8
23	Strip , Felt	10-163374	1	1	1	1	1
24	Washer , Nylon	10-391309	1	1	1	1	1
25	Kit , Distributor Gear	10-400405	1	1	1	1	1
26	Brush Assembly	10-160844	1	1	1	1	1
27	Screw	10-35936-7	4	3	4	4	3
28	Clip , Cable	10-5752		1			1
29	Washer , Plain	10-14268	2	1	2	2	1
30	Contact Assembly	10-382585	1 ¹	1	1 ¹	1 ¹	1
		10-382584	1			1	
	(Tachometer)	10-349970			1		
31	Screw , w/lock washer	10-391213	1	1	1	1	1
32	Washer , Plain	10-51354	1	1	1	1	1
33	Cam , Four Lobe, Breaker	10-382543-2	1	1	1	1	1

Table 11-8. S8LN-1208, -1209, -1258, and -1259 Magnetos

Index	Description	Part No.	10-349300-4	10-349320-4	10-349320-5	10-349500-1	10-349520-1
34	Strip , Fish Paper	10-349326	1	1	1	1	1
35	Wedge , Coil	10-349219	2	2	2	2	2
36	Coil , Magneto, High Tension	10-391088	1	1	1	1	1
37	Pin , Cotter	10-90751-18	1	1	1	1	1
38	Nut , Drive Shaft	10-163151	1	1	1	1	1
41	Washer , Plain	10-4093	1	1	1	1	1
42	Gasket	10-391391				1	1
49	Key , Woodruff	10-90788-5	1	1	1	1	1
50	Ring , Retaining	MS16624-2062	1	1	1	1	1
51	Washer , Flat	10-349328	1	1	1	1	1
52	Washer , Bowed	10-349249	1	1	1	1	1
53	Slinger , Oil	10-349248	1	1	1	1	1
54	Screw , Cap, Socket Head	10-349652	3	3	3	3	3
55	Washer , Plain	10-53397	3	3	3	3	3
56	Flange , Short	10-349392-2	1	1	1	1	1
58	Gasket , Magneto Flange	10-391401				2	2
59	Bearing , Ball	10-400567	1	1	1	1	1
60	Retainer , Ball Bearing	10-349247	1	1	1	1	1
61	Magnet , Rotating	10-349351-7	1	1	1	1	1
62	Gear , Spur (Pinion)	10-349241	1	1	1	1	1
63	Bearing , Roller	10-400561	1	1	1	1	1
64	Plug , Ventilator	10-157134	2	2	2		
66	Plug , Bleeder, Threaded	10-391422				1	1
69	Bushing , Hex, Threaded	10-382815				1	1
	Plug , Timing	10-157135	1	1	1	1	1
71	Nameplate , Magneto	10-400009	1	1	1	1	1
72	Housing , Magneto	10-349394-7	1	1	1	1	1

1. Primary contact assembly.

11-4. Numerical Parts List**Table 11-9. Numerical Parts List**

Part No.	Description	Index
10-3793	Washer , Lock	1-39
10-4093	Washer , Plain	41
10-5752	Clip , Cable	28
10-14268	Washer , Plain	29
10-16092	Washer , Insulating	14
10-35935-5	Screw , w/lock washer	9
10-35935-6	Screw , w/lock washer	9
10-35936-7	Screw , w/lock washer	27
10-35937-12	Screw , w/lock washer	12
10-35937-24	Screw , w/lock washer	1
10-50737	Spring , Helical Coil	22
10-50752	Washer , Felt	20
10-51324	Spring , Spiral	47
10-51333	Body , Impulse Coupling	46
10-51354	Washer , Plain	32
10-51370	Washer , Plain	41
10-51391	Plug , Hex	73
10-51613	Washer , Keyed	41
10-51643	Nut , Drive Shaft	38
10-52307	Washer , Special	41
10-53397	Washer , Plain	55
10-55501	Washer , Plain	2
10-70371	Body , Impulse Coupling	46
10-76232	Body , Impulse Coupling	46
10-78655	Washer , Flat	17
10-90351-9	Packing	5
10-90751-18	Pin , Cotter	37
10-90788-5	Key , Woodruff	49
10-116860	Washer , Plain	41
10-125996	Bushing , Shouldered	15
10-157134	Plug , Ventilator	64
10-157135	Plug , Timing	68
10-160844	Brush , Carbon	26
10-163003	Plate , Drive	44
10-163048	Bushing , Keyed	40
10-163049	Bushing , Insulating	40
10-163151	Nut , Drive Shaft	38
10-163178	Nut , Drive Shaft	38
10-163374	Strip , Felt	23
10-180046-28	Tubing , Flex	8
10-349219	Wedge , Coil	35
10-349221	Stud , Double End	16

Table 11-9. Numerical Parts List

Part No.	Description	Index
10-349241	Gear , Spur (Pinion)	62
10-349242	Gear , Spur (Pinion)	62
10-349243-2	Cam , Two Lobe Breaker	33
10-349247	Retainer , Ball Bearing	60
10-349248	Slinger , Oil	53
10-349249	Washer , Bowed	52
10-349263	Packing , Preformed	11
10-349326	Strip , Fish Paper	34
10-349328	Washer , Flat	51
10-349351-1	Magnet , Rotating	61
10-349351-2	Magnet , Rotating	61
10-349351-3	Magnet , Rotating	61
10-349351-4	Magnet , Rotating	61
10-349351-7	Magnet , Rotating	61
10-349392-1	Flange , Long	56
10-349392-2	Flange , Short	56
10-349392-3	Flange , Long	56
10-349392-4	Flange , Long	56
10-349392-5	Flange , Short	56
10-349392-6	Flange , Short	56
10-349393-1	Cover , Magneto	6
10-349393-2	Cover , Magneto	6
10-349393-3	Cover , Magneto	6
10-349393-4	Cover , Magneto	6
10-349393-5	Cover , Magneto	6
10-349393-8	Cover , Magneto	6
10-349393-9	Cover , Magneto	6
10-349393-10	Cover , Magneto	6
10-349393-11	Cover , Magneto	6
10-349394-7	Housing , Magneto	72
10-349438R	Pin , Dowel	57
10-349511	Washer , Flat	19
10-349652	Screw , Cap, Socket Head	54
10-349970	Contact Assembly (Tachometer)	30
10-382584	Contact Assembly	30
10-382585	Contact Assembly	30
10-382815	Bushing , Hex, Threaded	69
10-382861	Orifice , Threaded	65
10-391088-1	Coil , Magneto, High Tension	36
10-391213	Screw , w/lock washer	31
10-391309	Washer , Nylon	24
10-391389	Gasket , Cover	7

Table 11-9. Numerical Parts List

Part No.	Description	Index
10-391391	Gasket	42
10-391401	Gasket , Magneto Flange	58
10-391422	Plug , Bleeder, Threaded	66
10-391427	Impulse Coupling	45
10-391429	Impulse Coupling	45
10-391513-2	Housing , Magneto	72
10-391513-3	Housing , Magneto	72
10-391513-7	Housing , Magneto	72
10-391514-1	Cover , Magneto	6
10-391514-2	Cover , Magneto	6
10-391584	Block , Distributor (4 cylinder)	21
10-391586	Block , Distributor (6 cylinder)	21
10-391588	Block , Distributor (8 cylinder)	21
10-400009	Nameplate , Magneto	71
10-400050	Lead , Retard/Tach	13
10-400166-1	Cam Assembly	48
10-400166-5	Cam Assembly	48
10-400166-7	Cam Assembly	48
10-400166-9	Cam Assembly	48
10-400167-3	Cam Assembly	48
10-400167-5	Cam Assembly	48
10-400167-8	Cam Assembly	48
10-400167-9	Cam Assembly	48
10-400308	Impulse Coupling	45
10-400309	Impulse Coupling	45
10-400312	Impulse Coupling	45
10-400317	Impulse Coupling	45
10-400319	Impulse Coupling	45
10-400320	Impulse Coupling	45
10-400327	Impulse Coupling	45
10-400341	Impulse Coupling	45
10-400405	Kit , Distributor Gear, 4 & 8 cylinder	25
10-400406	Kit , Distributor Gear, 6 cylinder	25
10-400561	Bearing , Roller	63
10-400567	Bearing , Ball	59
10-400615	Capacitor	10
10-400671-1	Housing , Magneto	72
10-400671-2	Housing , Magneto	72
10-400671-3	Housing , Magneto	72
10-400671-4	Housing , Magneto	72
AE51413-5	Washer , Lock, Internal Teeth	70
AEL12681	Gasket	43
AEL73000	Coupling	44

Table 11-9. Numerical Parts List

Part No.	Description	Index
MS16624-2037	Ring , Retaining	18
MS16624-2037	Ring , Retaining	50
MS35338-43	Washer , Lock	4
MS35650-302	Nut	3
MS51967-5	Nut	67
NAS1351-3LE24P	Screw , w/lock washer	1

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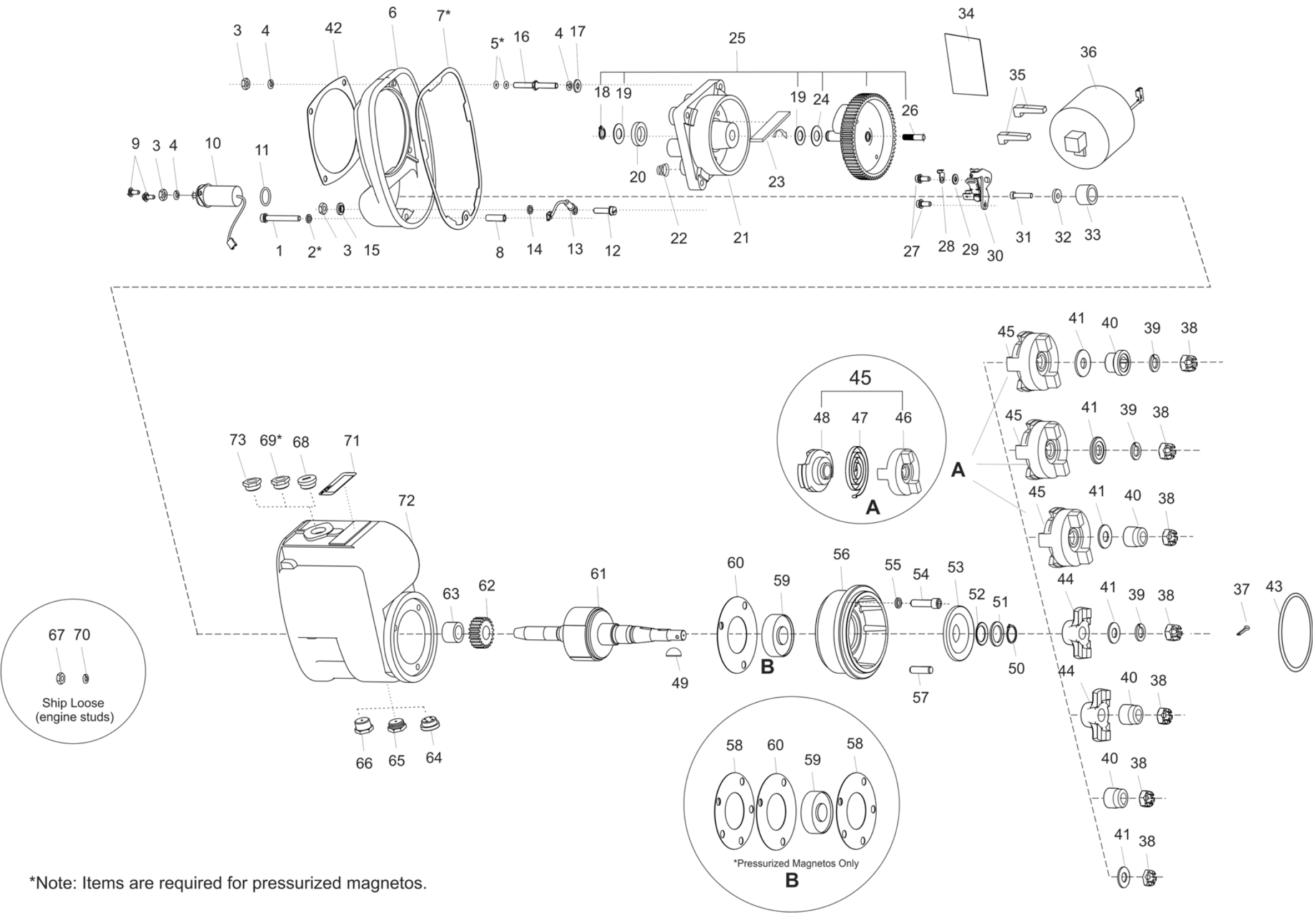


Figure 1. S-1200 Series Magneto - Exploded View

