



**TELEDYNE
CONTINENTAL MOTORS**

An Allegheny Teledyne Company
P.O. Box 90 Mobile AL 36601 • 334-438-3411

Service Support Manual

S-20 / S-200 SERIES HIGH TENSION MAGNETOS

Maintenance, Overhaul & Illustrated Parts List

WARNING

(Please note the following statements from FAA Advisory Circular 20-62C entitled "ELIGIBILITY, QUALITY, AND IDENTIFICATION OF APPROVED REPLACEMENT PARTS"):

3. **BACKGROUND.** An increasing amount of replacement parts (including standard parts), materials, appliances, and instruments are offered for sale as being of aircraft quality when actually the quality and origin of these units are unknown. Users of such units are usually not aware of the potential hazards involved with replacement parts that are **not** eligible for use on certificated aircraft. Frequently such units are deceptively advertised or presented as "**unused**," "**like new**," or "**remanufactured**." This implies that the quality of such units is equal to an original or appropriately repaired or overhauled unit.

The performance rules for replacement of parts and materials used in the maintenance and alteration of U.S. certificated aircraft are specified in Federal Aviation Regulations (FAR) 43.13 and FAR 145.57. The responsibility for the continued airworthiness of the aircraft, which includes the replacement of parts, is the **responsibility** of the owner/operator as outlined in FAR 91.163, FAR 121.363, FAR 123.45, FAR 127.131 and FAR 135.143(a).

4. **IDENTIFICATION OF THE APPROVED PARTS.** Approved serviceable replacement parts are identified as follows:

- a. By an FAA Form 8130-3 (Formerly FAA Form 186), Airworthiness Approval Tag. An Airworthiness Approval Tag identifies a part or group of parts that have been approved by authorized FAA representatives.
- b. By an FAA Technical Standard Order (TSO) number and identification mark that indicates the part or appliance has been manufactured under the requirements of FAR 37.
- c. By an FAA/PMA symbol, together with the manufacturer's name, trademark or symbol, part number, and the make and model of the type certificated product on which the part is eligible for installation, stamped on the part. An FAA Parts Manufacturer Approval (FAA/PMA) is issued under FAR 21.305. The make and model information may be on a tag attached to the part.
- d. By shipping ticket, invoice, or other document which provides evidence that the part was produced by a manufacturer holding an FAA Approved Production Inspection System issued under FAR 21, Subpart F, or by a manufacturer holding an FAA Production Certificate issued under FAR 21, Subpart G.
- e. By a certificate of airworthiness for export issued by a foreign government under the provisions of FAR 21, Subpart N.

11. **KNOW YOUR SUPPLIER.** It has come to our attention that many reproduced parts and components, particularly instruments which have been manufactured by persons other than the original manufacturer, are available for purchase and installation on U.S. certificated aircraft. Often, an original part is used as a sample to produce duplicates. The reproduced parts appear to be as good as the original part; however, there are many unknown factors to be considered that may not be readily apparent to the purchaser, i.e., heat treating, plating, inspections, tests and calibrations. All too often the faulty part is not discovered until a malfunction or an accident occurs.

12. **SUMMARY.** In accordance with FAR's, certification of materials, parts, and appliances for return to service, for use on aircraft, is the responsibility of the person or agency who signs the approval. The owner/operator, as denoted in paragraph 3 of this advisory circular, is responsible for the continued airworthiness of the aircraft. To assure continued safety in aircraft operation, it is essential that great care be used when inspecting, testing, and determining the acceptability of all parts and materials. Particular caution should be exercised when the identity of materials, parts and appliances cannot be established or when their origin is in doubt.

**System Support Manual
S20/S-200 MAGNETO IGNITION SYSTEM**

HIGHLIGHTS

TO: Holders of Maintenance, Overhaul & Illustrated Parts List X42002.

SUBJECT: System Support Manual X42002-1

This System Support Manual supersedes X42002. Revisions are so extensive that a list of revision highlights is not given.

RECORD OF REVISIONS

[illegible]

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SERVICE BULLETIN LIST

The following is a list of service bulletins which apply to S-20 and S-200 Series Magnetos. The intent of each bulletin listed has been incorporated into the text of this manual. Due to the continuing nature of FAA Airworthiness Directives and the Service Bulletins associated with them, some Service Bulletins issued prior to the issuance of this manual are still considered active. Consult the most recent revision of TCM Ignition Systems Master Service Manual and Price List (Form X41005-4 or subsequent) for a complete listing of active Service Bulletins. Service Bulletins affecting S-20 and/or S-200 Series Magnetos issued subsequent to issuance of this manual shall be considered to supplement or supersede applicable information in this manual.

Service Bulletin	Date Incorporated
556C	May/89
560A	May/89
568A	May/89
586A	May/89
599D	May/89
612	May/89
616	May/89
620	May/89
621	May/89
623A	May/89
625	May/89
626	May/89
629	May/89
631	November/93
632B	November/93
633A	November/93
634	November/93
637	November/93
639	November/93

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SECTION 1. INTRODUCTION AND SPECIFICATIONS

1.1 GENERAL

- A. This manual provides complete maintenance and overhaul instructions with illustrated parts list for S-20 and S-200 Series Magnetos, manufactured by Teledyne Continental Motors, Mobile, Alabama 36601. The S-20 and S-200 Series Magneto converts mechanical energy into a sequenced series of high-voltage pulses for reciprocating engine ignition.
- B. This manual is subdivided with sub-heads as listed in the Table of Contents. Revision service may be provided by ordering Form X40000. This manual may be inserted as Chapter 74-10 of applicable GAMA format publications.
- C. These instructions do not cover all details or variations in equipment nor do they provide for every possible contingency to be met in connection with installation, operation, or maintenance. Should further information be desired or particular problems arise which are not covered sufficiently for purchaser's purpose, the matter should be referred to Teledyne Continental Motors, Mobile, Alabama 36601.
- D. Good standard shop practices and safety precautions must be observed at all times to avoid damage to equipment and/or injury to personnel.
- E. 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 Fault Isolation by performing the functions described in this manual on equipment identical in configuration to that described.
- F. Dimensions are given in US Standard Units. For reference, abbreviations used are listed in Table 101.
- G. Numbers in parentheses following part nomenclature refer to item numbers in illustrated Parts List Figure 1 unless otherwise specified.
- H. For specific service information regarding TCM Ignition Harnesses, TCM Ignition Switches, and TCM Starting Vibrators used in conjunction with S-20 and S-200 Series Magnetos, consult the applicable service manual and all applicable service bulletins.
- I. 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 101
Abbreviations**

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

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1.2 SPECIFICATIONS

Table 102
Table of Leading Particulars

SUBJECT	DATA
LUBRICATION & COMPOUNDS	
Bearing Grease, Gears	Magneto Grease, TCM P/N 10-27165
Cam, Cam Follower Felt	Breaker Felt Lubricant, TCM P/N 10-86527
Distributor Block Bushing, Felt Washer	Distributor Block Lubricant, TCM P/N 10-391200
Housing Pole Shoes, Rotor Pole Pieces	Silicone-Free Rust Preventive
Impulse Coupling Spring	Light Oil
Magneto Shaft Taper	TCM 646943 Anti-Seize
Oil Seal, Sleeve Bearing	SAE No. 30 Oil
Distributor Block, Buna Rubber and Phenolic Types Only	Distributor Block Coating, TCM P/N 10-391400
TESTING	
Coming-in-speed	150 RPM
Spark-gap setting	5MM
TOLERANCES	
Cam Washer Thickness	.095 ± .010 inch
Capacitor	.34 - .41 Microfarads (For 10-357281 and 10-349276) .33 - .43 Microfarads (For 10-51676) 1.0 Ohm feed through maximum 8.0 mA leakage max. at 400 VDC, 190°F ± 10°F
Coil	Primary 0.2 to 0.6 ohms Secondary 12000 to 16000 ohms
Contact Point Clearance	
Main and Retard Contacts	0.018 ± 0.006 in.
Tachometer Contacts	0.019 ± 0.003 in.
"E" Gap	10° ± 4°
Pressurized Magneto Leakage	2.4 to 11.8 SCFH at 2.9 to 3.1 psig
TORQUES	
Cover Screws	20 to 25 in-lbs.
Cam Screw*	21 to 25 in-lbs.
Capacitor Screws	8 to 12 in-lbs.(in cover) 20 to 25 in-lbs.(in housing)
Coil Core Clamp Screws	20 to 25 in-lbs.
Coil Primary Lead Screw	8 to 10 in-lbs.
Contact Assembly Screws:	
Main and Retard	20 to 25 in-lbs.
Tachometer	10 to 12 in-lbs.
Drive Shaft Nut	180 to 300 in-lbs.
Distributor Block Screws	16 to 20 in-lbs.
Switch Terminal Bushing	10 to 13 in-lbs.
Housing Screws	Start 4 to 8 in-lbs. Final 25 to 35 in-lbs.
Timing Window Plug	10 to 15 in-lbs.
Ventilator Plug	10 to 15 in-lbs.
Harness Outlet Plate Screws	25 to 35 in-lbs.
Switch and Retard Stud Nuts	15 to 17 in-lbs.
MISCELLANEOUS	
Magneto Drive Speed	S6 Magnetos - 1.5 times crankshaft speed S4 Magnetos - equal to crankshaft speed

***CAUTION:** If self-locking screw is removed or loosened at any time, always replace with a new self-locking screw and apply torque to the specified value.

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SECTION 2. DESCRIPTION AND OPERATION

2.1 GENERAL DESCRIPTION

- A. The S-20 and S-200 Series Magnetos, manufactured by Teledyne Continental Motors, Mobile, Alabama 36601, are designed to provide ignition for four and six cylinder aircraft engines. These magnetos generate and distribute high voltage for aircraft engine ignition.
- B. To obtain the retard spark necessary for starting, S-20 Series Magneto Ignition systems employ an impulse coupling, and S-200 Magneto Ignition Systems include an additional contact assembly used in conjunction with a starting vibrator. Figure 201 shows the components used in a typical S-200 Ignition System incorporating a starting vibrator. This system consists of a single contact assembly magneto and 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).

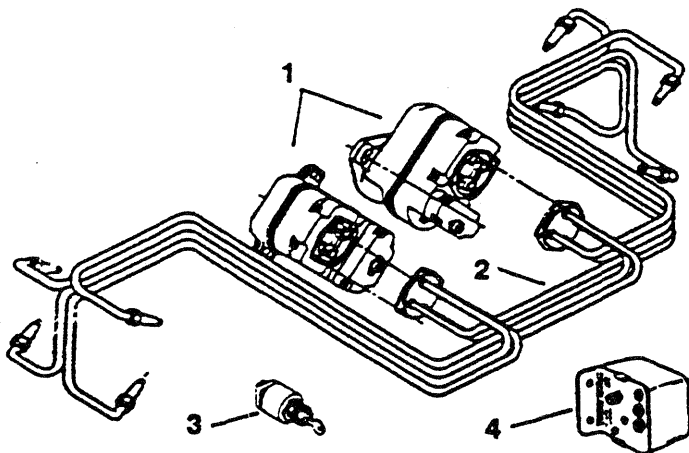


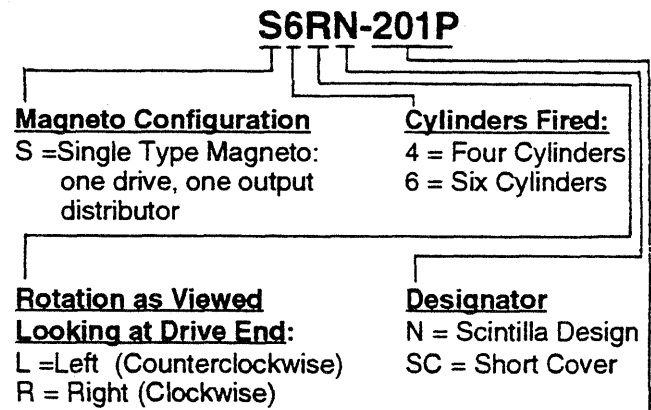
Figure 201. S-200 Magneto and Associated Components

- C. TCM introduces the new "Short Cover" (SC) style magnetos with the following features:

- Feed thru capacitor on all magnetos.
- Capacitor interchangeable with S-1200 Series.
- Simplified stud-type switch and retard connections - no special kits necessary.
- Low profile short cover (SC) allows maximum installation flexibility.
- Consolidated parts usage.
- Familiar and versatile S-20 and S-200 technology.

SC magnetos are fully interchangeable with older S-20 and S-200 designs. Refer to Illustrated Parts List, Table 1102.

- D. Magneto type numbers contain information regarding design configuration. Magneto type numbers are read as follows:



MODEL NUMBER:

S-20 SERIES

- 20: Dog-Ear Mount, No Impulse Coupling
- 21: Dog-Ear Mount, Impulse Coupled
- 23: Dog-Ear Mount, Impulse Coupled, Military Shielding
- 25: Deep Flange Mount, Impulse Coupled

S-200 SERIES

- 200: Dog-Ear Mount, With Retard Breaker
- 201: Deep Flange Mount, With Retard Breaker
- 204: Dog-Ear Mount, Without Retard Breaker
- 205: Deep Flange Mount, Without Retard Breaker

Suffix Letters:

- P: Pressurized
- T: Tachometer Breaker Installed

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2.2 DETAILED DESCRIPTION

- A. The magneto is a completely self contained unit. The rotating magnet turns on two ball bearings, one located at the contact assembly end and the other at the drive end. 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, 6 sparks are produced through 720 degrees of engine rotation. In a four cylinder magneto, the rotating magnet turns at the engine speed. Therefore, four sparks are produced through 720 degrees of engine rotation.
- B. Some S-20 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.
- C. The S-200 Dual Contact Assembly Magnetos incorporate a retard contact assembly. (See Figure 202.) This contact assembly is actuated by the same cam as the main contact assembly. It is positioned so that its points open a predetermined number of degrees after the main contact points open. A battery-operated starting vibrator used with this magneto provides electrical energy 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.
- D. All S-200 Series Magnetos and some S-20 Series Magnetos utilize feed-through capacitor technology for suppression of conducted radio interference.

2.3 MAINTENANCE AND OVERHAUL PERIODS

NOTE

Refer to ILLUSTRATED PARTS LIST Figure 1 for Magneto Exploded View.

- A. Anytime that magneto timing is found to be outside engine manufacturer's limits for magneto-to-engine timing, the contact assemblies (Item 39, Illustrated Parts List Figure 1) must be checked as specified in paragraph 6.2.1 of PERIODIC MAINTENANCE.
- B. Magnetos equipped with snap-ring impulse couplings (item 8, Illustrated Parts List Figure 1) must be inspected at the first 500 hours in service and every 500 hours thereafter as specified in paragraph 6.2.2 of PERIODIC MAINTENANCE. Magnetos equipped with riveted impulse couplings (item 8, Illustrated Parts List Figure 1) must be inspected at the first 100 hours in service and every 100 hours thereafter as specified in paragraph 6.2.2 of PERIODIC MAINTENANCE.
- C. Magnetos installed on all types of Aircraft Engines must be inspected as specified in PERIODIC MAINTENANCE, paragraph 6.2.3, 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. Make an appropriate logbook entry signifying compliance with this paragraph and referencing the magneto serial numbers involved after completing these procedures.
- D. Magnetos are subject to the same environmental conditions and wear as the engine. Therefore magnetos must be overhauled when the engine is overhauled. Engine overspeeds, sudden stoppage or other unusual circumstances may require engine overhaul prior to engine manufacturer's recommendations. In such circumstances the magneto, regardless of "in service time", must be overhauled with particular attention focused on rotating parts, bearings and electrical components.
- E. In addition, magnetos must be overhauled at the expiration of four years, without regard to the accumulated operating hours since new or last overhaul.

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2.4 S-20 AND S-200 MAGNETO OPERATION

2.4.1 General Theory

- A. 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.
- B. 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, current ceases to flow and the magnetic field around the primary winding collapses, causing a high voltage to be induced in the secondary winding of the coil. This high 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-200 Magneto System with Starting Vibrator

- A. A schematic diagram of the magneto hookup with a starting vibrator is shown in Figure 203. The starting vibrator supplies interrupted battery current to the left magneto and grounds the right magneto. This type of vibrator should be used with one of the TCM combination ignition and starter switches which controls the vibrator current flowing to the retard contact assembly and main contact assembly in the left magneto. In Figure 203, all switches are shown in their normal OFF position. Figure 203 must only be used for following the electrical operation of the magneto circuit, not for installation purposes.
- B. With the combination ignition and starter switch in its "START" position, the right magneto is grounded (refer to Figure 203). Starter solenoid L1 is energized, closing its relay contact R1. Battery current flows through vibrator points V1, coil L2 (and L3 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 L2 causes vibrator points V1 to open. Current flow ceases through coil L2 causing the magnetic

field to collapse and the vibrator points to reclose. This allows coil L2 (and L3 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.

- C. When the engine reaches its normal advance firing position, the main contact assembly 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 open), the vibrator current flows through the terminal at the main contact assembly and then through the primary of transformer T1, producing a magnetic field around the coil. Each time vibrator points V1 open, 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 thus produced at the spark plug due to the opening and closing of vibrator points V1 while both the main and retard contact assemblies are open.

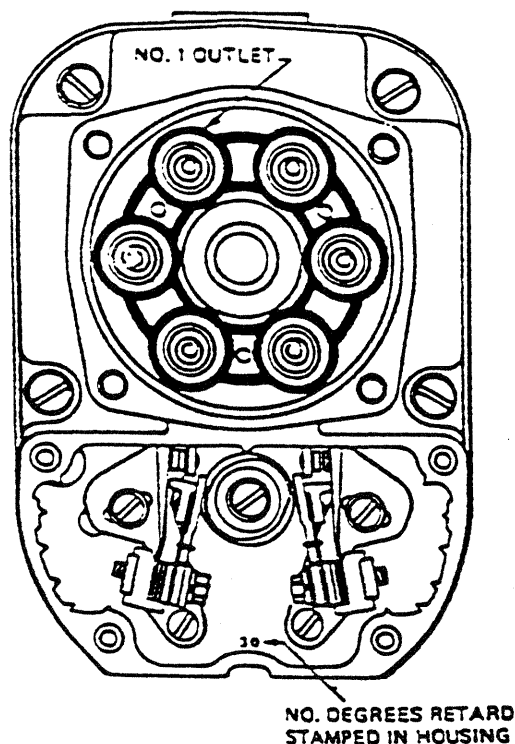


Figure 202. Cam End View of Dual Contact Assembly Magneto

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- D. When the engine fires and begins to pick up speed, the switch is released and returns to its "BOTH" position, rendering the vibrator circuit and retard contact assembly circuit inoperative. The single contact assembly (right) magneto is no longer grounded, therefore, both magnetos are simultaneously firing in full advance.

2.5 SERIAL NUMBERS

- A. Manufacturing numbers, commonly referred to as serial numbers, are currently used to identify magnetos built by TCM in Atlanta, GA. These manufacturing numbers employ a coding system shown at right. The build date derived from this code, rather than the magnitude of the numbers, determines the recency of manufacture. Therefore, for Service Bulletin compliance purposes, all magnetos manufactured, rebuilt or overhauled by TCM may be considered to have a "higher" serial number than magnetos manufactured or "remanufactured" by Bendix in Sidney, NY or in Jacksonville, FL. Corporate identification and factory location is found on the Magneto Data Plate.

- B. Current Manufacturing numbers may be read as follows:

Example: B138901DR

B	13	89	01	D	R
↓	↓	↓	↓	↓	↓
Month	Day of Month	Year (1989)	Sequential Number for Unit Begins With	Product Code:	Factory Rebuilt (No letter for new)
A: January				D: S-20	
B: February				E: S-200	
C: March				F: S-1200	
D: April			01	G: D-3000	
E: May					
F: June					
G: July					
H: August					
I: September					
J: October					
K: November					
L: December					

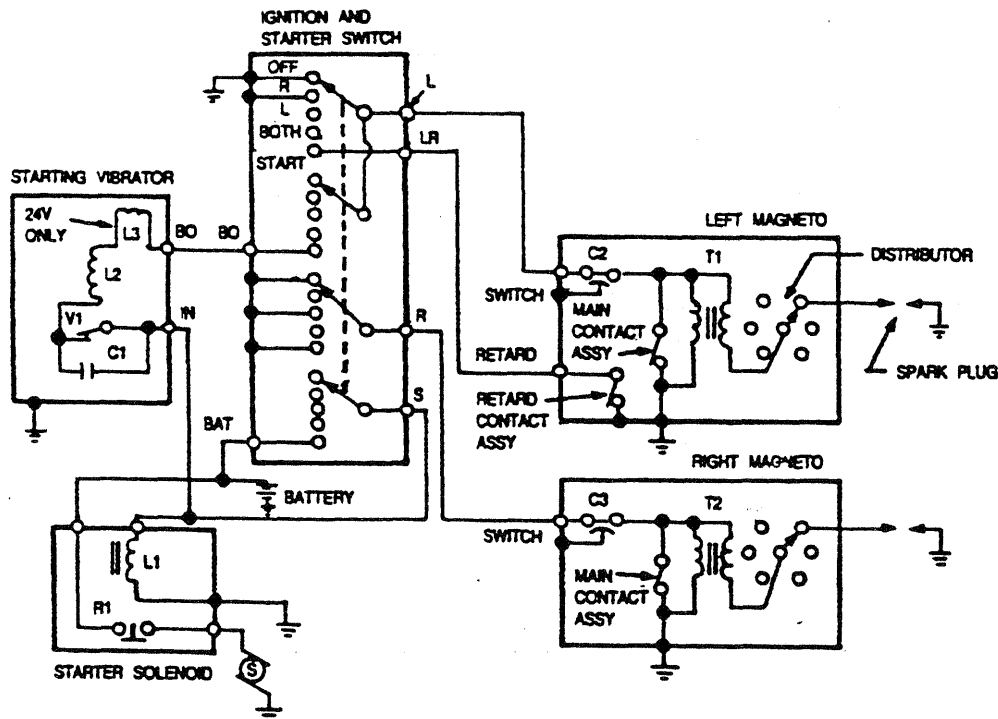


Figure 203. Sample Schematic Diagram of Magneto Circuit and Starting Vibrator
NOTE: FOR ACTUAL SCHEMATIC, SEE AIRFRAME SERVICE MANUAL

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SECTION 3. TESTING AND TROUBLESHOOTING

3.1 GENERAL

NOTE:

Refer to ILLUSTRATED PARTS LIST Figure 1 for Magneto Exploded View

**Table 301
Testing and Troubleshooting Tool**

Tool	Description
11-10500 Magneto Test Stand or Suitable Equivalent	Used for Off-Engine Magneto Test

A. If engine operating troubles develop which appear to be caused by the ignition system, check the spark plugs and wiring first before working on the magnetos.

B. Should the trouble appear definitely associated with the magneto, perform a Magneto RPM drop-off test as outlined in the applicable Pilot-Flight Manual. The purpose of the drop-off test is to determine that the ignition is in satisfactory condition. A drop in RPM is expected when one Magneto in a redundant ignition system is shut off. The absence of an RPM drop may indicate that:

- * The magneto timing has been advanced beyond setting specified, 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.

C. Any engine which does not exhibit a normal drop-off in RPM when the Magneto is checked must be shut down and the cause for the problem corrected before further flight. The normal engine drop-off is specified in the appropriate Pilot Flight Manual and Engine Manufacturer Operator's Manual.

WARNING

During hand propping or manually moving the propeller, do not stand or allow anyone else to stand within the arc of the propeller. A loose or broken wire or a component malfunction could cause the engine to fire and the propeller to rotate, causing injury to personnel.

D. As a precautionary measure, test the Magneto grounding circuit prior to shutting down the engine using the following procedure:

- (1) With the engine at normal idle, rotate the switch key or lever momentarily to the off position.
 - a. If the engine continues to run with the switch key or lever in the off position, one Magneto is still functioning.
 - b. If the grounding circuit is working as prescribed, the engine should quit.
 - c. If the Magneto did not ground out, the cause must be investigated and corrected prior to continued operation of the engine and before the next flight.

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WARNING

Should the propeller be moved by hand during pre-flight inspection or during maintenance procedures and a functional ("hot") magneto condition exists, the engine may fire and cause injury to personnel!

- (2) Return the switch key or lever to the 'BOTH' position and shut down the engine using normal procedures.
- E. If problems persist, install a certified replacement magneto and send the suspected unit for test and repair.
- F. Should this not be possible, a visual inspection of the magneto may disclose the source of trouble. Inspect as follows:
 - (1) Remove harness securing screws and separate outlet plate 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.

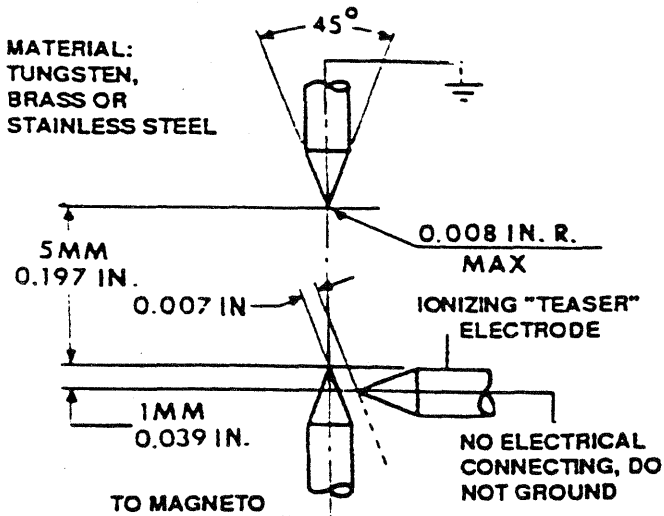


Figure 301. 5 mm Spark Gap Setting

- (2) Check springs in block towers for proper height. End of spring shall not be more than 0.422 inch from top of tower. Burned or otherwise short springs must be replaced. See ASSEMBLY, paragraph 9.2.3. Check for broken leads or damaged lead insulation. If either is present, replace magneto.
- (3) Inspect contact assemblies as specified in PERIODIC MAINTENANCE, paragraph 6.2.1.

3.2 POST-OVERHAUL TESTING

- A. Mount magneto on a 11-10500 test stand. Connect high voltage outlet to spark gaps on test stand using a standard harness assembly. Set spark gaps at 5 mm (0.197 in) as shown in figure 301. Using an oscilloscope and high voltage probe, adjust gaps to fire at 10,000 volts minimum.

CAUTION:

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

CAUTION:

Do not run magneto on test stand with oil seal (59) installed for longer than 5 minutes as hidden damage may result.

- B. Determine lowest speed at which 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 above specified RPM, the trouble may be due to dirty contact points, improperly adjusted contacts, weak coil, weak magnet, damaged capacitor or improperly timed distributor gear. Clean contact assembly, recheck contact assembly adjustment, install a new coil or capacitor, recharge magnet and recheck distributor gear timing, and repeat test.
- C. Observe electrical and mechanical performance at 150 and 1000 RPM. Perform high speed test run at 3500 RPM minimum. Do not exceed 5000 RPM. Magneto shall fire all gaps consistently and operate smoothly throughout its operating range.

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- D. 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.
- E. After testing, check rotating magnet for .0005 to .0015 in. end play and no perceptible radial play. If end play or radial play is out of limits, adjust shims and/or replace parts as necessary and re-test.
- F. For pressurized magnetos only, test flow rate as follows:
- (1) Install a sealed harness cover and gasket onto magneto. Apply 25-35 in. lb. torque to four attaching screws.
 - (2) Install all applicable ground and retard terminals with sealing insulators.
 - (3) For magneto P/N 10-500556-901 only, install B&D Tachometer Sensor P/N 0406-002 or P/N 0406-003. Use pointed tool to remove screen and cotton filter from sensor.

- (4) Connect magneto to Flow Test Stand as shown in Figure 302. Using dry, filtered air at 2.9 to 3.1 Psig, flow rate must be within the range 2.4 to 11.8 standard cubic feet per hour. If flow rate is below 2.4 SCFH inspect orifice for blockage. If flow rate exceeds 11.8 SCFH, discover and seal sources of leakage. Repeat test following any corrective procedures.

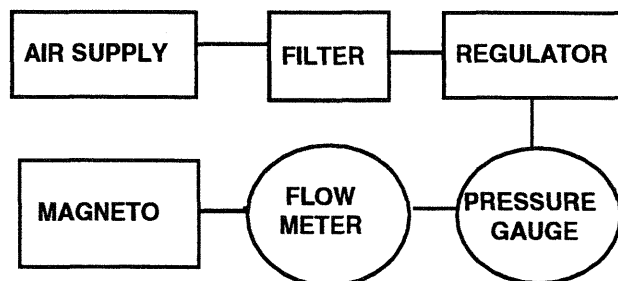


Figure 302. Pressurized Magneto Test Stand - Block Diagram

3.3 TROUBLESHOOTING

- A. A troubleshooting chart is provided as an aid for locating troubles thought to be in the ignition system.

**Table 302
Troubleshooting Chart**

SYMPTON:	PROBABLE CAUSE:	TEST:
Hard Starting	<p>Worn or fouled spark plugs. Arcing ignition lead.</p> <p>Mag Impulse Coupling not operating properly.</p> <p>Impulse Coupling is magnetized.</p> <p>Low voltage at vibrator input.</p> <p>Inoperative vibrator.</p>	<p>Inspect and replace or repair as necessary.</p> <p>Remove and check for binding, worn or broken impulse coupling parts.</p> <p>Remove and demagnetize or replace impulse coupling.</p> <p>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.</p> <p>If voltage is adequate, 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. Also check for good electrical continuity through switch and through magneto points.</p>

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Table 303
Fault Isolation Chart (Continued)

SYMPTON:	PROBABLE CAUSE:	TEST:
Hard Starting (continued)	<p>Retard contact assembly in retard (dual contact) magneto not operating electrically. Engine may kick back during cranking due to advance timing of ignition.</p> <p>Vibrator-magneto combination not "putting out" electrically.</p> <p>Magneto improperly timed to engine.</p> <p>Advance contact assembly out of adjustment (internal timing off).</p> <p>Retard points opening too late.</p>	<p>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.</p> <p>Turn engine in proper direction of rotation until retard points just open on No. 1 cylinder position. Remove input connection from starter to prevent engine turning, and while holding No. 1 plug lead 3/16 inch from ground, energize 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 this does not correct trouble, remove magneto and check for improper internal timing or improperly timed distributor gears.</p> <p>Check magneto-to-engine in accordance with Engine Manufacturer's instructions.</p> <p>Check magneto timing per paragraph 6.2.3 step G. (4) of PERIOD MAINTENANCE.</p> <p>Check timing of retard points according to paragraph 6.2.3 step G. (4) (e) of PERIODIC MAINTENANCE.</p>
Engine Roughness	<p>Worn or fouled spark plugs. Worn ignition leads.</p> <p>Worn or fouled magneto contact assemblies.</p> <p>Carbon tracked distributor block (79).</p>	<p>Install new spark plugs. Check plug leads for continuity and breakdown. Check magneto contact assemblies for burning or dirt. (Main and Retard.) See PERIODIC MAINTENANCE, paragraph 6.2.1 steps A., B., and C.</p> <p>Replace distributor block (79).</p>
Magneto Drop-off Check Out of Limits	<p>Magneto out of time.</p> <p>Contact assemblies not opening properly.</p> <p>Faulty plugs or leads. No drop-off noted -- open capacitor.</p> <p>Carbon-tracked distributor block (79).</p>	<p>Check magneto-to-engine timing in accordance with Engine Manufacturer's instructions. Inspect contact assemblies for proper opening. See PERIODIC MAINTENANCE, paragraph 6.2.3 step G. Check plugs and leads. Check capacitor as specified in GENERAL OVERHAUL, paragraph 7.2.5.</p> <p>Replace distributor block (79).</p>

CAUTION: If self-locking (cam-securing) screw (61) is removed or loosened at any time, always replace with a new self-locking screw and apply torque to 21-25 lb-in.

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SECTION 4. DISASSEMBLY

4.1 GENERAL

Refer to ILLUSTRATED PARTS LIST Figure 1 for Magneto Exploded View.

Refer to Table 401 for a list of materials and tools required for disassembly.

NOTE

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

**Table 401
Disassembly Materials and Tools**

Material/Tool	Description
CG240 Puller	Used to remove drive plate (7) and cam (11)
11-6924-1 Pressing Tool	Used to remove oil seal (59) and bearing outer race (70)
11-10192 Remover Tool	Used to remove bearing (70) inner race from magnet (54)
CG-40-8 Collar	Used to remove bearing (64) outer race
CG-40-4 Expander Rod	Used to remove bearing (64) outer race
Retaining Ring Pliers, No. 2	Used to remove retaining ring (74)

4.2 DETAILED DISASSEMBLY PROCEDURES

(Numbers listed are indicated on Illustrated Parts List; see Figure 1)

NOTE:

The following parts must be replaced 100% with new parts following their disassembly from the magneto, regardless of whether disassembly is for the purpose of inspection, replacement of a part or overhaul: Main and retard contact assemblies (39), lockwashers (34,3,13), screws (41,56,78,47,12,61), retaining ring (74), oil deflector (55), oil seal (59), bearings (64,70), felt strip (81), felt washer (82), identification plate (52), carbon brush (73) and pin (1); Also if installed, spring (10) and gaskets (14,49).

4.2.1 Disassemble Magneto for Initial Inspection

- A. Remove cover retention screws and lockwashers (12) from cover (15). Carefully pull cover (15) away from housing (48). Remove and discard gasket (14), if installed. Pry or unscrew lead terminals of capacitor lead (42) and retard lead (17) (if installed) from terminals of contact assembly(ies) (39).

- B. Remove plug (44, 44a) from distributor housing (48). Remove plug (46, 46a) from magneto housing (50). Remove five screws (47). Using care that coil primary lead is released from distributor housing as parts are separated, pull distributor housing straight away from magneto housing, leaving rotating magnet in magneto housing. Remove and discard gasket (49), if used.

CAUTION

Do not allow the two housings to turn in relation to each other as damage to coil or carbon brush may result.

- C. Using No. 2 retaining ring pliers, remove retaining ring (74), securing gear (72) to block (79), and discard ring (74). Remove washer (75) and slide gear (72) from block (79). Remove washers (76,77). Using a pointed tool, remove felt washer (82) and felt strip (81) from block (79). Remove carbon brush (73) from distributor gear (72).
- D. Remove screws (78), and remove distributor block (79) from housing (48).

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4.2.2 Disassemble Magneto for General Overhaul

- A. Remove contact assemblies (39) from magneto by taking out screws (41,33) and washers (37,34). Discard contact assemblies.

NOTE

Tachometer contact assembly, identified by smaller (0.125 in diameter) silver contact points, may be reused.

- B. Remove screws (41) and capacitor (42) from cover (15) or distributor housing (48). If retard lead (17) is installed and replacement is necessary, carefully remove it from cover (15). Remove screws with lockwashers (56) and coil core clamps (57). Lift coil (58) from housing.
- C. Using a pair of padded jaw pliers, grip drive member on drive end of rotating magnet (54). While holding rotating magnet, loosen cam securing screw (61) and remove screw (61), washer (62), and cam (63).

CAUTION

If self-locking screw (61) is removed or loosened at any time, always replace with a new self-locking screw and apply 21-25 lb-in. torque.

4.2.3 Disassemble Drive Plate (6, 7) and Other Front-End Hardware

Remove cotter pin (1) from magnet shaft. While holding drive member with padded jaw pliers, remove nut (2). Lift off lockwasher (3), bushing (5) and washer (4) if used. If drive plate (6, 7) is used, remove using 11-702-1 puller. Remove woodruff key(s) (53) as necessary.

4.2.4 Disassembling Impulse Coupling (8) (if used)

WARNING

Use of tools and procedures other than those specified herein for removal of the impulse coupling (8) may cause damage.

NOTE:

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

- A. Using heavy gloves or a cloth, grasp coupling body (9) firmly to prevent the internal spring from unwinding suddenly. Pull outward on coupling body only enough to release it from cam assembly (11). Keep coupling body close against cam and allow body to turn as spring (10) unwinds. After one or two turns, spring coils will wedge against projections on body, restraining spring from further unwinding.
- B. Look into hole in body and note location of inner eye of spring where it engages with mating recess in cam hub. See Figure 401. Insert a screwdriver under spring end and pry spring eye out of recess. Remove body and spring together. Uncoil spring from body and work spring eye from body recess to disengage spring. Spring (10) must be discarded.
- C. Assemble nut (2) to support cotter pin holes in end of shaft. Engage puller over shaft and cam assembly with jaws of puller hooked under cam assembly as shown in Figure 402.

WARNING

Do not allow puller jaws to pull against flyweights. This will damage flyweights and will result in having to discard cam assembly. Damage may not always be obvious.

- D. Tighten puller handle to remove coupling from shaft. If cam assembly (11) does not release with maximum hand torque at puller handle, apply penetrating thread release compound between cam assembly (11) and shaft. Then while puller is still fully tightened, hold tip of hot heavy-duty soldering iron in contact with hub of cam assembly (11). See Figure 403. Solder wetting of the tip at point of contact with cam hub will assist in heat transfer to the parts. Retighten puller after about a minute of heat application.

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CAUTION:

*Do not strike puller with hammer. If puller is struck with hammer, magneto ball bearings **MUST** be replaced.*

CAUTION:

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

- E. Remove puller. Hold toe of flyweight inward to clear Woodruff Key(s) (53). Lift cam from shaft. See Figure 605 for terminology.
- F. Remove Woodruff Key(s) (53) from rotating magnet shaft.

4.2.5 Disassembling Rotating Magnet (Rotor) (54)

- A. Assemble nut (2) to support cotter pin holes in rotating magnet (rotor) (54) and, with Woodruff Key(s) (53) removed from drive end, press magnet (54) from housing (50) using an arbor press. Oil Deflector (55) will come off during this operation.
- B. Remove and discard bearing (70) cage assembly.
- C. Clamp knife edge of 11-10192 removal tool between inner race of front bearing (70) and wide portion of rotor (54). Thread nut (2) onto rotor (54) to support and cover cotter pin holes. Remove bearing (70) inner race and sleeve bearing (69) by pressing on rotor (54) with arbor press. Discard bearing (70) inner race. Remove shim washers (71). Keep washers together and identify as drive end for reassembly.

CAUTION

To prevent damage to end of rotor (54) place a piece of copper or brass (approximately 1/4 inch thick) between end of shaft and the arbor press ram when removing bearing (70) inner race and sleeve bearing (69).

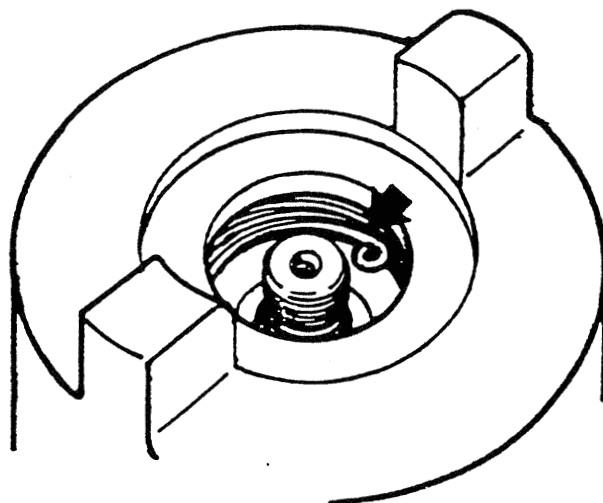


Figure 401. Spring Engaged with Cam

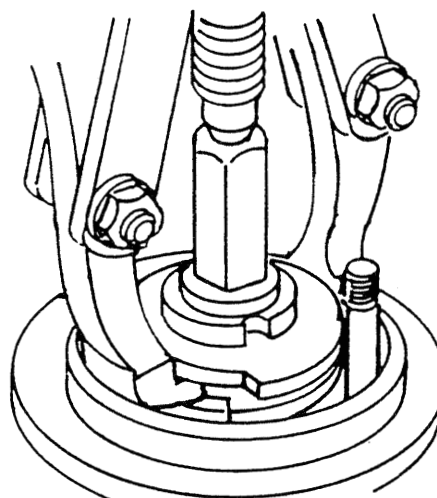


Figure 402. Removing Coupling Cam Assembly

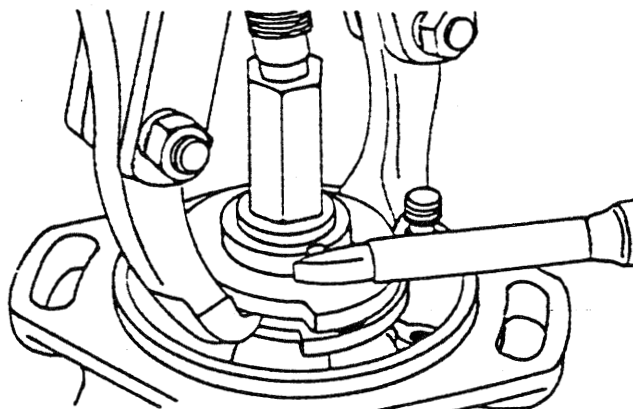


Figure 403. Applying Heat to Release Coupling From Shaft

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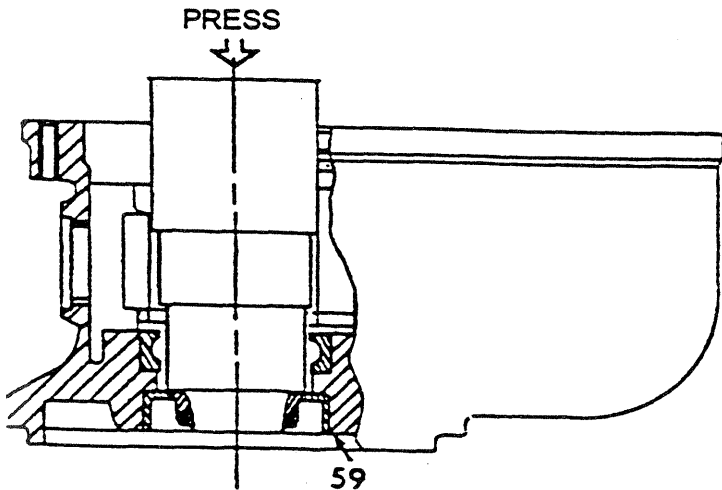


Figure 404. Pressing Oil Seal Out of Housing

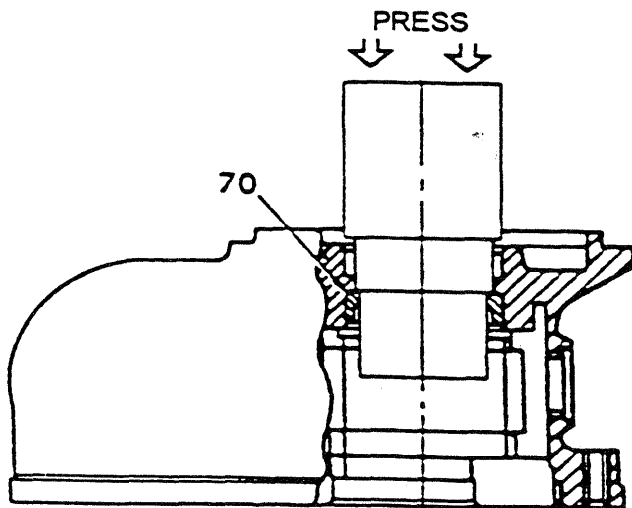


Figure 405. Pressing Bearing (70) Outer Race Out of Housing

D. Disassemble pinion gear (67) and bearing (64) inner race, as follows:

- (1) Fabricate two support bars similar to the ones shown in Figure 1001, Special Tools, Fixtures and Equipment.
- (2) Remove and discard bearing (64) cage assembly
- (3) Position fabricated bars between casting of magnet assembly, and pinion gear (67).
- (4) Position bars and magnet assembly in one of the slots in the web or base of an arbor press. Slot must be large enough to allow the casting magnet to pass through, but small enough to hold the fabricated bars.
- (5) Using arbor press, remove gear (67) and bearing (64) race.

CAUTION

To prevent damage to end of rotor (54), place a piece of copper or brass (approximately 1/4 inch thick) between end of shaft and the arbor press ram when removing gear (67) and bearing (64) race.

- (6) Remove shim washers (65) and plain washer (66) from shaft. Keep washers together and identify as cam end for use in reassembly.

4.2.6 Disassembling Housing (48, 50)

- A. Support magneto housing, mounting flange down, on base plate of an arbor press using a block of wood to protect the impulse coupling stop pins (60). Insert the 11-6924-1 Pressing Tool through bearing outer race until it seats against oil seal (59, Figure 404) as shown. Press oil seal out and discard.
- B. Place magneto housing (50) mounting flange up on base plate of an arbor press. Insert the 11-6924-1 Pressing Tool through outer race of bearing (70, Figure 405) until it bottoms as shown. Press outer race out and discard.
- C. Record magneto type and part number. Remove and discard nameplate (52). Clean pad area to remove adhesive and dirt.
- D. Using CG40-8 collar, CG40-4 expander rod and arbor press, remove bearing (64) outer race from distributor housing (48).

SECTION 5. CLEANING

5.1 GENERAL

NOTE

Refer to ILLUSTRATED PARTS LIST
Figure 1 for Magneto Exploded View.

- A. Using a clean, dry, lint-free cloth, wipe accessible areas of the housing (48,50) and other external surfaces free of grease, oil film, or other contaminants.

5.2 DETAILED CLEANING PROCEDURES

- A. Clean breaker contact points (39) as follows:

Using any hard finish paper (i.e., a typical business card), close contacts on cleaning paper, then open contacts and remove paper. Do not drag paper through closed contacts. Do not use emery cloth.

- B. All other parts of magneto, except capacitor (42), retard lead (17), distributor block (79), cam (63), and coil (58), 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 cam (62) or distributor block (79) in any solvent. Solvents will cause damage to these items.

- C. Clean capacitor (42), retard lead (17), cam (63), coil (58), and contact compartment by wiping with a clean dry cloth.

- D. Clean distributor block (79) as follows:

- (1) Using a clean dry lint free cloth, carefully wipe the internal & 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 brass bushing.

WARNING

Isopropyl Alcohol

- **Flammable -- do not use near welding areas, near open flames, electrical sparks, or on very hot surfaces.**
 - **Use only with adequate ventilation.**
 - **Do not smoke when using it.**
 - **Do not get in eyes, on skin, or on clothing.**
 - **Avoid breathing of vapors.**
 - **Store in approved metal safety containers.**
- (2) Install 10-70506-10S protector 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.

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- (3) Hold the distributor block with the outlet towers in a vertical plane. Using a 1/2 inch bristle brush dipped in isopropyl alcohol, clean around the electrodes of the block, allowing the cleaning fluid to flush out any remaining contaminants from the inside of the block. Also clean in and around the block outlet towers.
- (4) Using clean, dry compressed air, blow the block dry and remove protector caps from bronze bushing.

WARNING

Cleaning with Compressed Air

- **Use approved personnel protective equipment to protect eyes and face when using compressed air.**
 - **Maximum allowable air pressure for cleaning operation is 30 psi.**
 - **Do not direct airstream towards yourself or towards another person.**
- (5) Treat distributor blocks as specified in GENERAL OVERHAUL, Paragraph 7.2.4, Step H.

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SECTION 6. PERIODIC MAINTENANCE

6.1 GENERAL

Refer to ILLUSTRATED PARTS LIST Figure 1 for Magneto Exploded View.

Refer to Table 601 for a list of materials and tools required during PERIODIC MAINTENANCE.

- A. Use a 4 to 5 power magnifying glass for all visual inspections.
- B. The following parts must be replaced 100% with new parts following their disassembly from the magneto, regardless of whether disassembly is for the purpose of inspection, replacement of a part, or overhaul: Main and retard contact assemblies (39), lockwashers (34,3,13), screws (41,56,78,47,12,61), retaining ring (74), oil deflector (55), oil seal (59), bearings (64,70), felt strip (81), felt washer (82), identification plate (52), carbon brush (73) and pin (1). Also if installed, spring (10) and gaskets (14,49).
- C. **Periodic Maintenance Intervals**
 - (1) Paragraph 6.2.1 must be performed any time that magneto timing is found to be outside engine manufacturer's limits for magneto-to-engine timing.
 - (2) Paragraph 6.2.2 must be performed at the first 500 hours in service and every 500 hours thereafter for magnetos with snap-ring impulse couplings (8) installed or at the first 100 hours in service and every 100 hours thereafter for magnetos with riveted impulse couplings installed.
 - (3) Paragraph 6.2.3 must be accomplished for all magnetos at the first 500 hours in service and every 500 hours thereafter.
 - (4) Make an appropriate log book entry signifying compliance with paragraphs 6.2.1, 6.2.2, or 6.2.3 and referencing the magneto serial numbers involved after completing paragraphs 6.2.1, 6.2.2, or 6.2.3.

6.2 DETAILED MAINTENANCE PROCEDURES

6.2.1 Contact Assemblies

Anytime magneto timing is found to be outside engine manufacturer's magneto-to-engine timing limits, inspect contact assemblies as follows:

- A. Remove cover (15) from housing (48) as specified in DISASSEMBLY, paragraph 4.2.1 step A.
- B. Turn magneto drive shaft until cam follower rests on high lobe of cam holding points in their open position. Using a fiber or plastic rod with a screw driver shaped end, prod contact points as indicated in Figure 601. If any looseness is noted, replace contact assembly.

**Table 601
Periodic Maintenance Materials and Tools**

Material/Tool	Description
10-27165 Magneto Grease	Applied to teeth of distributor gear (72)
10-86527 High Temperature Lubricant	Applied to contact assembly (39) cam follower felt
11-8150-1 Timing Kit	Used to check magneto internal timing
11-8465 Rotor Holding Tool	Used to hold rotor (54) to check magneto internal timing
11-9110-1 Timing Light or timing suitable equivalent	Used to check magneto-to-engine

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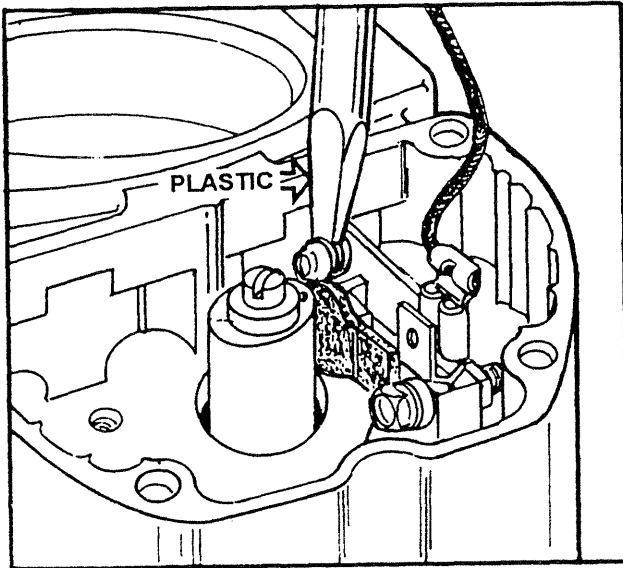


Figure 601. Checking Secureness of Contact Points

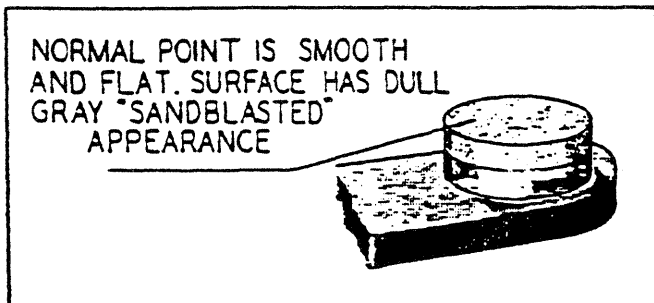


Figure 602. Normal Contact Point

- C. Examine contact points for wear or burning. Contact assemblies (39) with points which are deeply pitted or burned must be discarded. Figure 602 shows how the average contact point will look when surfaces are separated for inspection. Normal contact surfaces have a dull gray, sandblasted (almost rough) or frosted appearance, over the area where electrical contact is made. This means that points are worn in and mated to each other, thereby providing the best possible electrical contact and highest efficiency of performance. Replace burned, pitted, peaked or otherwise damaged contact assemblies.

NOTE:

Do not attempt to stone or dress contact points. Do not clean contact points with emery cloth. Should contact assembly have bad points, the complete contact assembly must be replaced.

- D. Check condition of cam follower felt. Squeeze felt tightly between thumb and forefinger. If fingers are not moistened with oil, re-oil using 2 or 3 drops of 10-86527 Lubricant. Allow approximately 30 minutes for felt to absorb the oil. Blot off excess with a clean cloth. Too much oil may foul contact points and cause burning.
- E. If necessary, points can be cleaned as specified in paragraph 5.2 step A of CLEANING.
- F. Check magneto-to-engine timing as follows:

WARNING

Should the propeller be moved by hand during pre-flight inspection or during maintenance procedures and a functional ("hot") magneto condition exists, the engine may fire and cause injury to personnel!

- (1) If necessary, ensure magneto impulse coupling flyweights are not engaged on the stop pins. Connect the 11-9110-1 Timing Light or equivalent across the main contact assembly.

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- (2) Slowly bring engine up to number one cylinder advance firing position as instructed in engine handbook. At this position timing light should go out. If it does, the magneto is properly timed to the engine. If the timing light does not go out, remove magneto from engine and perform internal timing check and inspection as specified in paragraph 6.2.3 step G of this chapter.

6.2.2 Impulse Couplings

For all S-21, S-23 and S-25 series magnetos, inspect snap ring impulse couplings (8) at the first 500 hours in service and every 500 hours thereafter, or inspect riveted impulse couplings (8) 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 603.

- A. To determine if flyweight and axle wear is within acceptable limits, perform the wear check on each flyweight as follows:

WARNING

A polished area on the heel of the flyweight is an indicator of severe wear and is cause for immediate rejection of the cam assembly. See Figure 604.

- (1) Rotate the impulse coupling so the flyweight axles are next to the stop pins. Position flyweight as shown in Figure 603. Lock rotor in place using 11-8465 rotor holding tool.

WARNING

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

- (2) For Model S-25 magnetos, push on flyweight trigger ramp (see Figure 605A) using bent wire as shown in Figure 607A. Proceed to step (4).

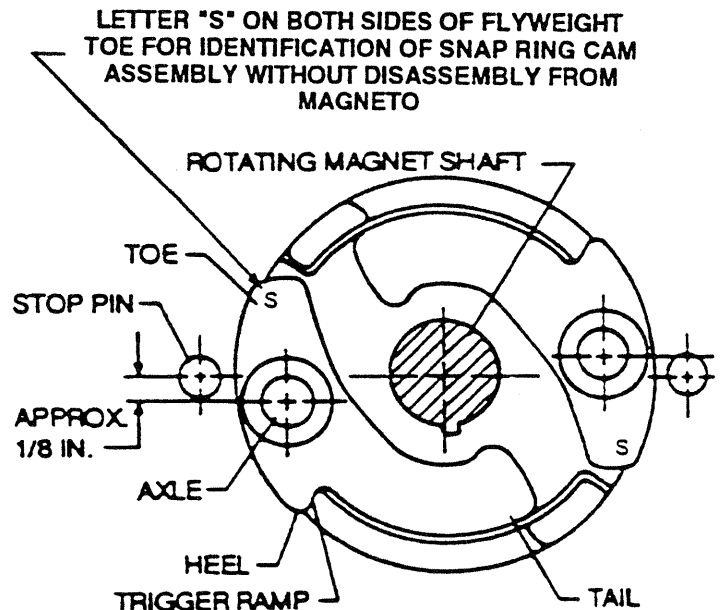


Figure 603. Flyweight Terminology

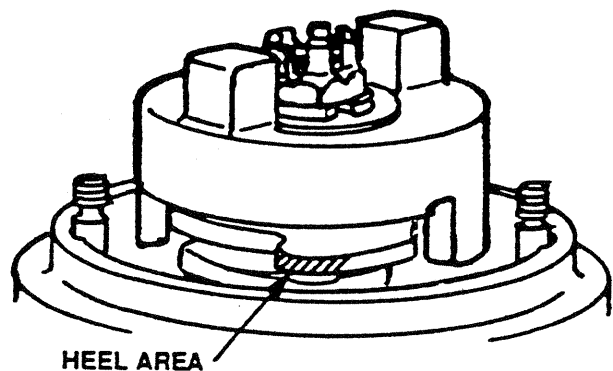


Figure 604. Reject Cam Assembly (11) if indicated area is polished.

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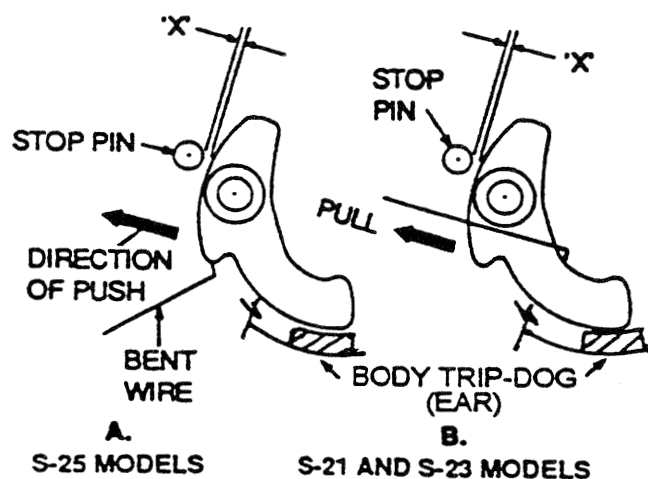


Figure 605. Flyweight To Axle Wear Check

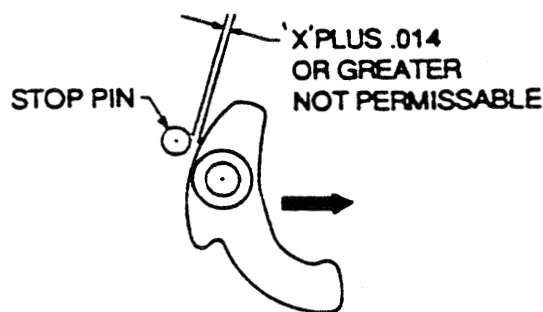


Figure 606. X Value Measurement

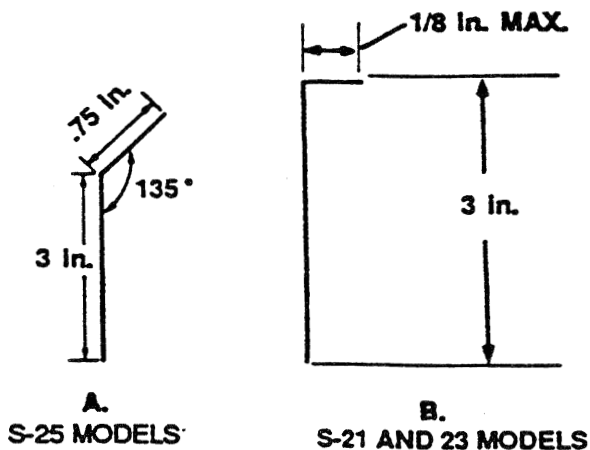


Figure 607. Wire Hook Configurations.
All Dimensions are Approximate.

- (3) For Model S-21 and S-23 magnetos, form wire into hook as shown in Figure 607B. Reach between the cam and the flyweight with wire hook as near as possible to the stop pin. Pull outward on the flyweight as shown in Figure 605B.
- (4) Insert feeler gage between the stop pin and flyweight to determine clearance ("X" of Figure 605) while the flyweight is forced outward. Maintain constant outward force on the flyweight while measuring clearance to ensure accuracy.
- (5) Remove the wire to relax the flyweight. Add .014 in. feeler gauge to your predetermined "X" value. Attempt to pass "X plus .014 in." feeler gauges between flyweight and stop pin. If gauges pass, remove and discard worn cam assembly. See Figure 606.

- B. If the impulse coupling is found to be unacceptable as a result of any of the preceding checks described, replace the entire impulse coupling assembly or worn parts.
- C. When inspection of the impulse coupling assembly is being performed, the stop pins in the magneto flange or housing must also be examined. A shiny spot at the point of flyweight contact is acceptable, a wear notch at this point is unacceptable. A damaged or worn stop pin is cause for replacement of the magneto stop pin or housing depending on extent of damage or wear.

6.2.3 500 Hour Inspection

Perform 500 hour inspection for all magnetos as follows:

- A. Disassemble magneto as specified in paragraph 4.2.1 of DISASSEMBLY.
- B. Inspect and treat distributor block (21) as specified in General Overhaul, paragraph 7.2.4.
- C. Inspect distributor gear assembly (25) and carbon brush (26) as follows:
 - (1) Wipe distributor gear and axle (25) free of all oil film and other contaminants. Inspect for damage or unusual wear. Replace as necessary.

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- (2) Remove carbon brush and spring (26) from hole in gear axle (25). Clean hole with pipe cleaner. Check carbon brush for side loading or unusual wear. Measure carbon brush 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 and spring (26) in gear (25) axle hole and compress brush to within 1/8 in. of gear, then release slowly. Brush shall move freely within hole in axle.
 - (3) Spread a 1/32 in. thick film of 10-27165 Magneto Grease over a flat, non-absorbent surface to produce a grease strip approximately 1 in. wide by 12 in. long. Roll the distributor gear teeth through the length of the grease strip for one complete revolution of the gear only. This procedure will provide sufficient grease for the gear. Excess grease will be thrown off during magneto operation which may lead to service difficulty due to contamination..
 - (4) Ensure washers (76, 77) are in place on gear axle and in good condition. Ensure that nylon washer (77) is positioned against distributor gear.
- D. Inspect housings (48, 50) for damage. Clean housings (48, 50) with a clean, dry, lint-free cloth.
- E. Inspect coil (58) as follows:
- (1) Using a dry, lint free cloth, clean contaminants from accessible surfaces of coil.
 - (2) Ensure coil outlet tab is parallel with housing mating surface. Bend tab with finger as necessary.
 - (3) If the carbon brush (73) has caused wear in the outlet tab, indicated by a visible depression in the tab, disassemble coil (58) from housing (55) as specified in DISASSEMBLY, paragraph 4.2.2, and repair coil (58) as specified in REPAIR, paragraph 8.2.1. Then assemble coil (58) into housing (50) as specified in ASSEMBLY, paragraph 9.2.2.
- F. Assemble distributor block (79) and distributor gear (72) into housing (48) as specified in ASSEMBLY, paragraph 9.2.3. Assemble housing halves (48, 50) together as specified in ASSEMBLY, paragraph 9.2.4. If used, assemble gasket (49) between housing halves. Pay particular attention to proper distributor gear positioning.
- G. Inspect contact assemblies (39) and related components as follows:
- (1) The contact assembly area shall be free of moisture, dirt, oil or grease residue. Clean as necessary.
 - (2) Perform inspection per paragraph 6.2.1, steps A through E.
 - (3) Insure cam securing screw (61) is tightened to a torque value of 21-25 in.-lb.
 - (4) Check magneto internal timing as follows:
 - (a) Loosen nut securing drive member to magnet shaft sufficiently in order to install the 11-8465 Rotor Holding Tool under nut and flat washer as shown in Figure 909. Tighten nut securely.
 - (b) Remove timing inspection plug (44) from top of magneto. Turn rotating magnet in direction of normal rotation until applicable timing mark on distributor gear is approximately aligned with center of timing window. Then turn magnet backward until magnet locates in its neutral position. Tighten adjusting knob of 11-8465 Holding Tool until pressure is applied on housing flange preventing rotor (54) from turning freely. See Note. With magnet held in this neutral position, install timing plate assembly and pointer assembly of the 11-8150-1 Timing Kit to contact compartment of magneto. (See Figure 918). Align pointer assembly with "O" mark on timing plate.

WARNING

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

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NOTE

Tighten adjusting knob of the 11-8465 Rotor Holding Tool only enough to hold magnet shaft firmly in desired position. Overtightening the adjusting knob may cause damage to drive end bearing.

- (c) Loosen adjusting knob of the 11-8465 Holding Tool and turn rotating magnet in normal direction of rotation until pointer indexes to respective 10° mark. Using the 11-9110-1 Timing Light or equivalent, check that main contact points just open at $(10^\circ \pm 4^\circ)$ "E" gap position.
- (d) Turn rotating magnet until cam follower of contact assembly is on high point of cam lobe. Tighten adjusting knob of holding tool and measure contact clearance 0.018 ± 0.006 in. If dimension does not fall within limits, readjust contact points to 0.018 ± 0.006 in. and recheck to be sure points open within $(10^\circ \pm 4^\circ)$ "E" gap tolerance. If points do not open within tolerance, replace contact assembly.
- (e) On dual contact assembly magnetos, the retard contact assembly is adjusted to open a pre-determined number of degrees after the main contact assembly opens. The degree of retard for any particular magneto is stamped in the bottom of the contact compartment. See Figure 921. Add degrees retard to the number of degrees past neutral where the main contacts just open. Unlock holding tool and turn rotating magnet in normal direction until pointer of timing kit indexes this total. Lock holding tool in this position. Using a timing light, adjust retard contact assembly to just open. Tolerance of retard is $+2^\circ-0^\circ$. Unlock holding tool. Turn rotating magnet until cam follower is on high point of cam lobe. Measure retard contact clearance: 0.018 ± 0.006 in. If dimension is not within limits, readjust retard contact assembly and recheck to be sure that points will open within retard degree tolerance. Replace contact assembly if retard degree tolerance and contact clearance cannot be obtained.

- H. If used, adjust tachometer contacts to maximum opening 0.019 ± 0.003 in. when on the highest point of cam lobe.
- I. Inspect magneto cover (15) for damage. Check capacitor (42) for case or flange looseness, and for evidence of lead chafing. Using clean, dry compressed air, clean as necessary and replace any component found defective. See appropriate procedures in DISASSEMBLY, paragraph 4.2.2 and ASSEMBLY, paragraph 9.2.6 if capacitor replacement is necessary.

WARNING

Cleaning with Compressed Air

- Use approved personnel protective equipment to protect eyes and face when using compressed air.
 - Maximum allowable air pressure for cleaning operation is 30 psi.
 - Do not direct airstream toward yourself or another person.
- J. Form capacitor and coil leads and assemble magneto cover (15), and new gasket (14) if installed, onto distributor housing (48) as specified in ASSEMBLY, paragraph 9.2.10.
 - K. Install magneto on engine. Check and adjust "magneto-to-engine" timing to comply with the engine manufacturer's specifications.
 - L. Replace any missing terminal eyelets on the harness wires before reinstalling the ignition harness onto the magneto. Check the harness grommets for any signs of carbon tracking. Replace as necessary. Refer to Harness portion of Master Service Manual, Form X40000.
 - M. Reinstall the ignition harness adapter plate to the magneto. Evenly torque four securing screws initially to 4-8 lb.-in. and then to 25-35 lb.-in.
 - N. Complete installation by properly attaching the switch wiring and any other miscellaneous hardware items removed.

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SECTION 7. GENERAL OVERHAUL

7.1 GENERAL

NOTE:

Refer to ILLUSTRATED PARTS LIST, Figure 1 for Magneto Exploded View. Refer to Table 701 for a list of materials and tools required during GENERAL OVERHAUL.

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

- B. The following parts must be replaced 100% with new parts following their disassembly from the magneto, regardless of whether disassembly is for the purpose of inspection, replacement of a part or overhaul: Main and retard contact assemblies (39), lockwashers (34,3,13), screws (41,56,78,47,12,61), retaining ring (74), oil deflector (55), oil seal (59), bearings (64,70), felt strip (81), felt washer (82), identification plate (52), carbon brush (73) and pin (1). Also if installed, spring (10) and gaskets (14,49).

- C. GENERAL OVERHAUL, as specified in paragraph 7.2, must be performed at time of engine overhaul, or in the event of severe environmental effects (engine overspeeds, sudden stoppage or other unusual circumstances), or at the expiration of four years without regard to accumulated engine operating hours since new or last overhaul.

**Table 701
General Overhaul Materials and Tools**

Material/Tool	Description
10-70506-10S Protective Caps (2 required)	Used to protect bushing during coating of block (79)
10-391200 Distributor Block Lubricant	Applied to distributor block bushing to provide proper lubrication for distributor shaft
10-391400 Distributor Block Coating	Applied to "black" distributor blocks (79) to inhibit moisture from sheeting on dielectric surface
11-8150-1 Timing Kit	Used to check magneto internal timing
11-8465 Rotor Holding Tool	Used to hold rotating magnet (54) to check magneto internal timing
11-8950-2 High Tension Lead Tester Kit	Used to test distributor block insulation
11-9110-1 Timing Light or suitable equivalent	Used to check magneto-to-engine timing
Fluke 8840A Digital Multimeter	Used to test coil (58)
LC101 Capacitor Tester	Used to test capacitor (42)

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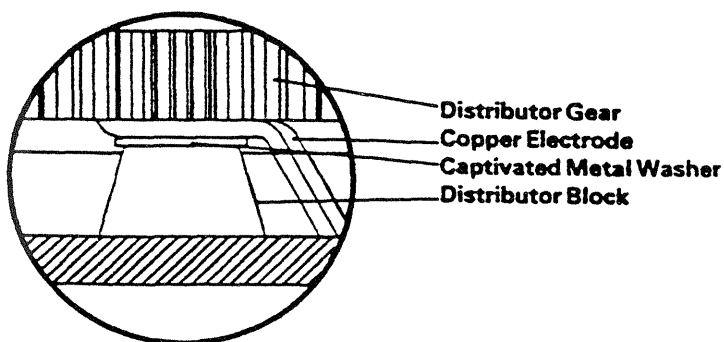


Figure 701
Original Gear Make Up
(Not incorporating insulating or plain steel skid washer)

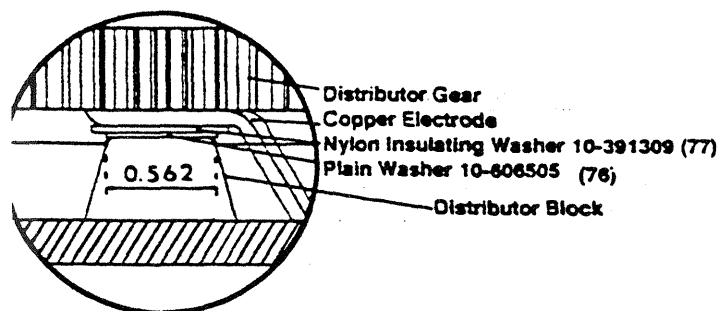


Figure 702. Current Insulated Configuration

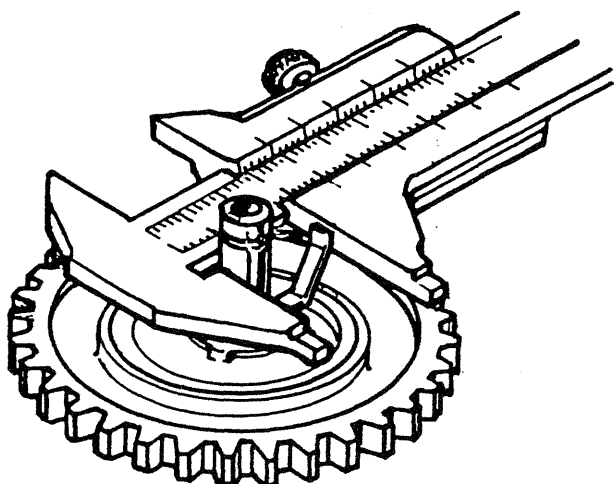


Figure 703. Checking Distributor Gear Electrode Wear

7.2 DETAILED OVERHAUL PROCEDURES

7.2.1 Disassemble Magneto

Completely disassemble magneto as specified in DISASSEMBLY chapter.

7.2.2 Inspect Distributor Gear (72)

- A. Determine if gear is of old or new design. Very old gears are dark brown laminated phenolic. Old nylon gears use a captivated washer. See Figures 701 and 702. If gear is of old design, discard gear and replace with new type.
- B. If distributor gear (72) is of new design, inspect gear for excessive wear or damage. If gear teeth, axle or electrode are excessively worn or damaged, or there is any evidence of looseness between axle and gear or electrode and gear, gear must be replaced. If electrode surface is slightly carbonized, smooth off with a nylon scouring pad.
- C. Wipe gear (72) free of all oil film and other contaminants.
- D. Check for wear of gear (72) electrode. With vernier calipers or a micrometer applied as shown in figure 703, electrode must measure $.933 + .000 - .023$ in. If electrode is worn beyond specifications, replace gear (72).

CAUTION

Do not attempt to correct gear electrode position by bending.

- E. Using Red Dykem or Red Lacquer, paint timing marks on gears as follows:
 1. For all S4LN magnetos, paint tooth and indent mark as indicated by CCW arrows. For all S4RN magnetos, paint tooth and indent mark as indicated by CW arrows. See Figure 704A.
 2. For S6LN-200 and -201 magnetos, paint tooth and indent mark as indicated by "outer" booster CCW arrows. For S6RN-200 and -201 magnetos, use "outer" CW booster arrows. These magnetos are used in conjunction with a starting vibrator (or "booster") and retard contacts. Refer to Figure 704B.

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3. For all other S6LN magnetos, paint tooth and indent mark as indicated by "inner" CCW normal arrows. For all other S6RN magnetos, use "inner" normal CW arrows. See Figure 704B.

NOTE:

Early production six cylinder gears only had "outer" arrows marked CW and CCW. These arrows correspond to booster arrows as shown in Figure 704B. Paint tooth and mark on such gears according to instructions Step 2 or Step 3 above and Figure 704B.

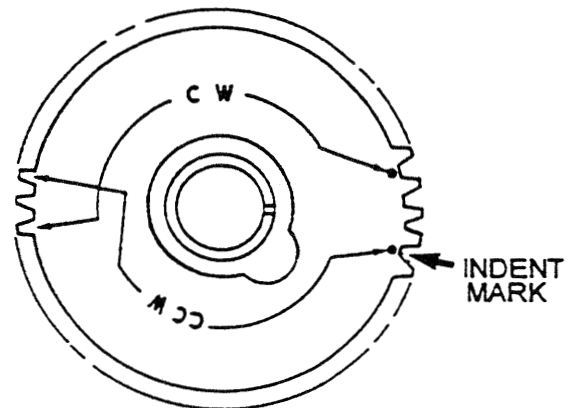
7.2.3 Inspect Cam (63), Washer (62) and Pinion Gear (67)

- A. Inspect cam (63) for scratches or wear and replace if either is found. Measure thickness of cam washer (62) and replace if not $.095 \pm .010$ inch thick.
- B. Wipe cam with clean lint free cloth.
- C. Submerge cam completely in 10-391200 Distributor Block Lubricant held at 200°F for 30 minutes.
- D. While still submerged in oil, allow cam and oil to cool to room temperature together.
- E. After cooling, remove cam from oil, wipe with lint free cloth and put into service or store in a sealed plastic bag until needed.
- F. Do not reuse any nylon Pinion Gears. Replace Nylon Pinion Gear with Sintered Iron Gear (67).

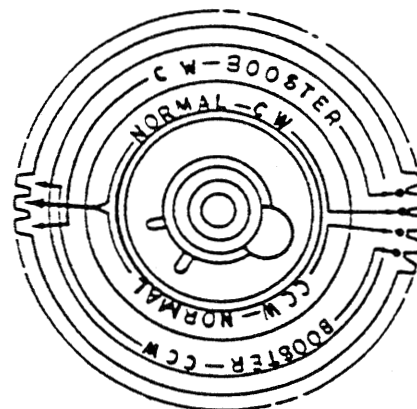
7.2.4 Inspect Distributor Block (79)

NOTE

Current design Distributor Blocks (79) 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 phenolic (black) material or buna rubber (very dark brown, with letters "cc" molded into the tower side of the block) material may be used in unpressurized applications so long as they incorporate annular felt groove (see Figure 705) and pass tests outlined below. For pressurized magnetos, use only brown polyester blocks.



A. Four Cylinder



B. Six Cylinder

Figure 704. Distributor Gear Timing Marks

1/16 INCH OF BUSHING ABOVE FELT STRIP ANNULAR FELT GROOVE

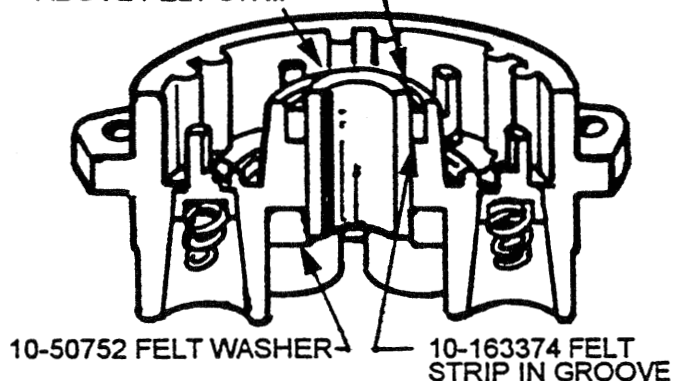


Figure 705. Cutaway View of Distributor Block

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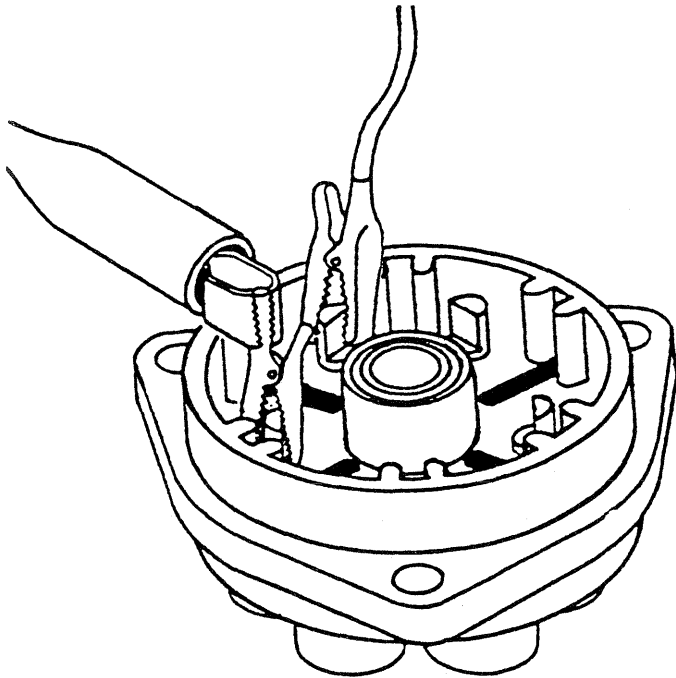


Figure 706. Checking Distributor Block for Carbon Tracking

0.422 IN. MAX

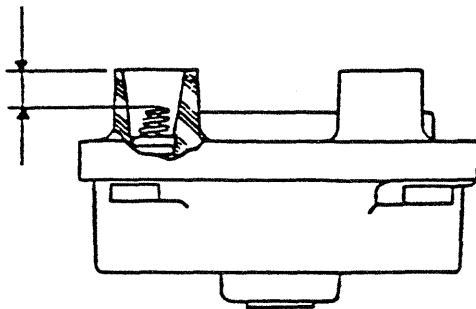


Figure 707. Contact Spring Height

- A. Inspect brown polyester blocks for batch code. Replace blocks with batch code 8601 or lower.
- B. Insert gear (72) into distributor block (79). Apply light hand pressure to first one side of gear, then the other. If any play can be felt as gear is "rocked" manually, block bushing is worn excessively. Replace block (79).
- C. Examine distributor block (79) for cracks, particularly around high tension terminal towers, mounting holes and nose in center of electrode side.
- D. Clean distributor block as specified in CLEANING, paragraph 5.2, step D.
- E. With block thoroughly cleaned, inspect for carbon tracking, which appears as a thin wavy line across dielectric surface. If any suspicious areas are noted check with the 11-8950-2 High Tension Lead Tester Kit as follows:
 - (1) Use a medium alligator clip to connect tester ground lead to an electrode of the block.
 - (2) Attach high voltage lead of tester to electrode adjacent to grounded one. See Figure 706.
 - (3) Tester high voltage will follow a carbon track. Complete test of all interelectrode spaces. Also test between center bushing and all electrodes. Temporarily assemble block (79) into housing (48) and test for carbon tracking between electrodes and housing by connecting to housing and each electrode. Reject any carbon tracked blocks (79).
- F. Inspect contact springs (80), on tower side of block (79). If any look fuzzy or white, or show evidence of burning, rust, or corrosion, remove with needle nose pliers and discard. Check springs for proper height by measuring down from top of tower. If measurement exceeds the .422 inch dimension shown in Figure 707, spring may be deformed or improperly installed. Using a scribe, or similar pointed instrument, wiggle top of spring in a circular motion to be sure only bottom turn of spring is captivated in groove of block insert. Recheck spring height and if measurement still exceeds .422 inch, remove and replace spring.

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- G. Using a small scraper or knife, clean electrodes of distributor block (79) to remove any carbonized deposits. Do not attempt to grind or machine electrodes.
- H. If block is phenolic or buna type (see Note above) and is not marked with a raised boss or a drill point indentation to the left and adjacent to No. 1 high tension tower (see Figure 708), remove old lubricant as follows:
- (1) Place distributor block, high tension towers up, on a piece of absorbent material, such as cardboard, in a 250°F oven for 4 hours. This should cause impregnating oil to appear on surface of bushing and on absorbent materials.
 - (2) Remove block from oven and using a clean, dry cloth, immediately wipe all oil possible from inside diameter of bushing. It may be necessary to wipe bushing several times as part cools, as well as to repeat this procedure until old oil is thoroughly purged.
 - (3) Identify distributor block by drilling an indentation 0.125 inch diameter and 0.016 inch deep located as shown in Figure 708.
- I. Impregnate bronze bushing and coat distributor block as follows:

NOTE

Only "black" phenolic or buna rubber type distributor blocks (79) must be coated at each 500 hour inspection and at each overhaul period. **DO NOT COAT POLYESTER "Brown" distributor blocks.** Bronze bushings in all types of distributor blocks (79) must be oil impregnated at each 500 hour inspection and at each overhaul period. The bronze bushing in the distributor block (79) is impregnated with oil to provide proper lubrication for distributor shaft. The phenolic or buna rubber dielectric surfaces are coated to inhibit moisture from sheeting and possibly causing electrical failure. Care must be taken to keep coating away from bronze bushing and to keep oil from coated surfaces.

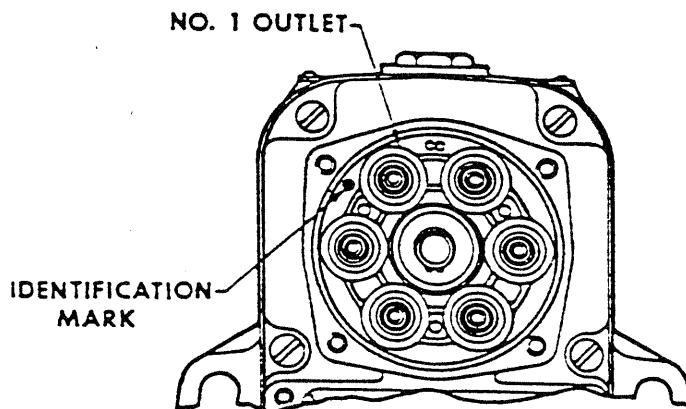


Figure 708. Location of Lubrication Identification Mark

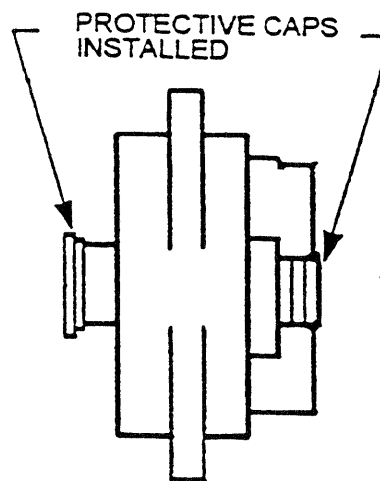


Figure 709. Protective Caps Installed.

Capacitor P/N	10-357281, 10-349276	10-51676
Capacitance at room temp., microfarads	.34 to .41	.33 to .43
DC Series resistance, ohms	1.0 maximum	N/A
Leakage current at 400 VDC, 190°F ± 10°	8.0 mA maximum	8.0 mA maximum

Table 702: Capacitor Test Values

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- (1) Install a 10-70506-10S Protective cap over each end of bronze bushing in block (see Figure 709). Brushcoat all surfaces of the distributor block dielectric material with 10-391400 Distributor Block Coating. Do not apply the coating to any exposed surface of the bronze bushing. Allow the block coating to dry for a minimum of 30 minutes before reassembling the block (79) to the housing (48) or gear assembly (72).
 - (2) Remove 10-70506-10S Protective Caps from block. Insert a cork stopper in one end of the bushing and fill bushing with 10-391200 Distributor Block Lubricant.
 - (3) Using care not to spill oil on coated surfaces, place block in oven. Bake block at 190°F to 210°F for 2 to 3 hours.
 - (4) Remove block and oil from oven and allow them to cool to room temperature together. (Oil is absorbed into bushing during cooling).
 - (5) Carefully remove cork stopper and allow excess oil to drain from bushing.
- J. For all blocks, install a new dry felt strip (81), in groove on electrode side of distributor block. When strip is properly installed, approximately 1/16 inch of bushing shall be exposed above the strip. See Figure 705.

CAUTION

*Felt strip (81) **MUST NOT** be lubricated.*

- K. For all blocks, before installing new felt washer (82) into the distributor block (79), saturate washer with 10-391200 Distributor Block Lubricant. Blot excess oil from washer until flat surfaces take on a "frosted" appearance, and seat washer in recess on tower side of block.

7.2.5 Inspect Capacitor (42)

- A. Visually inspect capacitor (42) mounting brackets for cracks or looseness. Check capacitor lead for damaged insulation or loose connections. If any damage is found, discard capacitor (42).

- B. Using LC101 capacitor tester measure capacitance and leakage in accordance with Table 702. Using ohmmeter, measure DC series resistance in accordance with Table 702. Replace capacitor if it does not meet all applicable specifications.

7.2.6 Inspect Coil (58) and Clamps (57)

- A. Ensure coil is of current design. Coil must exhibit red epoxy compound, external ground lead and part number 10-357164 or 10-357165 as shown in Figure 710. Coil may be cylinder or barrel shaped. Discard all old coils.
- B. Visually inspect coil (58)
- (1) Inspect core laminations of coil (58) for wear at point of contact with pole shoe laminations in magneto housing. If wear is present, coil will not fit tightly to laminations and must be replaced, regardless of electrical characteristics.
 - (2) Inspect leads for damaged insulation or loose connections. Discard coil with these conditions.
 - (3) Inspect high tension tab for wear caused by carbon brush (73), indicated by a visible depression in the tab. If tab is worn, repair coil as specified in repair paragraph 8.2.1.
- C. Using Fluke 8840A Digital Ohmmeter or equivalent, measure primary resistance between coil leads. Primary resistance shall be 0.2 to 0.6 ohms. Measure secondary resistance between ground lead and high tension tab. Secondary resistance shall be between 12,000 and 16,000 ohms. Replace coils not within specifications.
- D. Look at coil core clamps (57) closely. Obsolete design clamps not having identification mark shown in Figure 711 must be replaced with clamps having either a half moon indentation or white dykem (lacquer) paint in the same position on the clamp. Clamps with a circular indentation or no indentation must be discarded. Acceptable clamps may have black oxide finish or silver-colored finish.

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7.2.7 Inspect Impulse Coupling (8) and Related Components

A. Inspect Bushing (5).

- (1) Inspect for wear or deformation. Look particularly at surface where lockwasher or nut contacts bushing. If wear or deformation is present, replace bushing (5).
- (2) Sintered iron bushing with shoulder must be replaced with machined steel bushings (5). The machined steel bushings have an undercut 0.062 in. wide by 0.005 in. deep immediately behind the bushing shoulder (see Figure 712). Refer to illustrated parts list for correct part numbers. After compliance with this step, magneto P/N 10-51360-30 becomes new P/N 10-51360-37. Overstamp the nameplate (52) with the new part number. All other part number magnetos complying with this step shall be identified by stamping a 1/8 inch high letter "B" in the lower left-hand corner of the nameplate. Discard old style bushing.

B. Inspect the parts of impulse coupling separately as follows:

CAUTION

Regardless of condition or appearance, all obsolete design coupling cam assemblies having axles riveted into the cam must be replaced with current parts having the flyweight axles integral with the machined coupling cam. See Figure 713.

- (1) Ensure that impulse coupling cam flyweights have been properly heat treated as follows:

NOTE

Cam assemblies with yellow paint (dykem or lacquer) on the heel of each flyweight or with stamped numbers on flyweight as shown in Figure 714 or with more than 300 hours service are not subject to this test. Proceed to step (b).

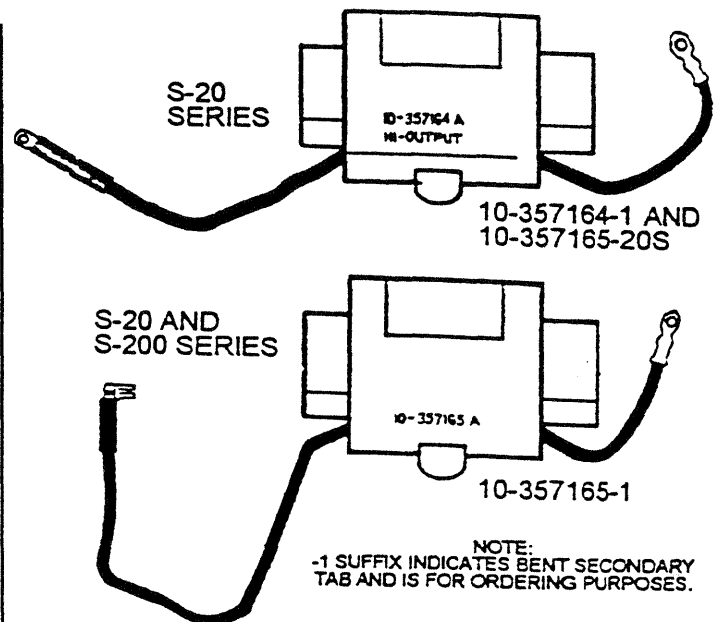


Figure 710. Current Design Coils (58)

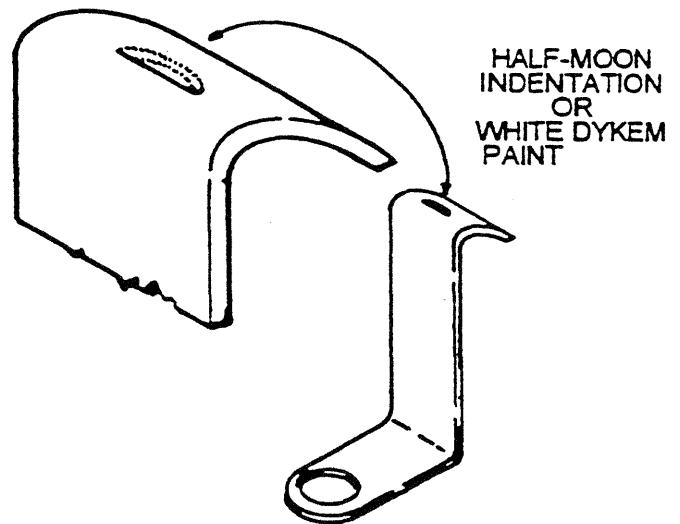


Figure 711. Current Design Clamp (57)

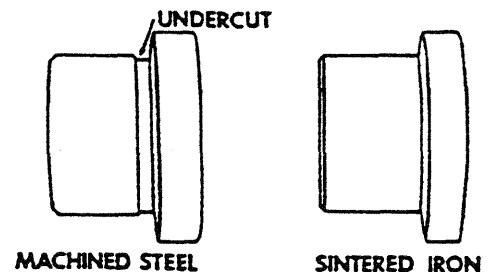


Figure 712. Machined Steel and Sintered Iron Bushings

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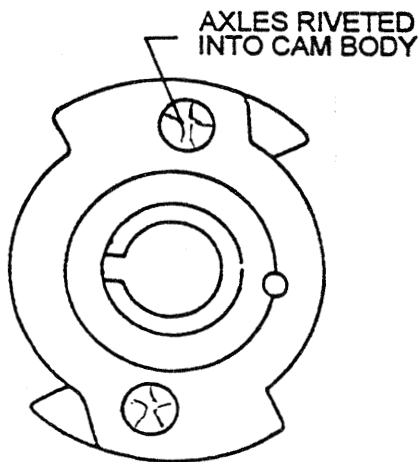
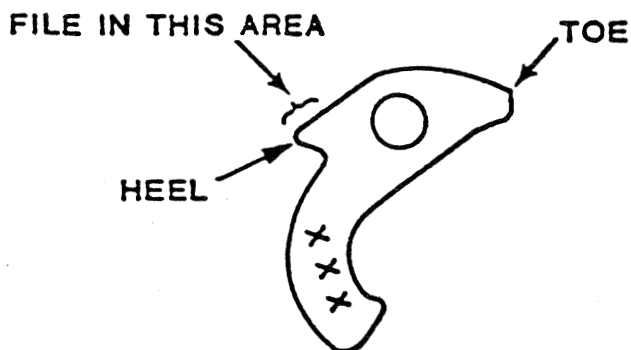


Figure 713. Old Coupling Cam Assembly



NOTE:

XXX Indicates location of stamped numbers.
Figure 714. Soft Flyweight Check

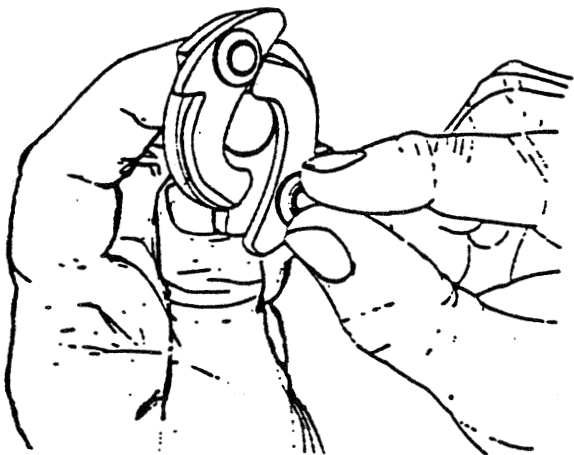


Figure 715. Inspection of Flyweight Securing Washers

(a) Use finger pressure to push inward on the toe of a flyweight so that the heel points outward. Using a fine #1, double cut, 1/2 in. wide file at least 3/32 in. thick, pass the file across the heel of the flyweight and attempt to remove material. Repeat for other flyweight. File should "glide" smoothly over the heel of the flyweight and remove no material. If the flyweight is soft, the file will not "glide" easily and material will be removed. Impulse coupling cams with soft flyweight(s) must be discarded and replaced with a cam with flyweights marked as specified in above Note.

(b) Make an appropriate log book entry signifying compliance with this step, mark heels of flyweights on good cam assembly with yellow dykem or yellow lacquer if numbers are not stamped, and stamp a 1/16 in. high letter F in the upper right-hand corner of the identification plate (52).

(2) Visually inspect riveted flyweight securing washers, snap rings, and flyweights for cracks. For riveted cam assemblies, grip washer as shown in figure 715, and exert a turning force in each direction. If washer moves, or if any cracks are found, reject and replace the cam assembly.

CAUTION

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

(3) Inspect drive lugs of body (9). If wear is noted, measure difference between worn and unworn areas of drive lug surface. If difference is in excess of 0.015 in., reject body (9). See Figure 716.

(4) Inspect trip dogs of coupling body (9) for grooves worn by tail of flyweight and wear at triggering ramp and cam stop contact areas. (See Figure 717.) If either ear shows a perceptible groove or a ridge can be felt when fingernail is drawn across surface, reject body (9).

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7.2.8 Inspect Magneto Housings (48 and 50) and Cover (15)

- A. Examine both housings (48 and 50) for cracks, stripped threads or other damage. Check bearing outer race seats in both housings for wear or "peening" due to operation with loose bearings. Measure each bearing bore at 90° intervals. If bearing bores are worn, peened or exceed limits shown in table 703, the housing must be replaced. Housing must also be replaced if, at the time of assembly of new bearing races, an interference or "press-fit" condition is not obtained.

WARNING

Do not attempt to repair worn bearing bores by any means. If bearing bores are oversize, replace housing. Do not reuse housings which have been staked, punched, or knurled.

- B. Inspect coil seat areas in magneto housing (50) for wear. See Figure 718. If a ridge can be felt when fingernail is drawn across coil seating surface at top of pole shoe laminations, replace housing.
- C. Replace housing (48 or 50) if evidence of corrosion or galling is found at mating surfaces of housings.
- D. Inspect cover (15) for cracks, stripped threads or other damage. Replace damaged covers.
- E. Inspect impulse coupling stop pin (50). If stop pin is bent or damaged, or shows signs of wear, remove and replace as follows:
- (1) Remove pin (60) using a steel bar, 1/4-20 nut and a few plain washers as shown in Figure 719. The bar should be about 1 X 3 X 1/4 inch with a hole drilled in its center big enough to fit over the stop pin. Make careful note of which hole pin was removed from.
 - (2) Place housing (50) on a wood block and press new stop pin (60) into position using an arbor press. The dimension from top surface of pin to face of mounting flange shall be .688 + .016 - .000 inch for all types except housing (50) P/N 10-81942 used with S6RN and S6LN-25 magnetos, in which case the dimension shall be .500 + .016 - .000 inch.
 - (3) If new pin is loose in housing, housing must be replaced.

Bearing Seat Location	Diameter (Inches)
Magneto Housing (50)	1.3770 Maximum
Distributor Housing (48)	1.1015 Maximum
Rotor (54), Front	0.5904 Minimum
Rotor (54), Rear	0.3937 Minimum

Table 703: Bearing Seat Limits

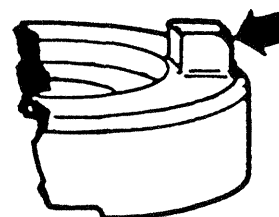


Figure 716. Worn Drive Lug

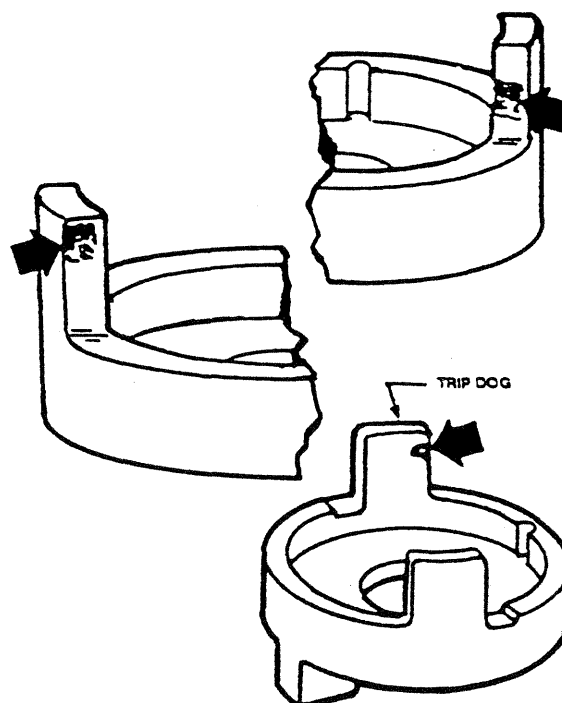


Figure 717. Points of Coupling Body Wear

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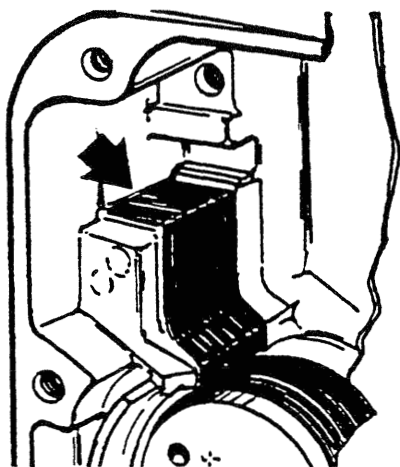


Figure 718. Wear in Coil Seat Area

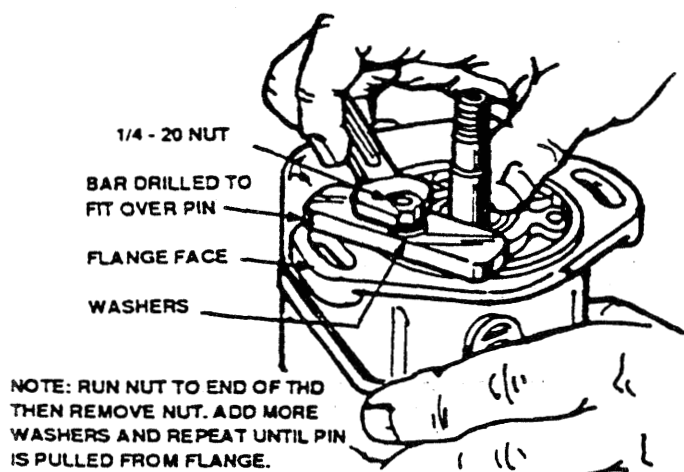


Figure 719. Pulling the Impulse Coupling Stop Pins

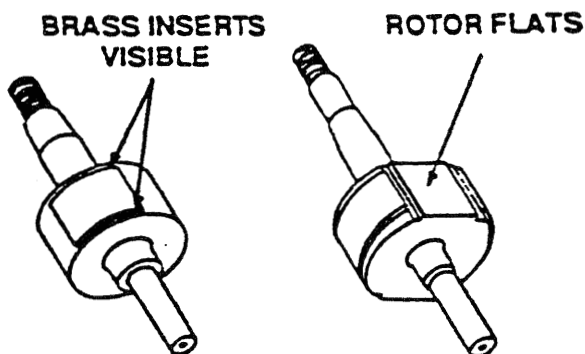


Figure 720. Magnets to be Replaced.

- F. Inspect retard lead assembly (23) or tachometer leads (17) for damage. Inspect terminals for proper attachment to leads. Examine leads for damaged insulation. Check grommet (19) in cover for damage. Ensure retard lead (23) is insulated from ground with p-lead installed. Replace damaged leads or grommet.

7.2.9 Inspect Rotating Magnet (Rotor) (54)

- A. Inspect rotor (54) for damaged threads, cracks in magnet casting, scored or otherwise damaged laminations, and wear or galling in bearing race seat area, cam and gear seat areas. Measure each bearing seat at 90° intervals. If either bearing seat exceeds limits shown in table 703, the rotor must be replaced. Visually inspect drive end of rotor shaft for grooves or scratches that might allow oil to enter under sleeve bearing. Rotor must also be replaced if, at the time of assembly of new bearing races and sleeve bearing, an interference or "press-fit" condition is not obtained. Discard rotor if any of these conditions are found.

CAUTION

All obsolete design rotors of configuration pictured in Figure 720 must be replaced with new rotors.

7.2.10 Inspect Sleeve Bearing (69)

- A. Inspect sleeve bearing (69) to determine whether it is of old or new design. The new design is steel and has a ground finish characterized by a bright silvery surface. The old design is sintered iron which has a dull gray appearance. Regardless of condition, all old type sleeve bearings must be replaced with the new steel type.
- B. If magneto already incorporates new sleeve bearing (69), inspect for scratches, pits or scoring that might allow oil to enter magneto. If sealing surface of steel sleeve bearing is worn, bearing can be reversed when reinstalled to provide an unused surface. If sleeve bearing is worn at both locations, it must be replaced.

7.2.11 Assemble Magneto

Assemble Magneto as specified in ASSEMBLY.

7.2.12 Test Magneto

Test Magneto as specified in TESTING AND TROUBLESHOOTING.

SECTION 8. REPAIR

8.1 GENERAL

Refer to ILLUSTRATED PARTS LIST Figure 1 for Magneto Exploded View.

Refer to Table 801 for a list of materials and tools required for repair.

Table 801
Repair Materials and Tools

Material/Tool	Description
Isopropyl Alcohol Local Purchase	Used to repair coil tab
Resin Flux (Kester 1544, or equivalent) Local Purchase	Used to repair coil tab
50/50 or 60/40 Solder Local Purchase	Used to repair coil tab
10-76257 Contact	Used to repair coil tab

8.2 DETAILED REPAIR PROCEDURES

8.2.1 Repair of High Tension Pad of Coil (58)

- A. Place a piece of phenolic or metal between the terminal pad and coil to prevent drill damage to coil. Drill a .125 in., + .016, -.000 diameter hole through center of high tension terminal pad.

- B. Lightly abrade face of coil terminal and clean with alcohol. Tin coil terminal with solder and flux. Then prein entire protrusion side of 10-76257 contact.

WARNING

Isopropyl Alcohol

- **Flammable -- do not use near welding areas, near open flames, electrical sparks, or on very hot surfaces.**
- **Use only with adequate ventilation.**
- **Do not smoke when using it.**
- **Do not get in eyes, on skin, or on clothing.**
- **Avoid breathing of vapors.**
- **Store in approved metal safety containers.**

- C. Position contact so protrusion extends through 1/8 inch hole in terminal pad. Flow solder between parts with a suitable soldering iron to make a good electrical joint.

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- D. After contact and terminal have cooled, clean with alcohol. Check the $90^\circ \pm 2^\circ$ angle as indicated in Figure 801. Dimension A shall be 1.246 inch maximum.

WARNING

Isopropyl Alcohol

- Flammable -- do not use near welding areas, near open flames, electrical sparks, or on very hot surfaces.
- Use only with adequate ventilation.
- Do not smoke when using it.
- Do not get in eyes, on skin, or on clothing.
- Avoid breathing of vapors.
- Store in approved metal safety containers.

- E. Inspect coil as specified in GENERAL OVERHAUL, paragraph 7.2.6.

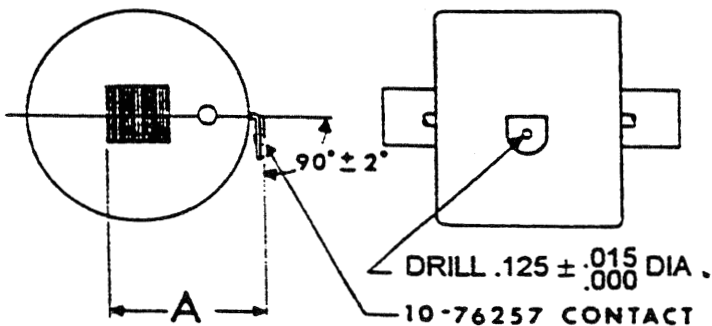


Figure 801. Correct Terminal Dimensions

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SECTION 9: ASSEMBLY

9.1 GENERAL

Refer to Table 901 for a list of materials and tools required during assembly.

NOTE

Refer to ILLUSTRATED PARTS LIST, Figure 1 for magneto exploded view. Numbers in parenthesis following part names correspond to find numbers in the exploded view.

WARNING

Proper torque where specified in assembly instructions is an imperative requirement to the airworthiness of equipment.

NOTE:

The following parts must be replaced 100% with new parts following their disassembly from the magneto, regardless of whether disassembly is for the purpose of inspection, replacement of a part or overhaul: Main and retard contact assemblies (39), lockwashers (34,3,13), screws (41,56,78,47,12,61), retaining ring (74), oil deflector (55), oil seal (59), bearings (64,70), felt strip (81), felt washer (82), identification plate (52), carbon brush (73) and pin (1). Also if installed, spring (10) and gaskets (14,49).

**Table 901
Assembly Materials and Tools**

Material/Tool	Description
10-27165 Magneto Grease	Used to pack bearings (64,70) and to lubricate distributor gear (72) teeth.
10-86527 Breaker Felt Lubricant	Used to lubricate follower felt of contact assembly (39).
10-391200 Distributor Block Lubricant	Used to lubricate distributor block (79) bushing.
646943 Anti-Seize Compound Teledyne Continental Motors P. O. Box 90 Mobile, AL 36601	Used to prevent drive members from locking onto rotating magnet shaft taper.
MS122 Fluorocarbon Spray Miller-Stephenson Chemical Company P. O. Box 950 Danbury, CT 06813	Used to coat harness grommets to prevent sticking to distributor block (79)
11-6924-1 Drift	Used to install press fit parts.
11-8150-1 Timing Kit	Used to aid magneto internal timing.
11-8465 Rotor Holding Tool	Used to lock rotating magnet (rotor) (54) during timing.
11-8627 Spring Seating Kit	Used to seat springs (80) in distributor block (79).
11-9110-1 Timing Light	Used to aid magneto internal timing.
11-10600 Magnet Charger	Used to magnetize rotor (54).
Tru-Arc Retaining Ring Pliers No. 2 Waldes-Kohinoor Long Island City, NY 11101	Used to install retaining ring (74) onto distributor gear shaft (72)

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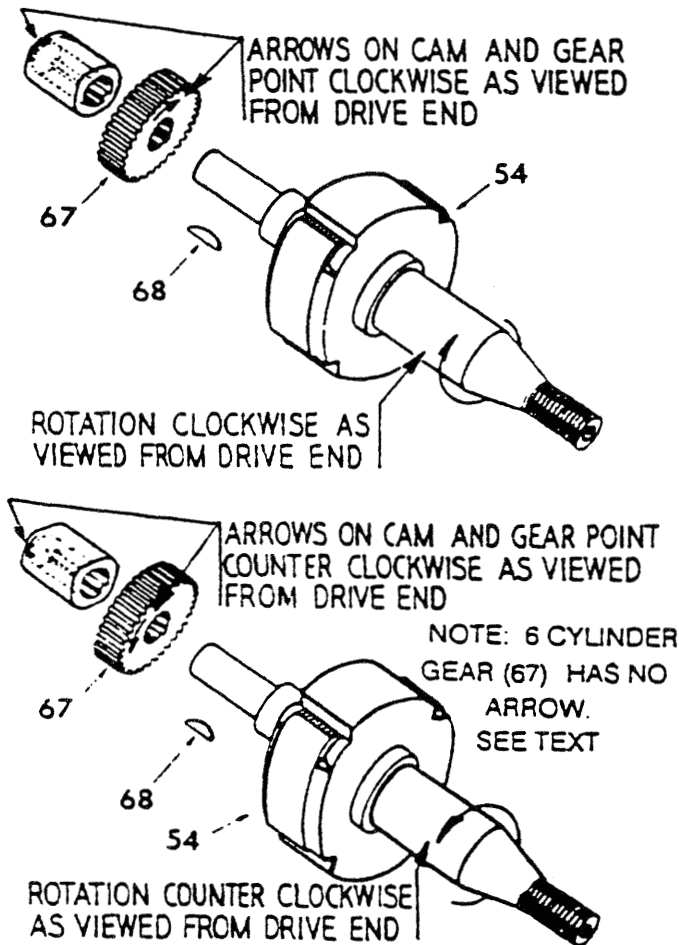


Figure 901. Correct Assembly of Gear and Cam

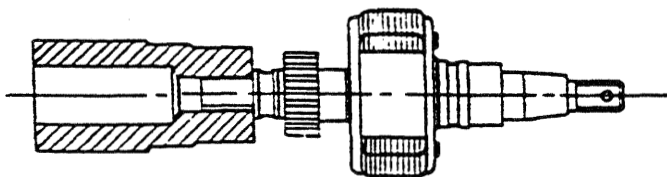


Figure 902. Installing Cam End Bearing Inner Race

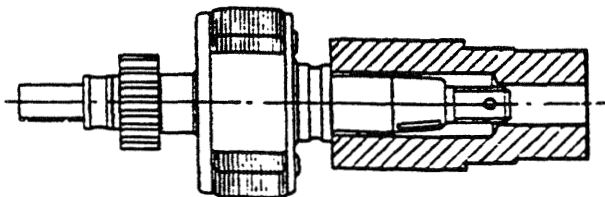


Figure 903. Installing Drive End Bearing Inner Race

9.2 DETAILED ASSEMBLY PROCEDURES

9.2.1 Assembly of Bearings (64, 70), Pinion Gear (67), and Cam (63)

CAUTION

If bearings are not a press fit in housings, (48, 50) or on rotating magnet (rotor) (54) shaft, do not attempt to repair worn bearing seats by knurling, staking, punch marking or any other means. If bearing seats are loose replace housing, (48, 50) or rotor (54).

NOTE

Rotating magnets which are found serviceable must be recharged before installation in magneto.

- A. Support shaft of magnet rotor (54) on a block of wood, tap pinion gear Woodruff key (68) into keyway and assemble gear (67) to shaft as follows:

- (1) Four cylinder magnetos incorporate a pinion gear (67) which has an arrow on each side. If magneto is of clockwise rotation, install gear on shaft so arrow points in a clockwise direction when viewed from the drive end. See Figure 901. If magneto is of counterclockwise rotation, arrow must point in a counterclockwise direction when viewed from the drive end.

- (2) Six cylinder magnetos incorporate a pinion gear (67) which has a chamfer on only one end of the tooth. There are no arrows on this gear. Chamfered end of tooth should be toward rotor casting when installed.

- B. Place plain washer (66) on shaft next to pinion gear, followed by original shim washers (65) or shim washers (65) totaling approximately .036 in. thickness if rotor (54) or distributor housing (48) has been replaced. Using small end of the 11-6924-1 Pressing Tool and an arbor press, press inner race of new bearing (64) on rotor shaft, lettered side toward pressing tool. See Figure 902.

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- C. Position original shim washers (71) [or shim washers totaling .012 in. thickness if rotor (54) or magneto housing (50) has been replaced] on drive end of magnet shaft. Using large end of the 11-6924-1 Pressing Tool, press inner race of the new bearing (70) onto shaft, lettered side toward pressing tool. See Figure 903.
- D. Place cage assemblies of bearings (64 and 70) on their respective inner bearing races on rotor shaft.
- E. Using large end of the 11-6924-1 Pressing Tool and an arbor press, seat outer races of bearings (64 and 70) in magneto and distributor housings. See Figure 904.
- F. To determine the proper bearing preload, temporarily assemble rotor (54) with gear, bearings and shim washers in place into housings (48 and 50), using gasket (49) when applicable. Install three screws with lockwashers (47) adjacent to rotor to secure housings together. To avoid possibility of excessive bearing preload, test magnet for free turning as screws are tightened. Rotor must turn freely. If bearings become tight as screws are tightened, disassemble and remove shim washers on pinion gear end of rotor. Reassemble magneto and tighten screws in two steps with 4 to 8 in.-lbs., then with 30 to 35 in.-lbs. of torque. Using a force of 30 lbs. in each direction, determine total end play. The amount of shims required to obtain the proper preload is sufficient to obtain the total end play of .0005 to .0015 in. loose. Add or remove shims on the gear end of the rotor to obtain the proper preload.
- G. When proper bearing preload is achieved, magnet will spin freely and there must be .0005 to .002 inches of end play and no perceptible radial play of the rotor shaft. If either a tight or too loose condition is found, entire shimming procedure must be repeated.

CAUTION

If magnet turns with any feel of binding or rubbing, this may indicate a bent magnet shaft, debris in the rotor bore, or a burr on the rotor (54) or housing (50). Do not attempt to straighten a bent rotor shaft. Replace the rotor (54). Remove debris and burrs as necessary.

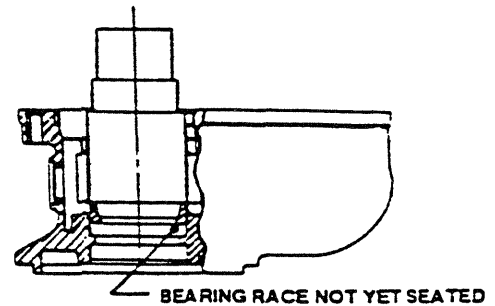


Figure 904. Installing Bearing Outer Race

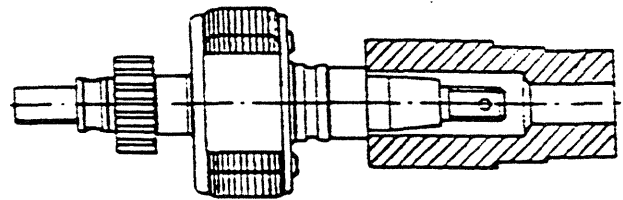


Figure 905. Installing Sleeve Bearing

- H. After satisfactory preload is obtained, separate distributor and magneto housings and remove rotating magnet. Pack Magneto Grease 10-27165 in ball cages of bearings (64 and 70).
- I. Position sleeve bearing (69) on drive end of rotor shaft and press into place using the 11-6924-1 Pressing Tool as shown. A small amount of engine oil on shaft will help prevent damage to sleeve bearing. See Figure 905.
- J. Place cam (63) on shaft so arrow on cam points in the correct direction for magneto rotation. See Figure 901. Using screw with lockwasher (61) and plain washer (62), secure cam in position with 21 to 25 in.-lbs. of torque. Wipe contour of cam with a clean cloth dampened with Breaker Felt Lubricant 10-86527.

CAUTION

If self-locking cam securing screw is removed or loosened at anytime, always replace with a new self-locking screw and apply torque to the specified value.

CAUTION

Before installing, measure thickness and replace washer (62) if it is not .096 ± .010 inch thick.

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9.2.2 Assembly of Coil (58) Into Housing (50)

Place coil (58) in position in magneto housing (50) so coil primary lead will fit into housing slot provided for it. Secure coil and ground lead to magneto housing using screws with lockwashers (56) and coil core clamps (57). Locate ground lead terminal between lockwasher on screw (56) and clamp (57). If clamps do not have the marking shown in Figure 711 they must be replaced. Tighten screws (56) with 20 to 25 in-lbs. of torque. Press insulating sleeve on primary lead into recess in housing.

CAUTION

After installing coil, check carefully to make sure coil clamps secure coil tightly against pole shoes in housing. If there is any play at this point, wear will occur, the parts will loosen, and magneto output will be degraded.

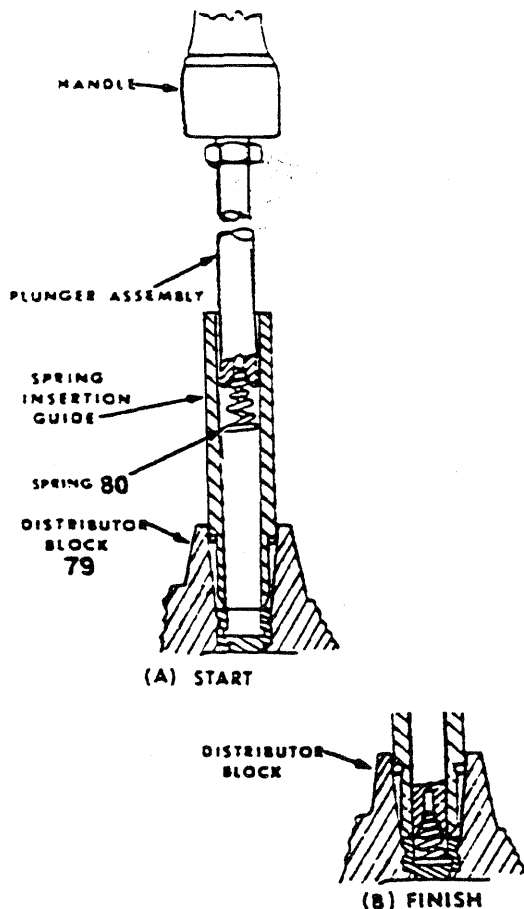


Figure 906. Installing Tower Springs

9.2.3 Assembly of Distributor Block (79) and Gear (72)

- A. If new tower springs (80) are to be installed in distributor block (79), use the 11-8627 Spring Seating Kit. Insert the Spring Insertion Guide in tower outlet hole of distributor block as shown in Figure 906. Place contact spring (80), large end down, in top of the Guide and position the Plunger Assembly with the Handle attached, over the small end of spring. See Figure 906. With a firm counterclockwise pushing motion, seat spring in recess of block tower (79). Spring is properly installed when bottom turn is caught in bushing of block and top turn is approximately centered in tower outlet. See Figure 906. Check spring height in accordance with paragraph 7.2.4, Step F.
- B. Position distributor block (79) in distributor housing (48) and install screws with plain and lockwashers (78). Tighten all screws evenly to a torque of 16 to 20 in-lbs.
- C. Saturate a new, or clean, undamaged felt washer (82) with Distributor Block Lubricant 10-391200. Blot excess oil from washer until flat surfaces take on a "frosted" appearance. Seat washer in recess of block.
- D. Assemble nylon washer (77) and steel skid washer (76) (0.562 in OD) onto gear (72) shaft. Slide large distributor gear shaft (72) into distributor block (79). Install washer (75) (0.750 in OD) and retaining ring (74). Be sure retaining ring snaps firmly into mating groove. If ring is a loose fit, replace it. Do not attempt to reform ring. Do not overexpand ring to install. Install new carbon brush (73) in hole in distributor gear (72) shaft.

NOTE

The carbon brush spring in the distributor gear may be a loose fit. Do not tip distributor housing at an angle such that brush can fall out.

- E. Turn Distributor Gear (72) at least one complete revolution by hand to ensure freedom of movement. The distributor gear electrode must not contact the distributor block electrodes.

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9.2.4 Assemble Rotor (54) Into Housings (48, 50)

- A. Lightly coat housing pole shoes and rotor pole pieces with silicone-free rust preventive. Spread 3 drops of SAE No. 30 oil on surface of sleeve bearing (69). Position rotor (54) in distributor housing (48), being careful not to damage cam as it enters contact compartment.
- B. Mesh distributor gear (72) with pinion gear (67) such that chamfered tooth of pinion gear (67) aligns with mark painted in accordance with paragraph 7.2.2 step E. See Figure 907.
- C. Form coil lead at a right angle with magneto housing so it can be threaded through passage in distributor housing and into breaker compartment. Position gasket (49), if used, between housings (48 and 50). Push housings straight together, allowing rotor shaft to extend through magneto housing. Be sure bearing parts mate properly. Do not allow housings to twist or turn as this may break carbon brush or dislodge coil lead. See that carbon brush rests on coil high voltage terminal and secure housings together using screw with lockwashers (47) tightened with seating torque of 4 to 8 in-lbs. When all screws have been seated, finally tighten to 25 to 35 in-lbs. of torque and recheck to make certain magnet turns freely and has correct bearing play. Refer to paragraph 9.2.1, Step G.

9.2.5 Install Contact Assemblies (39)

- A. Before installing new contact assemblies (39), check follower felt for adequate lubrication by squeezing felt tightly between thumb and forefinger. If fingers are moistened with oil, felt is adequately lubricated and no more oil is needed. If not, apply three drops of Breaker Felt Lubricant 10-86527 to the felt pad. Allow about 30 minutes for oil to penetrate into felt and for thinner to evaporate. Avoid getting oil on contacts. Blot off excess oil with a clean cloth.

CAUTION

Do not use contact assemblies P/N 10-357173 marked with Batch Code 0690 and P/N 10-357174 marked with Batch Codes 4289 through 1790. Batch Code format: WWYY. Batch Code is ink stamped on mounting surface of part.

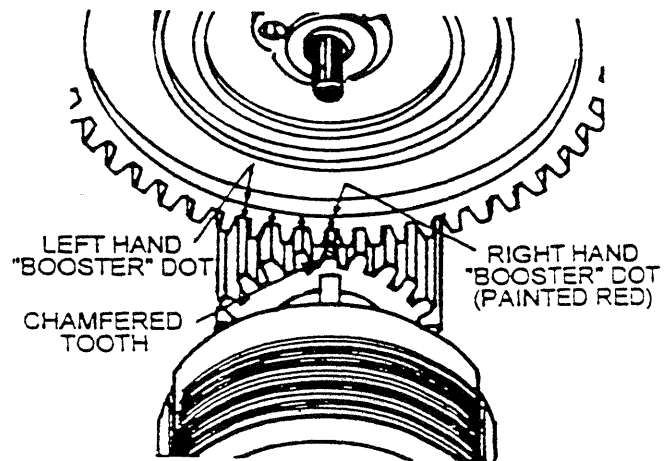


Figure 907. Correct Meshing of Distributor and Drive Gears – Clockwise S6RN Type Magneto With Retard Contact Illustrated

NOTE

Tungsten contact points used in these magnetos are capable of satisfactory performance over long periods, if not contaminated. The presence of oil on contacts will tend to attract and hold contaminating metallic particles. Contact assemblies must not be removed from protective containers until ready for installation. At installation, any oil on contact surfaces must be carefully blotted off with a clean hard cardboard, such as a business card. Make sure no paper particles are left between the contact surfaces.

- B. Install contact assemblies (39) in contact compartment. Main and retard contact assemblies both require a screw with lockwasher (36) at pivot end, and a screw with lockwasher (36) and plain washer (37) at slotted end. If a tachometer contact assembly is used, install contact assembly, insulating plate (40) and insulating bushings (38) with screws and lockwashers (36) and plain washer (37). Do not tighten contact securing screws fully until final adjustment of contact clearance and "E" gap have been made.

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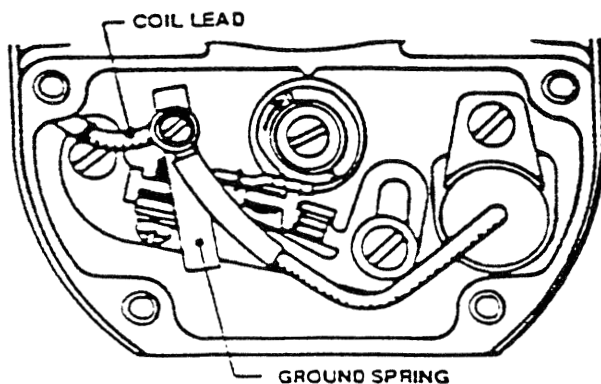
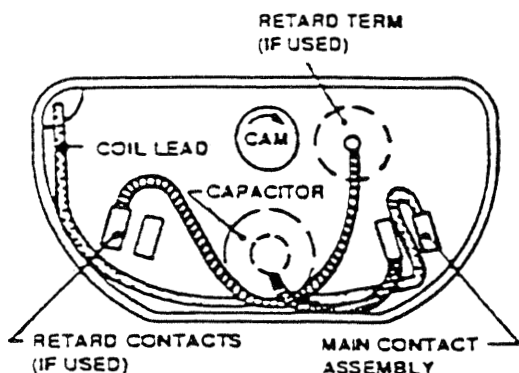
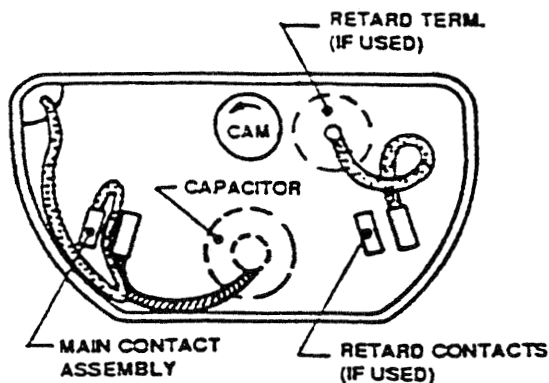


Figure 908. Lead Routing With Ground Terminal in Flat-Type Cover (15)



A. Counterclockwise Rotation Magneto

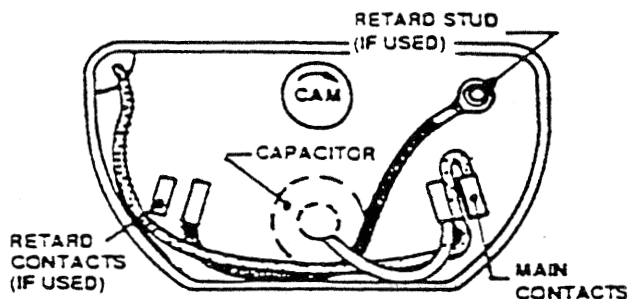


B. Clockwise Rotation Magneto

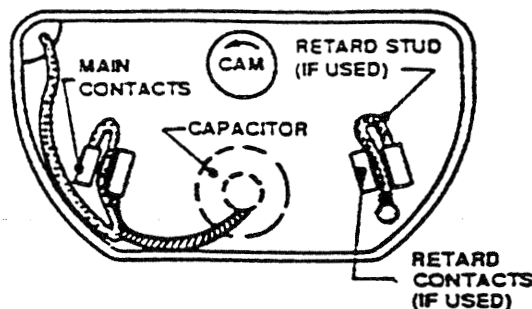
Figure 909. Forming Leads in Contact Compartment - Long Cover Type Magnets

9.2.6 Assemble Capacitor (42)

- A. Secure capacitor P/N 10-51676 (42) in contact compartment using screw with washer (41) and 20 to 25 in-lbs. of torque. Secure capacitor P/N 10-357281 or 10-349276 to contact cover (15) using screws with lockwashers (41) and 8 to 12 in-lbs. of torque.
- B. For capacitor mounted in housing (48), connect coil primary lead and capacitor lead to contact assembly with screw (33) and lockwasher (34) tightened with 8 to 10 in-lbs. of torque. Magnets having a ground terminal on flat-type contact cover use a separate ground terminal spring (35). This spring must be assembled at the same time leads are connected and must fit directly against bracket of breaker assembly to assure correct positioning. Ensure coil primary lead does not rest against edges of housing (48). See Figure 908. For capacitors mounted in cover (15), connect coil primary to main contact as shown in Figures 909 and 910. Set capacitor (42) and cover (15) aside until after magneto is timed.



A. Counterclockwise Rotation Magneto



B. Clockwise Rotation Magneto

Figure 910. Forming Leads in Contact Compartment - Short Cover type Magneto

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9.2.7 Install Oil Seal (59) and Oil Slinger (55)

- A. Wipe lip of new oil seal (59) with SAE No. 30 oil. Carefully slide oil seal onto rotor shaft, avoiding contact with threads or keyway, and position seal squarely at edge of recess in housing. Place magneto in an arbor press with contact compartment rim supported by a block of wood and press oil seal into position with the 11-6924-1 Pressing Tool. See Figure 911.
- B. Rest cam securing screw on wooden block and press new oil deflector (55) onto rotor (54) up against sleeve bearing using the 11-6924-1 Pressing Tool.

CAUTION

After installing oil seal and deflector, check torque of cam securing screw (61) for 21 to 25 in-lbs. to make sure cam washer (62) did not deform during pressing operation. Replace washer (62) and Screw (61) if washer deformed.

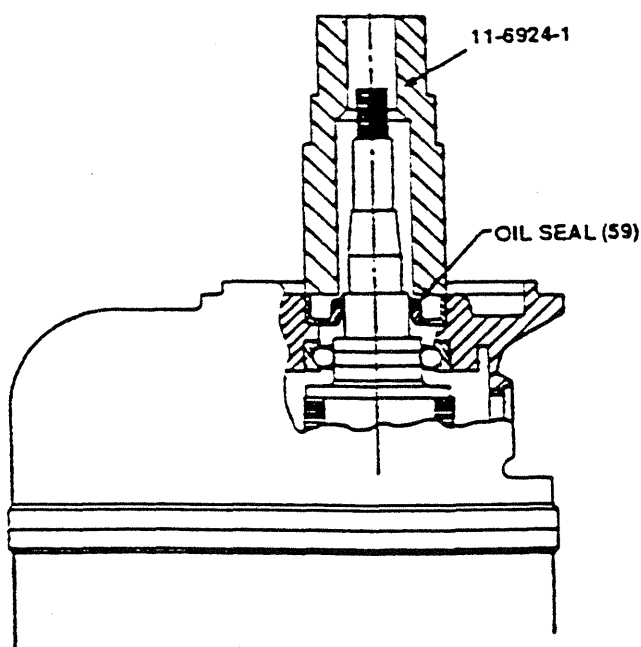


Figure 911. Installing Oil Seal.

9.2.8 Assembly & Installation of Impulse Coupling (8) and Stop Pins (60)

If impulse coupling (8) is used, assemble coupling as follows:

- A. Check cam assembly (11) and body (9) for magnetization which would prevent flyweights from engaging. Hold assembly as shown in Figure 912 and push upper position flyweight tail against body (9) trip dog. When released, flyweight tail must drop down. If flyweight tail sticks to body, parts are magnetized and coupling may not function. Perform test on both flyweights.
- B. If body is magnetized, demagnetize it using a degaussing coil.

NOTE

Induced magnetism from engine parts not thoroughly degaussed following magnetic particle inspection will result in a magnetized body (9). Ensure all engine parts are properly degaussed before reinstalling a body requiring degaussing.

- C. Clamp one drive lug of body (9) in a copper jaw vise with the spring recess side up. Orient spring (10) with body (9) for correct rotation. On clockwise couplings, spring must coil in a clockwise direction from the outside toward the center when viewed from the spring recess side of body. On counterclockwise couplings, spring must coil in a counterclockwise direction when viewed from spring recess. Insert eye of outer end of spring (10) into hole drilled in inner rim of body (9). See Figure 913.
- D. Using heavy gloves to protect the hands, wind spring (10) into body (9) manually, lifting spring coils one at a time over projections on body. Extreme care must be used to avoid scratching or nicking the spring. After winding spring, brush a coating of light oil over spring coils.
- E. Using a small screwdriver with all sharp edges removed, pry up one and one half turns at inner end of spring and support in position as shown in Figure 914. Do not allow screwdriver to scratch spring.

WARNING

Nicks or scratches in spring (10) will cause the spring to break.

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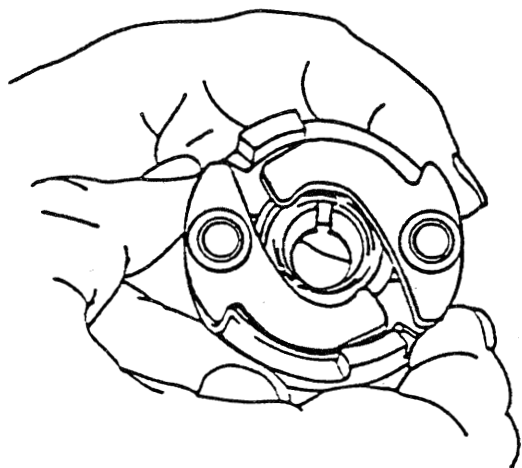


Figure 912. Checking Impulse Coupling for Magnetization

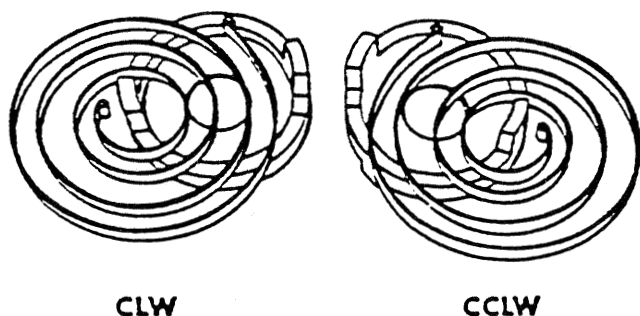


Figure 913. Orientation of Spring in Coupling Body

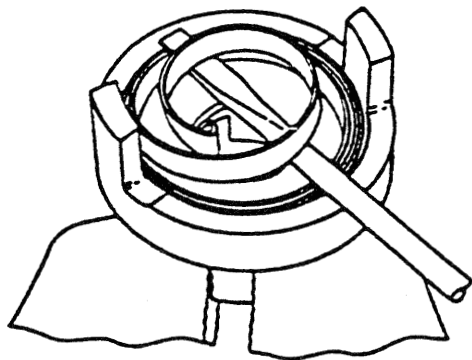


Figure 914. Lifting Inner End of Spring

- F. Engage recess in hub on cam assembly (11) with eye at inner end of spring. With eye engaged, rotate cam assembly slightly in direction to unwind spring to permit hub of cam to slip into inner loop of spring. Rotate cam in opposite direction, winding spring slightly, until trip dogs on edge of cam (11) clear over projections on body (9). Push cam assembly down into body, at the same time taking the screwdriver out.
- G. Insert a spare rotor with woodruff key installed in tapered portion, into cam assembly. See Figure 915. Turn magnet slightly in direction of coupling rotation (to wind spring). Lift rotor with cam only enough to clear trip dogs on body. Wind spring one half turn and re-engage cam assembly into body.
- H. Apply light coating of 10-27165 Magneto Grease to impulse coupling stop pins at point where impulse coupling flyweights strike them.
- I. Install woodruff key (53) in tapered portion of shaft. Apply a light coating of TCM 646943 anti-seize to the tapered section of the rotating magnet shaft. (See Figure 916). This inhibits seizure of the cam assembly to the shaft and avoids damage during disassembly. Do not apply lubricant to shaft or nut threads. Install coupling assembly (8) and washer (4) with flat side of washer toward the coupling. If applicable, install drive member woodruff key (53), and bushing (5). Install lockwasher (3) if used, and thread nut (2) onto shaft.

WARNING

Use of unapproved hardware and/or lubrication of threads will produce inaccurate torque values and increased stress on the impulse coupling during assembly.

- J. Using a **calibrated** torque wrench, tighten nut to 180 in-lbs. Install and secure new cotter pin. If unable to install pin, increase torque gradually to align the first available slot in the castellated nut.

WARNING

Under no circumstances exceed 300 in-lbs. torque. Any impulse coupling that is damaged in any way during installation must be replaced.

- K. Inspect coupling as described in Periodic Maintenance, paragraph 6.2.2.

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9.2.9 Magneto Timing Procedure

- A. Position 11-8465 rotor holding tool onto rotor (54). Use bushings, washers and nut as necessary to hold tool securely on rotor. See Figure 917.

WARNING

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

- B. Install the Timing Plate Assembly of the 11-8150-1 Timing Kit to contact compartment of magneto. See Figure 918. Turn rotor in direction of normal rotation until painted chamfered tooth on distributor gear is approximately centered in inspection window. Then turn it back until rotor locates in its neutral position.

NOTE

The neutral position is located by "feel" of rotor. As rotor is turned a few degrees backward from where distributor tooth is centered in inspection hole, magnet will have a natural tendency to "pull in" and locate in the neutral position.

- C. Tighten adjusting knob of rotor holding tool, locking rotor in this neutral position. Install the Pointer Assembly of 11-8150-1 Timing Kit on cam screw (61) and align pointer with zero degree mark on timing plate.

CAUTION

Tighten adjusting knob of holding tool only enough to hold magnet firmly in desired position. Over tightening may cause damage to drive end bearing.

- D. Loosen adjusting knob of rotor holding tool and turn rotor in normal direction of rotation until pointer indexes with respective 10° mark ("E" gap) and tighten rotor holding tool. Using the 11-9110-1 Timing Light, or equivalent, adjust main contact points to just open at this position.

NOTE

Main contact of a clockwise magneto is located on the left hand side of contact compartment looking into contact compartment. Main breaker of a counterclockwise magneto is on the right side of contact compartment.

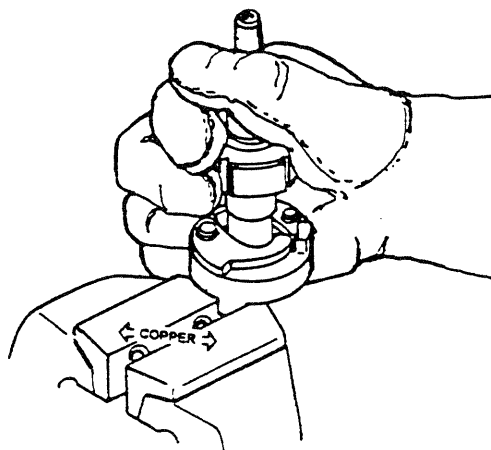


Figure 915. Winding Coupling Spring

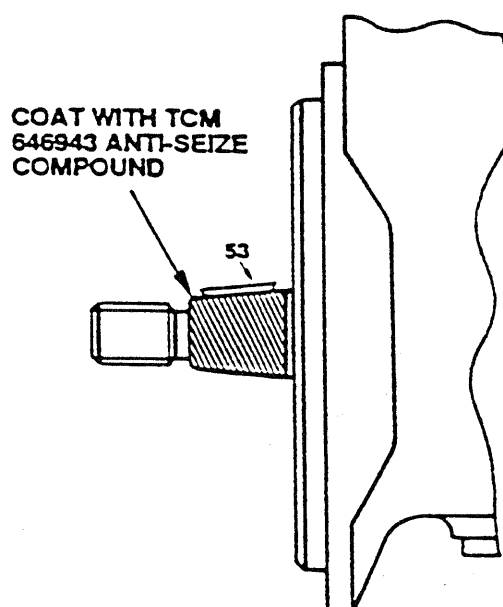


Figure 916. Applying Compound to Magnet Shaft

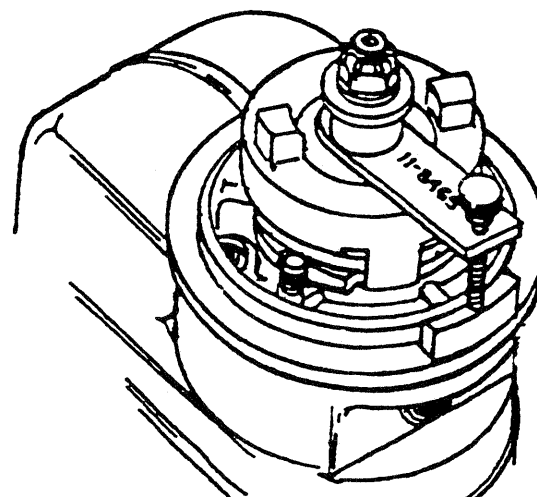


Figure 917. Rotor Holding Tool Installed

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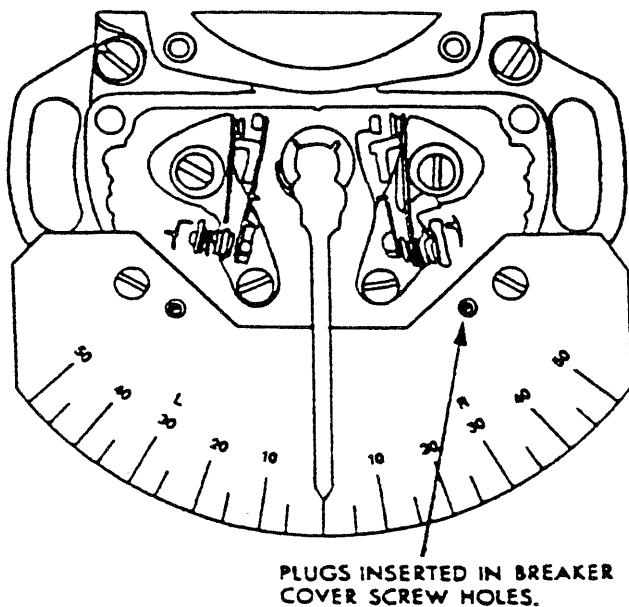


Figure 918. Timing Kit Installed on Housing

- E. Loosen rotor holding tool and turn rotor until cam follower of main contact assembly is on high point of cam lobe. Tighten holding tool in this position and measure contact point clearance. Clearance must be $.018 \pm .006$ inch. If clearance is over $.024$ inch, readjust contact to $.024$ inch opening. If clearance is under $.012$ inch, readjust contact to $.012$ inch opening. If contact assembly was readjusted, recheck "E" gap as previously described. Replace contact assembly if "E" gap is less than 6° or more than 14° with contact clearance set within specification.
- F. On retard contact assembly magnetos, the retard contact assembly is adjusted to open at a predetermined number of degrees after the main contact assembly. See Table 1101. The degree of retard for any particular magneto is stamped in the bottom of the contact compartment.

CAUTION

The magneto distributor housing can be used only for retard angle stamped in housing as shown in Figure 202. Attempts to alter retard angle by changing adjustment of retard contact will result in improper operation of magneto.

- G. At exact point of main contact assembly point opening, note degree reading. Add applicable degrees of retard to this reading to determine retard contact assembly opening position.
- H. Turn rotor forward from point of main contact opening the exact number of retard degrees, and lock in position with rotor holding tool. Connect the timing light to retard contact assembly tab, and adjust retard contact points to just open at this position.
- I. Loosen holding tool and recheck adjustment. Retard contact must open within $+2^\circ - 0^\circ$ of specified setting. For example, if main contact opened at 12° , and 30° retard is required, retard contact must open between the 42° and 44° marks.
- J. Continue turning rotor until retard cam follower is on high point of cam lobe. Tighten rotor holding tool. Measure point clearance. Clearance must be $.018 \pm .006$ inch. If retard contact clearance is over limits, repeat timing procedure with "E" gap set at maximum. If retard clearance is under limits, repeat timing procedure with "E" gap set at minimum. "E" gap tolerance is $10^\circ \pm 4^\circ$.
- K. If a tachometer contact assembly is used, turn rotor until tachometer contact cam follower is on high point of cam lobe. Adjust tachometer contact to $.019 \pm .003$ inch clearance. There is no angular timing requirement for tachometer contact assembly.
- L. Tighten screws (41) to 20 to 25 in-lbs. of torque for main and retard contact assemblies, and to 10 to 12 in-lbs. for tachometer contact assemblies. Recheck "E" gap and contact opening clearances to make sure values did not change when screws were tightened.

CAUTION

Use care that screwdriver does not interfere with contact assembly main spring when tightening contact securing screws.

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- M. Remove rotor holding tool and extra drive parts from rotor. Remove timing kit from breaker compartment.

9.2.10 Assemble Cover (15)

- A. If used, form a new insulation sheet (24) into a loop, and insert in place in retard lead recess in contact cover (15). Place retard lead assembly (23) in recess and secure by staking ears of spring washer so they wedge against recess wall. Check security of lead assembly in cover by exerting a pulling force of 3 or 4 pounds on lead wire. Do not pull on terminal. Spring washer must not shift or slip out of position. For short cover style magnetos, apply 24-26 in.-lbs. torque to retard Lead Screw (25).
- B. If not previously assembled, attach capacitor lead to main contacts. Attach any retard or tachometer leads to retard or tachometer contacts. Install contact cover (15) and gasket (14), if used, and secure with screws (12) and washers (13). Tighten screws (12) with 20 to 25 in.-lbs. of torque. Refer to Figures 908 through 910 for correct wiring arrangement.

NOTE

Screen vents located in the cover (15) are unnecessary. These screen vents may be sealed with silicone adhesive or epoxy. For pressurized magnetos only, all vent holes in cover (15) must be sealed on inside surface of cover.

- C. Connect adapters assembled from Switch Terminal Kit and Retard Terminal Kit (as necessary) to magneto and 11-9110-1 Timing Light. Confirm operation of contacts by turning rotor (54).

9.2.11 Install Ventilator (46) or Orifice (46a), and Plug (44)

- A. Apply 10-15 in.-lbs. of torque.
- B. Unpressurized magnetos must have ventilator plug (46) installed. Ensure that ventilator (46) location does not allow water or engine washing liquids into the magneto.
- C. Pressurized magnetos must have a clean orifice plug (46a) installed.

9.2.12 Install Nameplate (52)

- A. Type data onto nameplate. Coat with clear spray paint and allow to dry.
- B. Clean surface of housing (50) by wiping with cloth moistened with isopropyl alcohol.
- C. Transfer nameplate (52) onto housing (50). Press firmly across entire surface.

9.2.13 Test magneto as specified in paragraph 3.2 of TESTING AND TROUBLESHOOTING.

9.2.14 Final Assembly

- A. If necessary, remove front end hardware to install engine drive gear. Reassemble bushing (5), washers (3,4), drive member (6,7) and nut (2) onto shaft.
- B. If not previously accomplished, use a **calibrated** torque wrench to tighten nut (2) to 180 in.-lbs. Install and secure new cotter pin (1). If unable to install pin, increase torque gradually to align the first available slot in the castellated nut.

WARNING

Under no circumstances should you exceed 300 in.-lbs. torque. Any impulse coupling that is damaged in anyway during installation must be replaced.

CAUTION

*If impulse coupling cam (11) cracks during this procedure, an audible cracking noise is evident and nut torque reduces immediately. See Figure 919. If cam (11) cracks, it **MUST** be discarded and replaced.*

NOTE

Do not re-use cotter pin (1).

NOTE

Shouldered bushing (5) must be machined steel type. See General Overhaul paragraph 7.2.7 step B and Figure 712.

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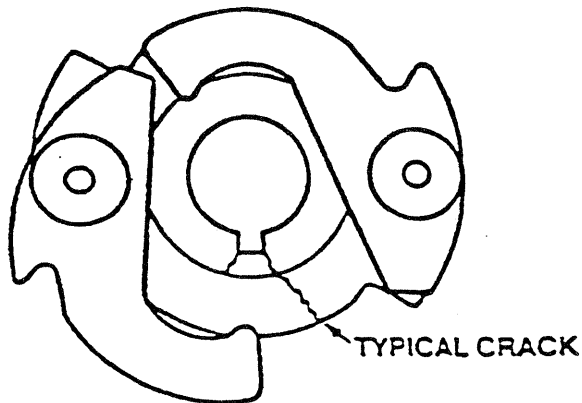
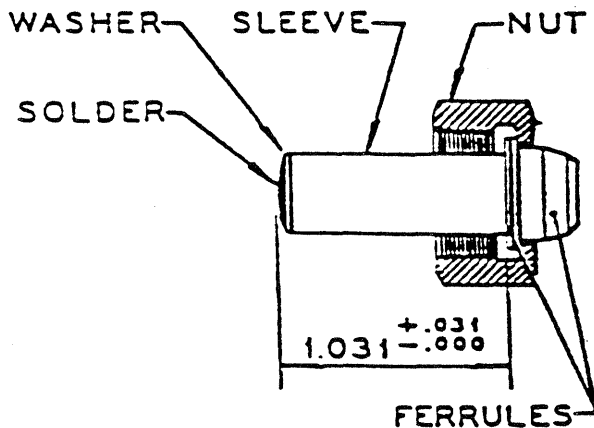


Figure 919. Typical Crack (Either Corner of Keyway)



TERMINAL ASSEMBLY
KIT P/N 10-52305 OR 10-52305-1

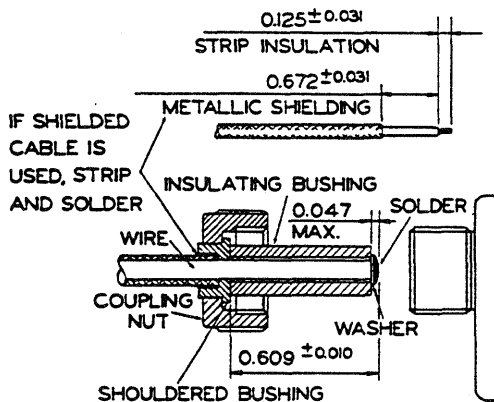


Figure 920. Terminal Connection Assembly
Kit P/N 10-157208, 10-157209, 10-382813, or 10-382814

9.3 Installation On Engine

NOTE

All engine manufacturer's instructions and parts lists regarding drive adapters, spacers, gaskets, mounting hardware, torque values and related specifications must be followed at all times.

- A. Remove plug (44) to allow visual access to distributor gear (72). Turn rotor (54) until red tooth on gear is approximately centered in timing hole in housing (48). This is approximately cylinder No. 1 normal firing position of magneto. Turn rotor slightly in reverse direction of normal rotation and allow to rest in magnetic neutral position. Red tooth should appear off center in timing hole.
- B. Using 11-9110-1 Timing Light and adapters made from appropriate terminal kits (if necessary, see Figure 920), install and adjust magneto on engine in accordance with engine manufacturer's instructions.

WARNING

When timing magneto to engine, no gear holding timing device should be used as hidden distributor gear tooth damage may result.

- C. Apply MS-122 spray to harness grommets and assemble gasket 10-357520 (if used) and harness outlet plate to magneto. Evenly apply 25-35 in-lbs. torque to outlet plate screws (P/N 10-35937-10).
- D. As required, assemble Terminal Kit(s) for each magneto as shown in Figure 920.
- E. Install switch and retard (if used) wiring by securing terminal nut(s) onto magneto. Apply 15-17 in-lbs. torque to nuts on terminal studs. Tighten other P-lead terminals finger tight.
- F. For pressurized magnetos, remove and discard plug (44) (supplied for shipping purposes). Assemble air inlet fitting into timing hole in housing (48). Ensure air inlet fitting does not interfere with internal magneto parts.
- G. Attach tachometer fittings to magneto following manufacturer's instructions. If hole adjacent to rotating magnet (54) in magneto housing (50) is to be used for a tachometer pick-up, in an unpressurized magneto, install ventilator plug, (46) in timing hole of distributor housing (48), and discard solid plug (44).

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SECTION 10. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

Refer to Table 1001 for a list of special tools, fixtures and equipment. Figure 1001 illustrates fabrication of special tools required for disassembly.

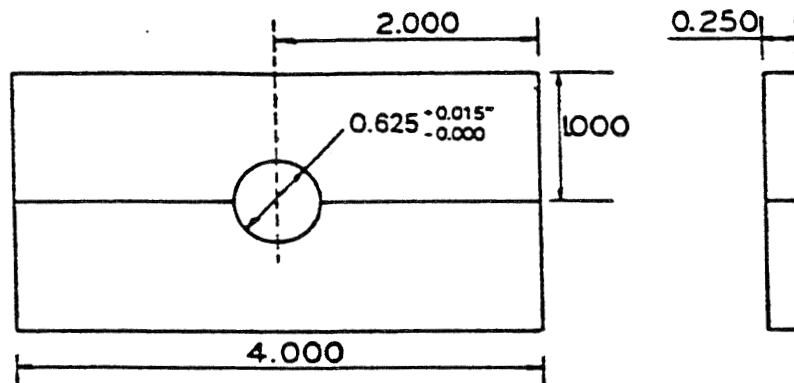
NOTE

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, so long as such tools are capable of equal or greater performance than the listed tool.

Table 1001

Item	Tool No.	Nomenclature	Application
1	11-6924-1	Pressing Tool Kell-Strom Tool Co., Inc. 214 Church Street Wethersfield, CT 06102	To remove oil seal (59), Bearing Outer Race (70) and to install all press fit parts.
2	11-8150-1	Timing Kit Kell-Strom Tool Co., Inc.	To time magneto.
3	11-8465	Rotor Holding Tool Kell-Strom Tool Co., Inc.	To hold rotor in desired position when timing magneto.
4	11-8627	Spring Seating Kit Kell-Strom Tool Co., Inc.	To install tower springs (80) in distributor block (79).
5	11-8950-2	High Tension Lead Tester Kit Kell-Strom Tool Co., Inc.	To check distributor block (79) for insulation strength.
6	11-9110-1	Timing Light Kell-Strom Tool Co., Inc.	To adjust magneto timing.
7	11-10192	Removal Tool Kell-Strom Tool Co., Inc.	To remove bearing inner race (70) from rotor (54).
8	11-10500	Magneto Test Stand Kell-Strom Tool Co., Inc.	Used to dynamically test magneto.
9	11-10600	Magnet Charger Kell-Strom Tool Co., Inc.	Used to charge rotor magnets (54).
10	8840A	Digital Multimeter John Fluke Mfg. Co. P. O. Box C-9090 Everett, WA 98206	Used to check coil (58) and capacitor (42).
11	No. 2	Waldes TRU-ARC Retaining Pliers TRU-ARC Division Waldes Kohinoor, Inc. Long Island City, NY 11101	Used to install and remove retaining ring (74).
12	LC101	Capacitor Tester Sencore 3200 Sencore Dr. Sioux Falls, SD 57107	Used to test capacitor (42).
13	CG240	Puller Snap-On Tools 2611 Commerce Blvd. Birmingham, AL	Used to remove impulse coupling cam (11) or drive plate (7) from rotor shaft (54).
14	CG40-8	Collar Snap-On Tools	Used to remove bearing (64) outer race from housing (48). Used with CG40-4.
15	CG40-4	Expander Rod Snap-On Tools	Used to remove bearing (64) outer race from housing (48). Used with CG40-8.

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MATERIAL: COLD ROLLED STEEL

Figure 1001. Fabricated Support Bars - To Pull Pinion Gear (67)

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SECTION 11. ILLUSTRATED PARTS LIST

TABLE 1101: EQUIPMENT COVERED

PART NUMBER	TYPE NUMBER	DEGREES LAG/RETARD	USE TERMINAL KIT P/N	SEE PARTS LIST TABLE
10-51360-26	S4LN-21	25	10-52305	1103
10-51360-27	S4RN-20	--	10-52305	1103
10-51360-28	S4RN-21	25	10-52305	1103
10-51360-29	S4LN-20	--	10-52305	1103
10-51360-37	S4LN-21	25	10-52305	1103
10-51360-40	S4RN-20	--	10-52305	1103
10-51360-41	S4RN-21	25	10-52305	1103
10-51360-45	S4LN-21	25	10-157209	1103
10-51360-46	S4RN-21	25	10-52305	1103
10-51360-47	S4LN-21	25	10-157209	1103
10-51360-54	S4LN-21	15	10-52305	1103
10-51360-58	S4LN-21	15	10-157209	1103
10-51365-9	S6LN-21	45	10-52305	1104
10-51365-32	S6LN-21	45	10-52305	1104
10-51365-33	S6LN-20	--	10-52305	1104
10-51365-34	S6RN-21	35	10-52305	1104
10-51365-35	S6RN-21	45	10-52305	1104
10-51365-39	S6LN-21	45	10-52305	1104
10-51365-40	S6RN-21	35	10-52305	1104
10-51365-43	S6LN-21	45	10-52305	1104
10-51365-44	S6LN-20	--	10-52305	1104
10-51365-45	S6LN-21	35	10-52305	1104
10-51365-46	S6LN-20	--	10-52305	1104
10-51365-47	S6LN-21	45	10-52305	1104
10-51365-48	S6RN-21	35	10-52305	1104
10-51365-54	S6RN-21	35	10-52305	1104
10-51365-57	S6LN-21	45	10-157209	1104
10-52350-20	S6LN-23	35	10-52306	1104
10-79020-6	S6LN-25	30	10-52305	1105
10-79020-10	S6RN-25	30	10-52305	1105
10-79020-11	S6LN-25	30	10-157209	1105
10-79020-16	S6LN-25	30	10-52305	1105
10-79020-17	S6LN-25	30	10-157209	1105
10-79020-18	S6LN-25	30	10-157209	1105
10-79020-19	S6RN-25	30	10-157209	1105
10-79020-118	S6LN-25P	30	10-382814	1105
10-79020-119	S6RN-25P	30	10-382814	1105
10-163005-2	S4LN-200	25	10-157208 & 10-157209	1106
10-163005-3	S4LN-200	25	10-157208 & 10-157209	1106
10-163005-11	S4LN-200	15	10-157208 & 10-157209	1106
10-163010-1	S6RN-200	30	10-157208 & 10-157209	1107
10-163010-2	S6LN-200	30	10-157208 & 10-157209	1107
10-163010-10	S6LN-200	37.5	10-157208 & 10-157209	1107
10-163010-11	S6LN-200	30	10-157208 & 10-157209	1107
10-163010-15	S6RN-200	25	10-157208 & 10-157209	1107
10-163015-3	S4RN-201	20	10-157208 & 10-157209	1106
10-163020-3	S6RN-201	30	10-157208 & 10-157209	1107
10-163020-4	S6LN-201	30	10-157208 & 10-157209	1107
10-163045-1	S4LN-204	--	10-157209	1106
10-163045-3	S4LN-204	--	10-157209	1106
10-163045-6	S4LN-204	--	10-157209	1106
10-163050-1	S6LN-204	--	10-157209	1107

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TABLE 1101: EQUIPMENT COVERED (CONTINUED)

PART NUMBER	TYPE NUMBER	DEGREES LAG/RETARD	USE TERMINAL KIT P/N	SEE PARTS LIST TABLE
10-163050-2	S6LN-204	--	10-157209	1107
10-163050-7	S6RN-204	--	10-157209	1107
10-163050-9	S6LN-204	--	10-157209	1107
10-163050-12	S6LN-204	--	10-157209	1107
10-163055-1	S4RN-205	--	10-157209	1106
10-163060-1	S6RN-205	--	10-157209	1107
10-163060-2	S6LN-205	--	10-157209	1107
10-500514-1	S4LSC-21	25	--	1108
10-500514-2	S4LSC-21	15	--	1108
10-500514-3	S4RSC-21	25	--	1108
10-500514-4	S4RSC-21	25	--	1108
10-500514-5	S4RSC-21	25	--	1108
10-500514-201	S4LSC-21T	25	--	1108
10-500516-2	S6LSC-21	45	--	1109
10-500516-3	S6LSC-21	45	--	1109
10-500516-4	S6LSC-21	45	--	1109
10-500516-5	S6RSC-21	35	--	1109
10-500516-6	S6RSC-21	45	--	1109
10-500516-7	S6RSC-21	45	--	1109
10-500516-9	S6RSC-21	35	--	1109
10-500516-10	S6LSC-21	45	--	1109
10-500556-1	S6RSC-25	30	--	1109
10-500556-3	S6LSC-25	30	--	1109
10-500556-101	S6RSC-25P	30	--	1109
10-500556-103	S6LSC-25P	30	--	1109
10-500556-203	S6LSC-25T	30	--	1109
10-500556-901	S6RSC-25P	30	--	1109
10-600604-1	S4RSC-201	20	--	1108
10-600606-1	S6RSC-201	30	--	1110
10-600606-3	S6LSC-201	30	--	1110
10-600614-1	S4LSC-200	25	--	1108
10-600614-2	S4LSC-200	15	--	1108
10-600614-3	S4LSC-200	25	--	1108
10-600616-3	S6LSC-200	37.5	--	1110
10-600616-4	S6RSC-200	30	--	1110
10-600616-5	S6LSC-200	30	--	1110
10-600616-6	S6LSC-200	30	--	1110
10-600616-7	S6RSC-200	25	--	1110
10-600616-101	S6LSC-200P	30	--	1110
10-600644-1	S4LSC-204	--	--	1108
10-600644-3	S4RSC-204	--	--	1108
10-600644-4	S4LSC-204	--	--	1108
10-600644-5	S4RSC-204	--	--	1108
10-600644-201	S4LSC-204T	--	--	1108
10-600646-1	S6LSC-204	--	--	1110
10-600646-2	S6LSC-204	--	--	1110
10-600646-3	S6LSC-204	--	--	1110
10-600646-4	S6RSC-204	--	--	1110
10-600646-101	S6LSC-204P	--	--	1110
10-600646-201	S6LSC-204T	--	--	1110
10-600654-1	S4RSC-205	--	--	1108
10-600656-1	S6RSC-205	--	--	1110
10-600656-3	S6LSC-205	--	--	1110

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TABLE 1102: SUPERSEDED, DISCONTINUED AND INTERCHANGEABLE MAGNETOS

OLD PART NO.	FOR MAINTENANCE OR OVERHAUL, FOLLOW PARTS LIST FOR	FOR REPLACEMENT, USE			
		PART NO.	TYPE NO. OR	PART NO.	TYPE NO.
10-51360-1	10-51360-26	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-3	10-51360-29	10-51360-29	S4LN-20	10-600644-1	S4LSC-204
10-51360-4	10-51360-27	10-51360-27	S4RN-20	10-600644-3	S4RSC-204
10-51360-6	10-51360-28	10-51360-28	S4RN-21	10-500514-3	S4RSC-21
10-51360-8	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-10	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-11	10-51360-29	10-51360-29	S4LN-20	10-600644-1	S4LSC-204
10-51360-12	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-23	10-51360-29	10-51360-29	S4LN-20	10-600644-1	S4LSC-204
10-51360-24	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-25	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-26	10-51360-26	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-27	10-51360-27	10-51360-27	S4RN-20	10-600644-3	S4RSC-204
10-51360-28	10-51360-28	10-51360-28	S4RN-21	10-500514-3	S4RSC-21
10-51360-29	10-51360-29	10-51360-29	S4LN-20	10-600644-1	S4LSC-204
10-51360-30	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-31	Discontinued	--	--	--	--
10-51360-33	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-37	10-51360-37	10-51360-37	S4LN-21	10-500514-1	S4LSC-21
10-51360-40	Discontinued	10-51360-40	S4RN-20	10-600644-5	S4RSC-204
10-51360-41	10-51360-41	10-51360-41	S4RN-21	10-500514-5	S4RSC-21
10-51360-45	10-51360-45	10-51360-45	S4LN-21	10-500514-1	S4LSC-21
10-51360-46	10-51360-46	10-51360-46	S4RN-21	10-500514-4	S4RSC-21
10-51360-47	10-51360-47	10-51360-47	S4LN-21	10-500514-201	S4LSC-21T
10-51360-48	Discontinued	--	--	--	--
10-51360-53	Discontinued	--	--	--	--
10-51360-54	10-51360-54	10-51360-54	S4LN-21	10-500514-2	S4LSC-21
10-51360-55	10-51360-58	10-51360-58	S4LN-21	10-500514-2	S4LSC-21
10-51360-58	10-51360-58	10-51360-58	S4LN-21	10-500514-2	S4LSC-21
10-51365-1	10-51365-39	10-51365-39	S6LN-21	10-500516-4	S6LSC-21
10-51365-2	10-51365-40	10-51365-54	S6RN-21	10-500516-7	S6RSC-21
10-51365-5	Discontinued	--	--	--	--
10-51365-7	10-51365-48	10-51365-48	S6RN-21	10-500516-9	S6RSC-21
10-51365-9 [1]	10-51365-9	10-51365-9	S6LN-21	10-500516-10	S6LSC-21
10-51365-13	10-51365-40	10-51365-54	S6RN-21	10-500516-7	S6RSC-21
10-51365-14	10-51365-48	10-51365-48	S6RN-21	10-500516-9	S6RSC-21
10-51365-15	10-51365-33	10-51365-33	S6RN-20	10-600646-2	S6LSC-204
10-51365-16	Discontinued	--	--	--	--
10-51365-17	10-51365-43	10-51365-43	S6LN-21	10-500516-3	S6LSC-21
10-51365-20	10-51365-32	10-51365-32	S6LN-21	10-500516-3	S6LSC-21
10-51365-25	10-51365-33	10-51365-33	S6LN-20	10-600646-2	S6LSC-204
10-51365-26	10-51365-34	10-51365-34	S6RN-21	10-500516-5	S6RSC-21
10-51365-27	10-51365-46	10-51365-46	S6LN-20	10-600646-1	S6LSC-204
10-51365-28	10-51365-47	10-51365-47	S6LN-21	10-500516-2	S6LSC-21
10-51365-29	10-51365-44	10-51365-44 [2]	S6LN-20	Discontinued	--
10-51365-30	10-51365-45	10-51365-45 [2]	S6LN-21	Discontinued	--
10-51365-31	10-51365-33	10-51365-33	S6LN-20	10-600646-2	S6LSC-204
10-51365-32	10-51365-32	10-51365-32	S6LN-21	10-500516-3	S6LSC-21
10-51365-33	10-51365-33	10-51365-33	S6LN-20	10-600646-2	S6LSC-204
10-51365-34	10-51365-34	10-51365-34	S6RN-21	10-500516-5	S6RSC-21
10-51365-35	10-51365-35	10-51365-35	S6RN-21	10-500516-6	S6RSC-21

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TABLE 1102: SUPERSEDED, DISCONTINUED AND INTERCHANGEABLE MAGNETOS
(continued)

OLD PART NO.	FOR MAINTENANCE OR OVERHAUL, FOLLOW PARTS LIST FOR	FOR REPLACEMENT, USE			
		PART NO.	TYPE NO. OR	PART NO.	TYPE NO.
10-51365-39 10-51365-40 10-51365-41	10-51365-39 10-51365-40 Discontinued	10-51365-39 10-51365-54 --	S6LN-21 S6RN-21 --	10-500516-4 10-500516-7 --	S6LSC-21 S6RSC-21 --
10-51365-42 10-51365-43 10-51365-44	Discontinued 10-51365-43 10-51365-44	-- 10-51365-43 10-51365-44 [2]	-- S6LN-21 S6LN-20	-- 10-500516-3 --	-- S6LSC-21 --
10-51365-45 10-51365-46 10-51365-47	10-51365-45 10-51365-46 10-51365-47	10-51365-45 [2] 10-51365-46 10-51365-47	S6LN-21 S6LN-20 S6LN-21	-- 10-600646-1 10-500516-2	-- S6LSC-204 S6LSC-21
10-51365-48 10-51365-53 10-51365-54	10-51365-48 Discontinued 10-51365-54	10-51365-48 -- 10-51365-54	S6RN-21 -- S6RN-21	10-500516-9 -- 10-500516-7	S6RSC-21 -- S6RSC-21
10-51365-57 10-52350-1 10-52350-2	10-51365-57 Discontinued 10-51365-48 [3]	10-51365-57 -- 10-51365-48	S6LN-21 -- S6RN-21	10-500516-2 -- 10-500516-9	S6LSC-21 -- S6RSC-21
10-52350-6 10-52350-7 10-52350-8	10-52350-20 Discontinued Discontinued	10-51365-43 [3] -- --	S6LN-21 -- --	10-500516-3 -- --	S6LSC-21 -- --
10-52350-14 10-52350-15 10-52350-17	10-51365-33 [3] 10-51365-34 [3] 10-51365-33	10-51365-33 10-51365-34 10-51365-33	S6LN-20 S6RN-21 S6LN-20	10-600646-2 10-500516-5 10-600646-2	S6LSC-204 S6RSC-21 S6LSC-204
10-52350-18 10-52350-19 10-52350-20	10-51365-34 [3] 10-51365-48 [3] 10-52350-20	10-51365-34 10-51365-48 10-51365-43 [3]	S6RN-21 S6RN-21 S6LN-21	10-500516-5 10-500516-9 10-500516-3	S6RSC-21 S6RSC-21 S6LSC-21
10-52350-21 10-52350-22 10-52350-23	Discontinued 10-51365-33 [3] 10-51365-34 [3]	-- 10-51365-33 10-51365-34	-- S6LN-20 S6RN-21	-- 10-600646-2 10-500516-5	-- S6LSC-204 S6RSC-21
10-52350-24 10-52350-25 10-79020-2	Discontinued Discontinued 10-79020-10 [4]	-- -- 10-79020-10	-- -- S6RN-25	-- -- 10-500556-1	-- -- S6RSC-25
10-79020-5 10-79020-6 10-79020-8	10-79020-10 [4] 10-79020-6 10-79020-10 [4]	10-79020-10 10-79020-6 10-79020-10	S6RN-25 S6LN-25 S6RN-25	10-500556-1 10-500556-3 10-500556-1	S7RSC-25 S6LSC-25 S6RSC-25
10-79020-10 10-79020-11 10-79020-13	10-79020-10 10-79020-11 Discontinued	10-79020-10 10-79020-11 --	S6RN-25 S6LN-25 --	10-500556-1 10-500556-203 --	S6RSC-25 S6LSC-25T --
10-79020-14 10-79020-16 10-79020-17	Discontinued 10-79020-16 10-79020-17	-- 10-79020-16 10-79020-17	-- S6LN-25 S6LN-25	-- 10-500556-3 10-500556-203	-- S6LSC-25 S6LSC-25T
10-79020-18 10-79020-19 10-79020-118	10-79020-18 10-79020-19 10-79020-118	10-79020-18 10-79020-19 10-79020-118	S6LN-25 S6RN-25 S6LN-25P	10-500556-3 10-500556-1 10-500556-103	S6LSC-25 S6RSC-25 S6LSC-25P
10-79020-119 10-85290-2 10-85290-3	10-79020-119 Discontinued Discontinued	10-79020-119 -- --	S6RN-25P -- --	10-500556-101 -- --	S6RSC-25P -- --
10-163005-1 10-163005-2 10-163005-3	10-163005-2 10-163005-2 10-163005-3	10-163005-2 10-163005-2 10-163005-3	S4LN-200 S4LN-200 S4LN-200	10-600614-1 10-600614-1 10-600614-3	S4LSC-200 S4LSC-200 S4LSC-200

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TABLE 1102: SUPERSEDED, DISCONTINUED AND INTERCHANGEABLE MAGNETOS
(continued)

OLD PART NO.	FOR MAINTENANCE OR OVERHAUL, FOLLOW PARTS LIST FOR	FOR REPLACEMENT, USE			
		PART NO.	TYPE NO. OR	PART NO.	TYPE NO.
10-163005-4	Discontinued	--	--	--	--
10-163005-5	Discontinued	--	--	--	--
10-163005-7	Discontinued	--	--	--	--
10-163005-10	Discontinued	--	--	--	--
10-163005-11	10-163005-11	10-163005-11	S4LN-200	10-600614-2	S4LSC-200
10-163010-1	10-163010-1	10-163010-1	S6RN-200	10-600616-4	S6RSC-200
10-163010-2	10-163010-2	10-163010-2	S6LN-200	10-600616-5	S6LSC-200
10-163010-3	Discontinued	--	--	--	--
10-163010-4	Discontinued	--	--	--	--
10-163010-5	Discontinued	--	--	--	--
10-163010-6	Discontinued	--	--	--	--
10-163010-7	Discontinued	--	--	--	--
10-163010-8	Discontinued	--	--	--	--
10-163010-9	10-163010-10	10-163010-10	S6LN-200	10-600616-3	S6LSC-200
10-163010-10	10-163010-10	10-163010-10	S6LN-200	10-600616-3	S6LSC-200
10-163010-11	10-163010-11	10-163010-11	S6LN-200	10-600616-6	S6LSC-200
10-163010-15	10-163010-15	10-163010-15	S6RN-200	10-600616-7	S6RSC-200
10-163010-17	Discontinued	--	--	--	--
10-163015-1	Discontinued	--	--	--	--
10-163015-2	Discontinued	--	--	--	--
10-163015-3	10-163015-3	10-163015-3	S4RN-201	10-600604-1	S4RSC-201
10-163015-4	Discontinued	--	--	--	--
10-163020-1	Discontinued	10-163020-3	S6RN-201	10-600606-1	S6RSC-201
10-163020-2	Discontinued	--	--	--	--
10-163020-3	10-163020-3	10-163020-3	S6RN-201	10-600606-1	S6RSC-201
10-163020-4	10-163020-4	10-163020-4	S6LN-201	10-600606-3	S6LSC-201
10-163020-103 [5]	Discontinued	--	--	--	--
10-163030-1	Discontinued	--	--	--	--
10-163030-4	Discontinued	--	--	--	--
10-163045-1	10-163045-1	10-163045-1	S4LN-204	10-600644-4	S4LSC-204
10-163045-2	Discontinued	--	--	--	--
10-163045-3	10-163045-3	10-163045-3	S4LN-204	10-600644-1	S4LSC-204
10-163045-4	Discontinued	--	--	--	--
10-163045-6	10-163045-6	10-163045-6	S4LN-204	10-600644-201	S4LSC-204T
10-163045-7	Discontinued	--	--	--	--
10-163045-8	10-163045-3	10-163045-3	S4LN-204	10-600644-1	S4LSC-204
10-163050-1	10-163050-1	10-163050-1	S6LN-204	10-600646-2	S6LSC-204
10-163050-2	10-163050-2	10-163050-2	S6LN-204	10-600646-3	S6LSC-204
10-163050-3	Discontinued	--	--	--	--
10-163050-4	10-163050-9	10-163050-9	S6LN-204	10-600646-1	S6LSC-204
10-163050-5	Discontinued	--	--	--	--
10-163050-6	Discontinued	--	--	--	--
10-163050-7	10-163050-7	10-163050-7	S6RN-204	10-600646-4	S6RSC-204
10-163050-8	Discontinued	--	--	--	--
10-163050-9	10-163050-9	10-163050-9	S6LN-204	10-600646-1	S6LSC-204
10-163050-12	10-163050-12	10-163050-12	S6LN-204	10-600646-201	S6LSC-204T
10-163055-1	10-163055-1	10-163055-1	S4RN-205	10-600654-1	S4RSC-205
10-163055-2	Discontinued	--	--	--	--

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**TABLE 1102: SUPERSEDED, DISCONTINUED AND INTERCHANGEABLE MAGNETOS
(continued)**

OLD PART NO.	FOR MAINTENANCE OR OVERHAUL, FOLLOW PARTS LIST FOR	FOR REPLACEMENT, USE			
		PART NO.	TYPE NO. OR	PART NO.	TYPE NO.
10-163060-1 10-163060-2 10-163060-101 ^[5]	10-163060-1 10-163060-2 Discontinued	10-163060-1 10-163060-2 --	S6RN-205 S6LN-205 --	10-600656-1 10-600656-3 --	S6RSC-205 S6LSC-205 --
10-163070-1 10-163070-3	Discontinued Discontinued	-- --	-- --	-- --	-- --

- ^[1] Use P/N 10-51365-9 or P/N 10-500516-10 Magnetos on engines not converted per Continental Service Bulletin M53-3. If magneto drive configuration is as shown in TCM "E" Series Parts Catalog (X30017, Sept. 1970), use Magneto P/N 10-51365-43 or P/N 10-500516-3.
- ^[2] Magnetos P/N 10-51365-44 and 10-51365-45 may be factory rebuilt only if a serviceable Bushing P/N 10-116861 is provided.
- ^[3] Upon exhaustion of special parts for radio-shielded S-22 and S-23 Series Magnetos, these magnetos may be converted to or replaced by standard configuration magneto part numbers shown.
- ^[4] Magnetos should be updated as a matching pair.
- ^[5] TCM TSIOL-550-A engines originally equipped with indicated magnetos should be retrofitted to an S-1200 Magneto System. Contact TCM Service Department for details.

TABLE 1103: S4LN, S4RN-20 AND -21 MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-51360-26	10-51360-27	10-51360-28	10-51360-29	10-51360-37	10-51360-40	10-51360-41	10-51360-45	10-51360-46	10-51360-47	10-51360-54	10-51360-58
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-163151 10-51643 10-51652Y	1	1	1	1	1	1	1	1	1	1	1	1
3	LOCKWASHER	10-3793	1				1			1	1	1	1	1
4	WASHER-Plain	10-4093		1		1								
	WASHER-Keyed	10-51370 10-51613	1		1		1	1	1	1	1	1	1	1
5	BUSHING	10-51651 10-163049	1		1		1	1	1	1	1	1	1	1
6	DRIVE PLATE	10-160850						1						
8	IMPULSE COUPLING													
	25° Lag	10-400302			1						1			
	25° Lag	10-400313	1				1			1		1		
	25° Lag	10-400301							1					
	15° Lag	10-400321											1	1

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TABLE 1103: S4LN, S4RN-20 AND -21 MAGNETOS

(Continued)

REF. NO.	DESCRIPTION	PART NO.	10-51360-26	10-51360-27	10-51360-28	10-51360-29	10-51360-37	10-51360-40	10-51360-41	10-51360-45	10-51360-46	10-51360-47	10-51360-54	10-51360-58
9	BODY-Impulse Coupling	10-51333 10-51395 10-52903	1		1		1		1	1	1	1	1	1
10	SPRING-Main	10-51324	1		1		1		1	1	1	1	1	1
11	CAM ASSY-Impulse Coupling	10-400166-2 10-400167-4 10-400167-1	1		1		1		1	1	1	1	1	1
12	SCREW w/lockwasher	10-35936-7 10-157160	4	4	4	4	4	4	4	4	4	4	4	4
15	CONTACT COVER	10-163199 10-52939Y 10-163136 10-361637	1	1	1	1	1	1	1	1	1	1	1	1
17	LEAD ASSY, TACH	10-400141										2		
18	SLEEVEING, 20 Ft.	10-180128-1										AR		
19	GROMMET, TACH	10-622161-9										1		
20	COVER, Spare	10-361638										1		
21	CAP NUT	10-163177								1				1
22	DISK, NEOPRENE	10-163384								1				1
33	SCREW-Fil hd	10-16476 10-51355	1	1	1	1	1	1	1		1		1	
34	LOCKWASHER	2-194	1	1	1	1	1	1	1		1		1	
35	SPRING	10-102090				1	1	1	1		1		1	
37	WASHER-Plain	10-14268	1	1	1	1	1	1	1	1	1	2	1	1
38	BUSHING, TACH	10-361639										2		
39	CONTACT ASSEMBLY (Tachometer)	10-382585 10-357173 10-357174 10-361631	1	1	1	1	1	1	1	1	1	1	1	1
40	PLATE-Insulating	10-361624										1		
41	SCREW w/lockwasher	10-35935-5 10-35836-7	3	3	3	3	3	3	3	2	3	4	3	2
42	CAPACITOR	10-51676 10-357281	1	1	1	1	1	1	1	1	1	1	1	1
44	PLUG, Solid	10-157135	1	1	1	1	1	1	1	1	1	1	1	1
45	BUSHING	10-51612	1	1	1									
46	PLUG-Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1	1	1
47	SCREW, w/lockwasher	10-157158	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING,-Distributor	10-50757Y 10-52917 10-106498	1	1	1	1	1	1	1		1	1	1	1
50	HOUSING-Magneto	10-50727Y 10-160858	1	1	1	1	1	1	1	1	1	1	1	1
52	IDENTIFICATION PLATE	10-400012	1	1	1	1	1	1	1	1	1	1	1	1
53	WOODRUFF KEY	10-90788-5	3	2	3	2	3	3	3	3	3	3	3	3

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TABLE 1103: S4LN, S4RN-20 AND -21 MAGNETOS

(Continued)

REF. NO.	DESCRIPTION	PART NO.	10-51360-26	10-51360-27	10-51360-28	10-51360-29	10-51360-37	10-51360-40	10-51360-41	10-51360-45	10-51360-46	10-51360-47	10-51360-54	10-51360-58
54	ROTATING MAGNET (ROTOR)	10-52945 10-52946 10-52947	1	1	1	1	1	1	1	1	1	1	1	1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1	1	1	1
56	SCREW, w/lock washer	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-20S 10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1
60	STOP PIN	10-56513	1	1	1	1	2	1	2	2	2	2	2	2
61	SCREW, w/lock washer	10-391213	1	1	1	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-1 10-88543-5	1	1	1	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1
67	PINION GEAR	10-157123Y	1	1	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1
71	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.0015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR
72	DISTRIBUTOR GEAR KIT	10-357584	1	1	1	1	1	1	1	1	1	1	1	1
73	. CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1	1	1
74	. RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1
75	. WASHER-Plain .75 in.OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1
76	. WASHER-Plain .562 in. OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1
77	. WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1
78	SCREW, W/Plain & Lockwasher	10-102083	3	3	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357424	1	1	1	1	1	1	1	1	1	1	1	1
80	.TOWER SPRING	10-50737	4	4	4	4	4	4	4	4	4	4	4	4
81	. FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1

System Support Manual **S20/S-200 MAGNETO IGNITION SYSTEM**

TABLE 1104: S6LN, S6RN-20, -21, AND -23 MAGNETOS

REF NO.	DESCRIPTION	PART NO.	10-51365-9	10-51365-32	10-51365-33	10-51365-34	10-51365-35	10-51365-39	10-51365-40	10-51365-43	10-51365-44	10-51365-45	10-51365-46	10-51365-47	10-51365-48	10-51365-54	10-51365-57	10-52350-20
1	PIN-Cotter	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-163151 10-51643 10-51652Y 10-163178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	LOCK WASHER	10-3793	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	WASHER-Plain	10-4093 10-51370 10-116860 10-52307 10-51613	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	BUSHING	10-51651 10-116861 10-163048 10-357193						1	1									
8	IMPULSE COUPLING																	
	35° Lag	10-400303						1							1			
	45° Lag	10-400314																
	45° Lag	10-400315		1						1				1			1	1
	35° Lag	10-400305	1			1	1											
	45° Lag	10-400306																
	35° Lag	10-400320										1						
	35° Lag	10-400304							1							1		
9	BODY - Impulse Coupling	10-51333 10-51395 10-52903 10-70371 10-76232	1	1		1		1	1			1		1	1	1	1	1
10	SPRING - Main	10-51324	1	1		1	1	1	1	1		1		1	1	1	1	1
11	CAM ASSY - Impulse Coupling	10-400166-6 10-400167-8 10-400167-10 10-400166-9	1	1		1		1		1		1		1	1	1	1	1
12	SCREW	10-35936-7 10-157160 10-357015	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	GASKET	10-52321Y																1
15	CONTACT COVER	10-163199 10-52939Y 10-163136 10-79019Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
21	CAP NUT	10-163177															1	
22	DISK-Neoprene	10-163384															1	
33	SCREW-Fil hd	10-16476 10-51355	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34	LOCKWASHER	2-194	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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TABLE 1104: S6LN, S6RN-20, -21 AND -23 MAGNETOS

(Continued)

REF NO.	DESCRIPTION	PART NO.	10-51365-9	10-51365-32	10-51365-33	10-51365-34	10-51365-35	10-51365-39	10-51365-40	10-51365-43	10-51365-44	10-51365-45	10-51365-46	10-51365-47	10-51365-48	10-51365-54	10-51365-57	10-52350-20
35	SPRING	10-102090 10-102092	1	1	1	1	1	1		1	1	1	1	1		1		1
37	WASHER-Plain	10-14268	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
39	CONTACT ASSEMBLY	10-382585 10-357173 10-357174							1		1	1	1	1	1		1	
41	SCREW, W/LOCK WASHER	10-35936-7 10-35935-5	3	3	3	3	3	3	3	3	3	3	3	3	3	3	2 2	3
42	CAPACITOR	10-51676 10-357281	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	PLUG, Solid	10-157135 10-51391	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	BUSHING-P-Lead	10-51612							1						1			
46	PLUG-Ventilator	10-157134 10-50732	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
47	SCREW	10-157158	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING-Distributor	10-52917 10-50757Y 10-106498 10-52931	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
49	GASKET	10-52320																1
50	HOUSING-Magneto	10-50727Y 10-160858 10-52327	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	PLATE-ID	10-400012	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	KEY-Woodruff	10-90788-5	2	2	2	2	3	3	2	2	3	3	3	3	2	3	3	2
54	ROTATING MAGNET (ROTOR)	10-52945 10-52946 10-52947 10-52948			1				1							1		
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
56	SCREW	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-20S 10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	STOP PIN	10-56513	1	2		2	2	1	1	1		2		2	1	1	2	1
61	SCREW	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-1 10-88543-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim																	
	0.0025 in. thick	2-199-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.004 in. thick	2-199-2	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.005 in. thick	2-199-3	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.008 in. thick	2-199-4	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.010 in. thick	2-199-5	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.012 in. thick	2-199-6	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR

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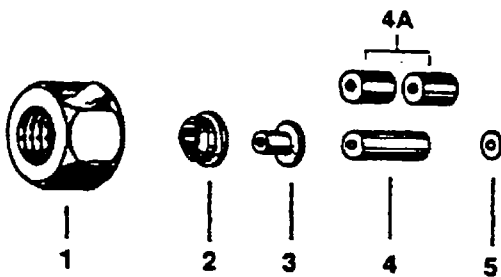
TABLE 1104: S6LN, S6RN-20, -21 AND -23 MAGNETOS

(Continued)

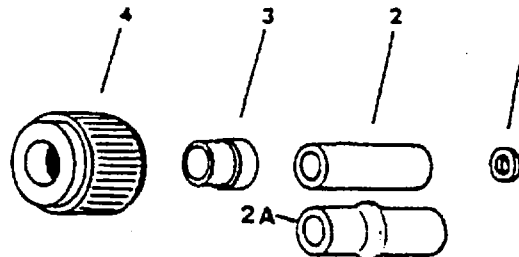
REF NO.	DESCRIPTION	PART NO.	10-51365-9	10-51365-32	10-51365-33	10-51365-34	10-51365-35	10-51365-39	10-51365-40	10-51365-43	10-51365-44	10-51365-45	10-51365-46	10-51365-47	10-51365-48	10-51365-54	10-51365-57	10-52350-20
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67	PINION GEAR	10-157120Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
71	WASHER-Shim 0.0025 in. thick	2-161-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.004 in. thick	2-161-2	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.005 in. thick	2-161-3	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.008 in. thick	2-161-4	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.010 in. thick	2-161-5	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.012 in. thick	2-161-6	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.015 in. thick	2-161-7	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
72	DISTRIBUTOR GEAR-Kit	10-357586	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73	BRUSH-Carbon	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
74	RING-Retaining	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	WASHER-.750 OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
76	WASHER-.562 OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
77	WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
78	SCREW	10-102083	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357426	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	TOWER SPRING	10-50737	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
81	FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

SWITCH TERMINAL KITS

(See Table 1101 for Applications)



Kit No. 10-52305, 10-52305-1



Kit Number	Description	Code
10-157208	KIT, Magneto Retard Terminal	A
10-157209	KIT, Magneto Ground Terminal	B
10-382814	KIT, Pressurized Ground Terminal	C

Ref. No.	Part No.	No. Req.	Description
1	10-37669	1	NUT - Coupling (Ground Terminal)
2	10-7030	1	FERRULE - Outer (Ground Wire)
3	10-7029	1	FERRULE - Inner (Ground Wire)
4	10-37668	1	SLEEVE - Insulating (10-52305)
4A	10-52901	2	SLEEVE - Insulating (10-52305-1)
5	2-155	1	WASHER - Ground Wire Contact

Ref. No.	Part Number	Description	Use Code	Quantity Required
1	10-77092	WASHER, Flat	A,B,C	1
2	10-157212	BUSHING, Insulated	A,B	1
2A	10-382812	INSULATOR	C	1
3	10-157213	BUSHING, Shouldered	A,B,C	1
4	10-157210	NUT, Coupling, 0.3750-32	A,C	1
	10-157211	NUT, Coupling, 0.4375-28	B	1

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TABLE 1105: S6LN, S6RN-25 AND -25P MAGNETOS

REF NO.	DESCRIPTION	PART NO.	10-79020-6	10-79020-10	10-79020-11	10-79020-16	10-79020-17	10-79020-18	10-79020-19	10-79020-118	10-79020-119
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1
2	NUT	10-51643	1	1	1	1	1	1	1	1	1
3	LOCKWASHER	10-3793	1	1	1	1	1	1	1	1	1
4	WASHER-Plain	10-52307	1	1	1	1	1	1	1	1	1
8	IMPULSE COUPLING ASSY 30° Lag 30° Lag	10-400316 10-400307	1	1	1	1	1	1	1	1	1
9	. BODY-Impulse Coupling	10-70371 10-76232	1	1	1	1	1	1	1	1	1
10	. SPRING-Main	10-51324	1	1	1	1	1	1	1	1	1
11	. CAM-Impulse Coupling	10-400166-4 10-400167-6	1	1	1	1	1	1	1	1	1
12	SCREW, W/LOCK WASHER, SHORT SCREW, W/LOCK WASHER, LONG SCREW-Hex hd, SHORT SCREW-Hex hd, LONG	10-35936-7 10-157160 10-357256 10-357257	4	4	4	4	4	4	4	4	4
13	LOCKWASHER	10-82879-42				4	4				
14	GASKET, Contact Cover	10-357532								1	1
15	CONTACT COVER	10-52939Y 10-163136 10-361637	1	1	1	1	1	1	1	1	1
17	. LEAD ASSY, TACH	10-400141			2	2					
18	. SLEEVING, 20 Ft.	10-180128-1			AR	AR					
19	. GROMMET, TACH	10-622161-9			1	1					
20	. COVER, Spare	10-367638			1	1					
21	CAP NUT	10-163177						1	1	1	1
22	DISK-Neoprene	10-163384						1	1	1	1
33	SCREW-Fil hd (Switch Terminal)	10-16476	1	1		1					
34	LOCKWASHER	2-194	1	1		1					
35	SPRING (Switch Terminal)	10-102090	1	1		1					
37	WASHER-Plain	10-14268	1	1	2	1	2	1	1	1	1
38	BUSHING, TACH	10-361639			2	2					
39	CONTACT ASSEMBLY	10-382585 10-357174 10-382584 Tachometer Contact Assembly 10-361631	1	1	1	1	1	1	1	1	1
40	PLATE-Insulating, TACH	10-361624			1	1					
41	SCREW, W/LOCK WASHER	10-35936-7 10-35935-5	3	3	4	3	4	2	2	2	2
42	CAPACITOR	10-51676 10-357281	1	1	1	1	1	1	1	1	1
44	PLUG-Solid	10-157135	1	1	1	1	1	1	1	1	1
46	PLUG-Vent	10-157134	1	1	1	1	1	1	1	1	1
46a	ORIFICE, Air Bleed	10-382861								1	1
47	SCREW, W/LOCK WASHER	10-157158	5	5	5	5	5	5	5	5	5

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S20/S-200 MAGNETO IGNITION SYSTEM

TABLE 1105: S6LN, S6RN-25 AND -25P MAGNETOS
(Continued)

REF NO.	DESCRIPTION	PART NO.	10-79020-6	10-79020-10	10-79020-11	10-79020-16	10-79020-17	10-79020-18	10-79020-19	10-79020-118	10-79020-119
48	HOUSING-Distributor	10-52917 10-106498	1	1	1	1	1	1	1	1	1
49	GASKET-Housing	10-357533			1	1	1	1	1	1	1
50	HOUSING-Magneto	10-81942	1	1	1	1	1	1	1	1	1
52	IDENTIFICATION PLATE	10-400012	1	1	1	1	1	1	1	1	1
53	WOODRUFF KEY	10-90788-5	2	2	2	2	2	2	2	2	2
54	ROTATING MAGNET (ROTOR)	10-52948	1	1	1	1	1	1	1	1	1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1
56	SCREW, W/LOCK WASHER	10-35937-8	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-20S 10-357165-1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1
60	STOP PIN	10-79011	2	2	2	2	2	2	2	2	2
61	SCREW, W/LOCK WASHER	10-391213	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-1 10-88543-4 10-88543-5	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1
67	PINION GEAR	10-157120Y	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1
71	WASHER-Flat 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR
72	DISTRIBUTOR GEAR, Kit	10-357586	1	1	1	1	1	1	1	1	1
73	CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1
74	RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1
75	WASHER-Plain, .750 in. OD	10-349511	1	1	1	1	1	1	1	1	1
76	WASHER-Plain, .562 in. OD	10-606505	1	1	1	1	1	1	1	1	1
77	WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1
78	SCREW	10-102083	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357426	1	1	1	1	1	1	1	1	1
80	TOWER SPRING	10-50737	6	6	6	6	6	6	6	6	6
81	FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1

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TABLE 1106: S4LN, S4RN-200, -201, -204 AND -205 MAGNETOS

REF NO.	DESCRIPTION	PART NO.	10-163005-2	10-163005-3	10-163005-11	10-163015-3	10-163045-1	10-163045-3	10-163045-6	10-163055-1
1	PIN-Cotter	10-90751-18	1	1	1	1	1	1	1	1
2	WASHER-Drive Shaft	10-163151 10-51643	1	1	1	1	1	1	1	1
3	WASHER-Lock	10-3793	1	1	1	1	1	1	1	1
4	WASHER-Plain	10-4093 10-116860	1	1	1	1	1	1	1	1
5	BUSHING	10-163049	1	1	1	1	1	1	1	1
7	PLATE, Drive	10-163003 10-163214	1	1	1	1	1	1	1	1
12	SCREW, W/LOCK WASHER	10-157160	4	4	4	4	4	4	4	4
15	CONTACT COVER (TACH)	10-163136 10-361637	1	1	1	1	1	1	1	1
17	LEAD ASSY, TACH	10-400141							2	
18	SLEEVING, 20 Ft.	10-180128-1							AR	
19	GROMMET, TACH	10-622161-9							1	
20	COVER, Spare	10-367638							1	
21	CAP NUT	10-163177					1	1		1
22	DISK, NEOPRENE	10-163384					1	1		1
23	LEAD ASSEMBLY, RETARD	10-157241	1	1	1	1				
24	PAPER, RETARD	10-163194	1	1	1	1				
37	WASHER-Plain	10-14268	2	2	2	2	1	1	2	1
38	BUSHING, TACH	10-361639							2	
39	CONTACT ASSEMBLY	10-382585 10-382584	1	1	1	1	1	1	1	1
	CONTACT ASSEMBLY-Tachometer	10-361631							1	
40	INSULATING PLATE (TACH)	10-361624							1	
41	SCREW, W/LOCK WASHER	10-35935-5 10-35936-7	2	2	2	2	2	2	2	2
42	CAPACITOR	10-357281	1	1	1	1	1	1	1	1
43	TUBING	10-357494			1					
44	PLUG, SOLID	10-157135	1	1	1	1	1	1	1	1
46	PLUG-Ventilator	10-157134	1	1	1	1	1	1	1	1
47	SCREW, W/LOCK WASHER	10-157158	5	5	5	5	5	5	5	5
48	HOUSING-Distributor	10-106492 10-357478 10-106498 10-160895	1	1	1	1	1	1	1	1
50	HOUSING-Magneto	10-160858 10-163402	1	1	1	1	1	1	1	1
52	IDENTIFICATION PLATE	10-400012	1	1	1	1	1	1	1	1
53	WOODRUFF KEY	10-90788-5	2	3	2	2	3	2	2	2
54	ROTATING MAGNET (ROTOR)	10-52945 10-357479 10-52947 10-52948	1	1	1	1	1	1	1	1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1

System Support Manual **S20/S-200 MAGNETO IGNITION SYSTEM**

TABLE 1106: S4LN, S4RN-200, -201, -204 AND -205 MAGNETOS
(continued)

REF NO.	DESCRIPTION	PART NO.										
			10-163005-2	10-163005-3	10-163005-11	10-163015-3	10-163045-1	10-163045-3	10-163045-6	10-163055-1		
56	SCREW, W/LOCK WASHER	10-35937-8	2	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1
61	SCREW, W/LOCK WASHER	10-391213	1	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-4 10-88543-5	1	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1
67	GEAR-Pinion	10-157123Y	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1
71	WASHER-Flat 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR
72	DISTRIBUTOR GEAR- Kit	10-357584	1	1	1	1	1	1	1	1	1	1
73	CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1
74	RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1
75	WASHER-Plain, .750 in. OD	10-349511	1	1	1	1	1	1	1	1	1	1
76	WASHER, Plain.562 in. OD	10-606505	1	1	1	1	1	1	1	1	1	1
77	WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1
78	SCREW, W/PLAIN & LOCK WASHER	10-102083	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357424	1	1	1	1	1	1	1	1	1	1
80	TOWER SPRING	10-50737	4	4	4	4	4	4	4	4	4	4
81	FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1

System Support Manual **S20/S-200 MAGNETO IGNITION SYSTEM**

TABLE 1107: S6LN, S6RN-200, -201, -204 AND -205 MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-163010-1	10-163010-2	10-163010-10	10-163010-11	10-163010-15	10-163020-3	10-163020-4	10-163050-1	10-163050-2	10-163050-7	10-163050-9	10-163050-12	10-163060-1	10-163060-2
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-163151 10-51643 10-163178	1	1		1	1	1	1	1	1	1		1	1	1
3	LOCK WASHER	10-3793						1	1						1	1
4	WASHER-Plain	10-4093 10-116860	1	1		1	1	1	1	1		1			1	1
5	BUSHING	10-163048 10-357193			1	1					1		1	1		
7	PLATE, Drive	10-163003 10-163216				1		1	1		1				1	1
12	SCREW	10-157160	4	4	4	4	4	4	4	4	4	4	4	4	4	4
15	COVER, CONTACT (TACH)	10-163136 10-361637	1	1	1	1	1	1	1	1	1	1	1		1	1
17	LEAD ASSY, TACH	10-400141												2		
18	SLEEVING, 20 Ft.	10-180128-1												AR		
19	GROMMET, TACH	10-622161-9												1		
20	COVER, SPARE	10-361638												1		
21	CAP NUT	10-163177								1	1	1	1		1	1
22	DISK-Neoprene	10-163384								1	1	1	1		1	1
23	LEAD ASSEMBLY, Retard	10-157241	1	1	1	1	1	1	1							
24	PAPER, Retard	10-163194	1	1	1	1	1	1	1							
37	WASHER-Plain	10-14268	2	2	2	2	2	2	2	1	1	1	1	2	1	1
38	BUSHING, Tach	10-361639												2		
39	CONTACT ASSEMBLY (Tachometer)	10-382585 10-382584 10-361631	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1 1	1
40	INSULATING PLATE (TACH)	10-361624												1		
41	SCREW, W/LOCK WASHER	10-35936-7 10-35935-5	4 2	4 2	4 2	4 2	4 2	4 2	4 2	2 2	2 2	2 2	2 2	4 2	2 2	2 2
42	CAPACITOR	10-357281	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	PLUG-SOLID	10-157135	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	PLUG-Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1	1	1	1	1
47	SCREW	10-157158	5	5	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING-Distributor	10-106498 10-163056 10-163292	1	1	1	1		1	1	1	1	1	1	1	1	1
50	HOUSING-Magneto	10-163402 10-160858	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	IDENTIFICATION PLATE	10-400012	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	WOODRUFF KEY	10-90788-5	2	2	3	3	3	2	2	2	3	2	3	3	2	2
54	ROTATING MAGNET (ROTOR)	10-52945 10-52947 10-52948	1	1	1	1				1	1	1	1	1		1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1	1	1	1	1	1
56	SCREW	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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TABLE 1107: S6LN, S6RN-200, -201, -204 AND -205 MAGNETOS
(continued)

REF. NO.	DESCRIPTION	PART NO.	10-163010-1	10-163010-2	10-163010-10	10-163010-11	10-163010-15	10-163020-3	10-163020-4	10-163050-1	10-163050-2	10-163050-7	10-163050-9	10-163050-12	10-163060-1	10-163060-2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1	1	1
61	SCREW	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-4 10-88543-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67	PINION GEAR	10-157120Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1	1	1
71	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR
72	DISTRIBUTOR GEAR, Kit	10-357586	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73	CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1
74	RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	WASHER-Plain, .750 OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1	1	1
76	WASHER-Plain, .562 OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1	1	1
77	WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1
78	SCREW	10-102083	3	3	3	3	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357426	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	TOWER SPRING	10-50737	6	6	6	6	6	6	6	6	6	6	6	6	6	6
81	FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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S20/S-200 MAGNETO IGNITION SYSTEM

TABLE 1108: S4LSC, S4RSC-21, -21T, -200, -201
-204, 204T AND -205 MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-500514-1	10-500514-2	10-500514-3	10-500514-4	10-500514-5	10-500514-201	10-600604-1	10-600614-1	10-600614-2	10-600614-3	10-600644-1	10-600644-3	10-600644-4	10-600644-5	10-600644-201	10-600654-1
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-163151 10-51643 10-51652Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	LOCK WASHER	10-3793	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	WASHER-Plain	10-4083 10-51370 10-116860 10-51613	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	BUSHING	10-51651 10-163049	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	PLATE, Drive	10-160850	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	PLATE, Drive	10-163003 10-163214	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	IMPULSE COUPLING ASSY 25° Lag 25° Lag 25° Lag 15° Lag	10-400302 10-400313 10-400301 10-400321	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9	BODY, Impulse Cpl.	10-51333 10-51395 10-52903	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	SPRING, Main	10-51324	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	CAM ASSY- Impulse Coupling	10-400166-2 10-400167-4 10-400167-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	SCREW	10-157180	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
15	COVER, Contact	10-400160-3Y 10-400160-7Y 10-400160-1Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	LEAD TACH	10-400141	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
18	SLEEVEING, 20 ft.	10-180128-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
19	GROMMET, Tach	10-622161-9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23	LEAD, Retard	10-400050	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	SCREW	10-35937-12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	WASHER, Insul.	10-16082	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	BUSHING, Insul.	10-125996	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	NUT	10-92873-302	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	PACKING	10-349263	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	WASHER-Plain	10-14268	1	1	1	1	1	2	2	2	2	2	1	1	1	1	2	1
38	BUSHING, Tach	10-361639	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
39	CONTACT ASSY (Tachometer)	10-382585 10-382584 10-361631	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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S20/S-200 MAGNETO IGNITION SYSTEM

**TABLE 1108: S4LSC, S4RSC-21, -21T, -200, -201
-204, 204T AND -205 MAGNETOS**

REF. NO.	DESCRIPTION	PART NO.	10-500514-1	10-500514-2	10-500514-3	10-500514-4	10-500514-5	10-500514-201	10-600604-1	10-600614-1	10-600614-2	10-600614-3	10-600644-1	10-600644-3	10-600644-4	10-600644-5	10-600644-201	10-600654-1
40	PLATE, Insulating	10-361624						1									1	
41	SCREW	10-35936-7	2	2	2	2	2	4	4	4	4	4	2	2	2	2	2	2
41a	SCREW	10-35935-6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
42	CAPACITOR	10-349276	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
43	TUBING	10-400191									1							
44	PLUG, SOLID	10-157135	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	PLUG-Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
47	SCREW	10-157158	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING-Distributor	10-160895 10-106492 10-106498 10-357478	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1
50	HOUSING-Magneto	10-50727Y 10-160858 10-163402	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1
52	ID PLATE	10-400012	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	WOODRUFF KEY	10-90788-5	3	3	3	3	3	3	2	3	3	3	2	2	3	3	2	2
54	ROTATING MAGNET (ROTOR)	10-52945 10-52946 10-52947 10-52948 10-357479	1	1	1	1	1	1	1			1	1	1	1	1	1	1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
56	SCREW	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	STOP PIN	10-56513	2	2	1	2	1	2										
61	SCREW	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
62	WASHER-Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-4 10-88543-5	1	1		1	1	1	1		1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR

**System Support Manual
S20/S-200 MAGNETO IGNITION SYSTEM**

**TABLE 1108: S4LSC, S4RSC-21, -21T, -200, -201
-204, 204T AND -205 MAGNETOS**

REF. NO.	DESCRIPTION	PART NO.	10-500514-1	10-500514-2	10-500514-3	10-500514-4	10-500514-5	10-500514-201	10-600604-1	10-600614-1	10-600614-2	10-600614-3	10-600644-1	10-600644-3	10-600644-4	10-600644-5	10-600644-201	10-600654-1
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67	GEAR-PINION	10-157123Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
71	WASHER-Shim 0.0025 in. thick	2-161-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.004 in. thick	2-161-2	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.005 in. thick	2-161-3	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.008 in. thick	2-161-4	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.010 in. thick	2-161-5	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.012 in. thick	2-161-6	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
	0.015 in. thick	2-161-7	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
72	DISTRIBUTOR GEAR- KIT	10-357584	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73	CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
74	RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	WASHER-. .750 OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
76	WASHER-. .562 OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
77	WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
78	SCREW	10-102083	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357424	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	TOWER SPRING	10-50737	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
81	FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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S20/S-200 MAGNETO IGNITION SYSTEM

TABLE 1109: S6LSC, S6RSC, -21, 25, -25P, AND 25T MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-500516-2	10-500516-3	10-500516-4	10-500516-5	10-500516-6	10-500516-7	10-500516-9	10-500516-10	10-500556-1	10-500556-3	10-500556-101	10-500556-103	10-500556-203	10-500556-901
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-51643 10-51652Y 10-163178	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	LOCKWASHER	10-3793		1	1	1	1		1	1	1	1	1	1	1	1
4	WASHER-Plain	10-51370 10-116860 10-52307 10-51613	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	BUSHING	10-51651 10-163048 10-357193	1		1		1	1								
8	IMPULSE COUPLING 30° Lag 35° Lag 45° Lag 45° Lag	10-400316 10-400303 10-400314 10-400315	1	1	1				1			1		1	1	
	35° Lag 45° Lag 30° Lag 35° Lag	10-400305 10-400306 10-400307 10-400304				1	1			1	1		1			1
9	BODY-Imp. Cpl.	10-51333 10-51395 10-52903 10-70371 10-76232	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10	SPRING-Main	10-51324	1	1	1	1	1	1	1	1	1	1	1	1	1	1
11	CAM ASSY	10-400166-6 10-400167-6 10-400167-10 10-400166-9 10-400166-4	1	1	1		1	1	1	1		1		1	1	1
12	SCREW	10-157160	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	GASKET	10-357532											1	1		1
15	COVER CONTACT	10-400160-4Y 10-400160-3Y 10-400160-7Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	LEAD, TACH	10-400141													2	
18	SLEEVING, 20 ft.	10-180128-1													AR	
19	GROMMET, TACH	10-622161-9													1	
36	PACKING	10-349263	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	WASHER-Plain	10-14268	1	1	1	1	1	1	1	1	1	1	1	1	2	1
38	BUSHING, TACH	10-361639													2	
39	CONTACT ASSEMBLY (Tachometer)	10-382585 10-382584 10-361631	1	1	1	1	1	1	1	1	1	1	1	1	1	1
40	PLATE, Insulating, TACH	10-361624													1	
41	SCREW	10-35936-7	2	2	2	2	2	2	2	2	2	2	2	2	4	2
41a	SCREW	10-35936-6	2	2	2	2	2	2	2	2	2	2	2	2	2	2

System Support Manual **S20/S-200 MAGNETO IGNITION SYSTEM**

TABLE 1109: S6LSC, S6RSC, -21, 25, -25P, AND 25T MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-500516-2	10-500516-3	10-500516-4	10-500516-5	10-500516-6	10-500516-7	10-500516-9	10-500516-10	10-500556-1	10-500556-3	10-500556-101	10-500556-103	10-500556-203	10-500556-901
42	CAPACITOR	10-349276	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	PLUG, SOLID	10-157135	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	PLUG-Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1			1	
46a	ORIFICE, Air Bleed	10-382861											1	1		
47	SCREW	10-157158	5	5	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING-Distributor	10-106498	1	1	1	1	1	1	1	1	1	1	1	1	1	1
49	GASKET, Housing	10-357533											1	1		1
50	HOUSING-Magneto	10-50727Y 10-81942 10-400075	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	PLATE-Identification	10-400012	1	1	1	1	1	1	1	1	1	1	1	1	1	1
53	KEY-Woodruff	10-90788-5	3	2	3	2	3	3	2	2	2	2	2	2	2	2
54	ROTATING MAGNET (ROTOR)	10-52946 10-52947 10-52948	1	1	1	1	1	1	1	1	1	1	1	1	1	1
55	OIL SLINGER	10-51678	1	1	1	1	1	1	1	1	1	1	1	1	1	1
56	SCREW	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2	2	2
57	CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	COIL	10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59	OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1	1	1
60	PIN-Stop (Imp. Cpl.)	10-56513	2	2	1	2	2	1	1	2	2	2	2	2	2	2
61	SCREW	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1
62	WASHER	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63	CAM	10-88543-4 10-88543-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64	BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66	WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67	GEAR-Pinion	10-157120-Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1
69	SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70	BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1	1	1
71	WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR

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S20/S-200 MAGNETO IGNITION SYSTEM**

TABLE 1109: S6LSC, S6RSC, -21, 25, -25P, AND 25T MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-500516-2	10-500516-3	10-500516-4	10-500516-5	10-500516-6	10-500516-7	10-500516-9	10-500516-10	10-500556-1	10-500556-3	10-500556-101	10-500556-103	10-500556-203	10-500556-901
72	DISTRIBUTOR GEAR KIT	10-357586	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73	. CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1
74	. RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75	. WASHER-. 750 OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1	1	1
76	. WASHER-. 562 OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1	1	1
77	. WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1
78	SCREW	10-102083	3	3	3	3	3	3	3	3	3	3	3	3	3	3
79	DISTRIBUTOR BLOCK	10-357426	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80	. TOWER SPRING	10-50737	6	6	6	6	6	6	6	6	6	6	6	6	6	6
81	. FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1
82	FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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TABLE 1110: S6SC, S6RSC-200, 200P, -201, -204, 204P, 204T AND -205 MAGNETOS

REF. NO.	DESCRIPTION	PART NO.	10-600606-1	10-600606-3	10-600616-3	10-600616-4	10-600616-5	10-600616-6	10-600616-7	10-600616-101	10-600646-1	10-600646-2	10-600646-3	10-600646-4	10-600646-101	10-600646-201	10-600656-1	10-600656-2
1	COTTER PIN	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	NUT-Drive Shaft	10-163151 10-51643 10-163178	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	LOCKWASHER	10-3793	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	WASHER-Plain	10-4093 10-116860	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	BUSHING	10-163048 10-357193	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	PLATE, Drive	10-163003 10-163216	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
12	SCREW	10-157160	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
14	GASKET, Cover	10-357532	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
15	COVER, Contact	10-400160-1Y 10-400160-2Y 10-400160-3Y 10-400160-4Y 10-400160-7Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17	LEAD ASSY, TACH	10-400141	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
18	SLEEVEING, 20 ft.	10-180128-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
19	GROMMET, TACH	10-622161-9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
23a	LEAD, Retard	10-400050	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
25	SCREW	10-35937-12	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
26	WASHER, Insul.	10-16092	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
27	BUSHING, Insul.	10-125996	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
28	NUT	10-92873-302	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
36	PACKING	10-349263	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
37	WASHER-Plain	10-14268	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
38	BUSHING TACH	10-361639	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
39	CONTACT ASSY (Tachometer)	10-382585 10-382584 10-361631	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
41	SCREW	10-35936-7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
41a	SCREW	10-35935-6	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
42	CAPACITOR	10-349276	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	PLUG-SOLID	10-157135	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44a	BUSHING, Air Inlet	10-382815	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	PLUG, Ventilator	10-157134	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46a	ORIFICE, Calibrated	10-382861	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
47	SCREW	10-157158	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
48	HOUSING-Dist.	10-106498 10-163056 10-163292	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
49	GASKET, Housing	10-357533	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	HOUSING, Mag	10-163402 10-160858	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	I.D. PLATE	10-400012	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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TABLE 1110: S6SC, S6RSC-200, 200P, -201, -204, 204P, 204T AND -205 MAGNETOS

NO.	REF. NO.	DESCRIPTION	PART NO.	10-600606-1	10-600606-3	10-600616-3	10-600616-4	10-600616-5	10-600616-6	10-600616-7	10-600616-101	10-600646-1	10-600646-2	10-600646-3	10-600646-4	10-600646-101	10-600646-201	10-600656-1	10-600656-2
53		WOODRUFF KEY	10-90788-5	2	2	3	2	2	3	3	3	3	2	3	2	3	3	2	2
54		ROTATING MAGNET (ROTOR)	10-52945 10-52947 10-52948	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
55		DEFLECTOR	10-51678	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
56		SCREW	10-35937-8	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
57		CLAMP-Coil Core	10-50765	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58		COIL	10-357165-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
59		OIL SEAL	10-357592	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
61		SCREW	10-391213	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
62		WASHER	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
63		CAM	10-88543-4 10-88543-5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
64		BALL BEARING	2-202	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65		WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick	2-199-1 2-199-2 2-199-3 2-199-4 2-199-5 2-199-6	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR	AR AR AR AR AR AR
66		WASHER-Plain	10-3503	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
67		GEAR-Pinion	10-157120Y	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
69		SLEEVE BEARING	10-357078	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
70		BALL BEARING	10-81806	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
71		WASHER-Shim 0.0025 in. thick 0.004 in. thick 0.005 in. thick 0.008 in. thick 0.010 in. thick 0.012 in. thick 0.015 in. thick	2-161-1 2-161-2 2-161-3 2-161-4 2-161-5 2-161-6 2-161-7	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR	AR AR AR AR AR AR AR
72		DIST. GEAR Kit	10-357586	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
73		CARBON BRUSH	10-160844	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
74		RETAINING RING	10-92815-37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
75		WASHER-.750 OD	10-349511	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
76		WASHER, .562OD	10-606505	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
77		WASHER, Nylon	10-391309	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
78		SCREW	10-102083	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
79		DISTRIBUTOR BLOCK	10-357426	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
80		TOWER SPRING	10-50737	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
81		FELT STRIP	10-163374	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
82		FELT WASHER	10-50752	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

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TABLE 1111: S-20/S-200 NUMERICAL PARTS LIST

PART NO.	DESCRIPTION	REF. NO.	QUANTITY 100 UNIT O'HAUL
2-161-1 thru-7	WASHER-Shim	71	10
2-194	LOCKWASHER	34	100
2-199-1 thru-6	WASHER-Shim	65	10
2-202	BALL BEARING	64	100
10-3503	WASHER-Plain	66	5
10-3793	LOCKWASHER	3	100
10-4093	WASHER-Plain	4	10
10-14268	WASHER-Plain	37	10
10-16092	WASHER	26	25
10-16476	SCREW	33	10
10-35935-5	SCREW, w/lockwasher	41	200
10-35935-6	SCREW, w/lockwasher	41	200
10-35936-7	SCREW, w/lockwasher	41	300
10-35937-8	SCREW, w/lockwasher	56	300
10-35937-12	SCREW, w/lockwasher	25	25
10-50727Y	HOUSING-Magneto	50	1
10-50732	PLUG-Ventilator	44	5
10-50737	TOWER SPRING	80	60
10-50752	FELT WASHER	82	100
10-50757Y	DISTRIBUTOR	48	1
	HOUSING		
10-50765	CLAMP-Coil Core	57	10
10-51324	SPRING-Imp. Cpl.	10	100
10-51333	BODY-Imp. Cpl.	9	2
10-51354	WASHER-Plain	62	10
10-51355	SCREW	33	10
10-51370	WASHER-Plain	4	10
10-51391	PLUG, VENTILATOR	46	5
10-51395	BODY-Imp. Cpl.	9	2
10-51612	BUSHING, SWITCH TERM.	45	5
10-51613	WASHER-Keyed	4	25
10-51643	NUT	2	10
10-51651	BUSHING	5	5
10-51652Y	NUT	2	10
10-51676	CAPACITOR	42	10
10-51678	OIL SLINGER	55	100
10-52307	WASHER	4	25
10-52320	GASKET-Magneto Housing	49	100
10-52321Y	GASKET-Contact Cover	14	100
10-52326	HOUSING-Distributor	48	1
10-52327	HOUSING-Magneto	50	1
10-52903	BODY-Imp. Cpl.	9	2
10-52917	DISTRIBUTOR HOUSING	48	1
10-52931	DISTRIBUTOR HOUSING	48	1
10-52939Y	CONTACT COVER	15	1
10-52945	ROTATING MAGNET	54	2

PART NO.	DESCRIPTION	REF. NO.	QUANTITY 100 UNIT O'HAUL
10-52946	ROTATING MAGNET	54	2
10-52947	ROTATING MAGNET	54	2
10-52948	ROTATING MAGNET	54	2
10-56513	STOP PIN	60	10
10-70371	BODY-Imp. Cpl.	9	2
10-76232	BODY-Imp. Cpl.	9	2
10-79011	STOP PIN	60	10
10-79019Y	CONTACT COVER	15	1
10-81806	BALL BEARING	70	100
10-81942	HOUSING-Magneto	50	1
10-88543-1	CAM-Breaker	63	5
10-88543-4	CAM-Breaker	63	5
10-88543-5	CAM-Breaker	63	5
10-90751-18	COTTER PIN	1	100
10-90788-5	WOODRUFF KEY	53	15
10-92815-37	RETAINING RING	74	100
10-92873-302	NUT	28	25
10-92879-42	LOCKWASHER	13	400
10-102083	SCREW, w/plain & lockwasher	78	300
10-102090	SPRING	35	10
10-102092	SPRING	35	10
10-106492	DISTRIBUTOR HOUSING	48	1
10-106498	DISTRIBUTOR HOUSING	48	1
10-116860	WASHER-Plain	4	10
10-116861	BUSHING, Imp. Cpl.	5	5
10-125996	BUSHING, Insulating	27	25
10-157120Y	PINION GEAR	67	2
10-157123Y	PINION GEAR	67	2
10-157134	PLUG-Ventilator	46	5
10-157135	PLUG, SOLID	44	5
10-157158	SCREW, w/lockwasher	47	500
10-157160	SCREW, w/lockwasher	12	400
10-157241	LEAD ASSEMBLY, RETARD	23	5
10-160844	CARBON BRUSH	73	100
10-160850	PLATE, Drive	6	2
10-160858	HOUSING-Magneto	50	1
10-160893	CAM-Impulse Coupling	11	2
10-160895	HOUSING-Distributor	48	1
10-163003	PLATE, Drive	7	2
10-163048	BUSHING	5	5
10-163049	BUSHING	5	5
10-163056	HOUSING-Distributor	48	1
10-163136	CONTACT COVER	15	1
10-163151	NUT-Drive Shaft	2	10
10-163177	CAP NUT	21	10
10-163178	NUT	2	10
10-163194	PAPER, RETARD	24	5
10-163199	CONTACT COVER	15	1

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S20/S-200 MAGNETO IGNITION SYSTEM**

**TABLE 1111: S-20/S-200 NUMERICAL
PARTS LIST
(Continued)**

PART NO.	DESCRIPTION	REF. NO.	QUANTITY 100 UNIT O'HAUL
10-163214	PLATE, Drive	7	1
10-163216	PLATE, Drive	7	1
10-163292	HOUSING, Distr.	48	1
10-163374	FELT STRIP	81	100
10-163384	DISK-Neoprene	22	10
10-163402	HOUSING-Magneto	50	1
10-180128-1	SLEEVEING, 20 Ft.	18	1
10-349263	PACKING	36	100
10-349276	CAPACITOR	42	10
10-357015	SCREW, w/lockwasher	12	400
10-357078	SLEEVE BEARING	69	50
10-357165-1	COIL	58	10
10-357165-20S	COIL	58	10
10-357173	CONTACT ASSY	39	100
10-357174	CONTACT ASSY	39	100
10-357193	BUSHING	5	5
10-357256	SCREW, Hex hd	12	25
10-357257	SCREW, Hex hd	12	25
10-357281	CAPACITOR	42	50
10-357424	DISTRIBUTOR BLOCK, 4 cyl.	79	5
10-357426	DISTRIBUTOR BLOCK, 6 cyl.	79	5
10-357478	HOUSING	48	1
10-357479	ROTATING MAGNET	54	2
10-357494	TUBING	43	1
10-357532	GASKET, CONTACT COVER	14	100
10-357533	GASKET, HOUSING	49	100
10-357584	DISTRIBUTOR GEAR KIT, 4 cyl.	72	5
10-357586	DISTRIBUTOR GEAR KIT, 6 cyl.	72	5
10-357592	OIL SEAL	59	100
10-361624	INSULATING PLATE	40	50
10-361631	CONTACT ASSEMBLY	39	100
10-361637	CONTACT COVER	15	1
10-361638	COVER, Spare	20	1

PART NO.	DESCRIPTION	REF. NO.	QUANTITY 100 UNIT O'HAUL
10-361639	BUSHING	38	25
10-382584	CONTACT ASSY	39	100
10-382585	CONTACT ASSY	39	100
10-382815	BUSHING	44	5
10-382861	ORIFICE	46	5
10-391213	SCREW, w/lockwasher	61	100
10-391309	WASHER, Nylon	77	10
10-400012	IDENTIFICATION PLATE	52	100
10-400050	LEAD ASSY, TACH	23A	5
10-400075	HOUSING	50	1
10-400141	LEAD, TACH	17	200
10-400160-1Y	CONTACT COVER	15	1
10-400160-2Y	CONTACT COVER	15	1
10-400160-3Y	CONTACT COVER	15	1
10-400160-4Y	CONTACT COVER	15	1
10-400160-7Y	CONTACT COVER	15	1
10-400166-2	CAM ASSY	11	2
10-400166-6	CAM ASSY	11	2
10-400166-9	CAM ASSY	11	2
10-400167-1	CAM ASSY	11	2
10-400167-4	CAM ASSY	11	2
10-400167-8	CAM ASSY	11	2
10-400167-10	CAM ASSY	11	2
10-400191	TUBING	43	1
10-400301	IMPULSE COUPLING	8	2
10-400302	IMPULSE COUPLING	8	2
10-400303	IMPULSE COUPLING	8	2
10-400304	IMPULSE COUPLING	8	2
10-400305	IMPULSE COUPLING	8	2
10-400306	IMPULSE COUPLING	8	2
10-400307	IMPULSE COUPLING	8	2
10-400313	IMPULSE COUPLING	8	2
10-400314	IMPULSE COUPLING	8	2
10-400315	IMPULSE COUPLING	8	2
10-400316	IMPULSE COUPLING	8	2
10-400320	IMPULSE COUPLING	8	2
10-400321	IMPULSE COUPLING	8	2
10-606505	WASHER-Plain, .562 in. OD	76	10
10-622161-9	GROMMET, TACH	19	5