

D-2000/D-3000 Series High Tension Magneto

CONTINENTAL IGNITION SYSTEMS

SERVICE SUPPORT MANUAL



Technical Portions Approved by the FAA

Publication X42003-3

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Supersedure Notice

This manual is a revision of the service instructions contained in X42003-2, published in July 2010. Upon FAA approval and release of this document, all previous versions of X42003 are superseded and should not be used for Continental Motors D-2000/D-3000 magneto service, maintenance or overhaul.

Effective Changes for this Manual

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List of Effective Pages

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Service Document and Technical References

Relevant technical content of the service documents which apply to D-2000 and D-3000 Series Magneto Ignition Systems listed below have been incorporated in this manual. Active Continental Motors service documents are available on the Continental Motors web site, <http://.continentalmotors.aero>. Refer to “Contact Information” on page vii for Continental Motors web site details.

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 Continental Motors Ignition Systems Master Service Manual Index (Form X41005) for a complete listing of active magneto Service Bulletins. Service Bulletins affecting D-2000 and D-3000 Series Magnetos and/or applicable Gold Seal Harnesses issued subsequent to issuance of this manual shall be considered to supplement or supersede applicable information in this manual.

Bulletin Number	Bulletin Title	Issue Date
584B	Coil Retaining Devices for D-2200 Series Magnetos	04/78
587	Inspection of D-2000 Series Magneto Capacitors and Capacitor Lead Crimp Terminals	02/77
588	Stress Relief Lines in Distributor Blocks of D-200/D-2200 Series Magnetos	05/78
590A	Rotating Magnet to Housing Clearance, D-2000/D-2200 Series Magnetos	05/78
597A	Cleaning Bendix Lightweight Ignition Harness Spark Plug Ends	10/79
600	10-353110 Bearing in D-2000/D-2200 Series Magneto	05/78
603	Aircraft Noise in Aircraft Communication Equipment	11/78
605A	Inspection of D-2000/D-2200 Series Magnetos, etc.	11/79
606	D-2000/D-2200 Series Magnetos using Green Distributor Blocks	04/79
608	Self-Locking Cam Retaining Screws P/N 10-391213 and 10-352959	11/79
610	10-652014 and 10-652016 Insulated Distributor Gear Kits for D-2000/D-2200 Series Magnetos	6/80
617B	Inspection and/or Replacement of Distributor Gears in D-2000/D-2200 Series Magnetos	07/89
618	Replacement or Inspection of Distributor Gears in D-3200 Series Pressurized (BLUE) Magnetos	08/81
619	Replacement of Distributor Gears in D-3200 Series Pressurized (BLUE) Magnetos	07/89
623A	Inspection of Impulse Coupling Cam Assemblies	08/94
627	Distributor Block Kit Part Number 10-682056 (6 Cylinder) Dual Magneto Series	06/85
628	Replace of impulse Coupling Main Spring P/N 10-382941	05/85
629	Inspection and replacement of Certain Bendix Aircraft magneto Brown Distributor Blocks as Used on Turbocharged Six (6) Cylinder Engines	07/89
631	Recommended Lubricant for Tapered Drive on TCM Magnetos	09/89
635	Gold Seal Harnesses	05/91
639	Proper Installation of Impulse Couplings	03/93
640	New Service Document Format	02/94
SIL642A	Manufacturing Number (Serial Number) Interpreting	02/94
SB643B	Maintenance Intervals for all TCM and Bendix Aircraft Magneto and Related Equipment	04/05
MSB644	Replacement of Magneto Coils and Rotating Magnets	04/94
MSB645	Inspection of Riveted Impulse Couplings and Stop Pins	04/94
SIL648	Optional Conversion to “Shower-of-Sparks” Ignition	10/94



Bulletin Number	Bulletin Title	Issue Date
SB651	Capacitor information and Installation D-2000 and D-3000 Series Magnetos	03/95
SB652	Impulse Coupling Configuration and maintenance for All Type D6LN-2031 Magnetos	03/95
SB653	Hot Magneto Test	05/95
SB655	Improved Ball Bearing, P/N 10-400605, for Pressurized S-1200, D-2000, AND D-3000 Magnetos Formerly using Standard Bearing P/N 10-353056	12/95
SB658	Distributor Gear Maintenance	08/96
SB661	BL - Prefix marking on Rebuilt Magnetos and Rebuilt D-2000 Ignition Systems	09/99
CSB662A	TCM D-2000 AND D-3000 Series magneto Capacitors, P/N 10-382807, 10-382681, AND 10-382681-1	01/00

Service Documents Released After Publication

Continental Motors strives to provide clear, concise, and accurate information and instructions based on best known engineering data at the time of publication. Ongoing process improvements may change a specification or procedure after a manual is released. Service documents, defined on Chapter 1, expedite customer notification and serve as the prevailing instruction over conflicting information until the new information is incorporated in the manual text. As service documents are received, note the service document number, release date, title, and applicable section affected by the service document in the blank cells below and insert a copy of the service document behind the last page of this section. Make pen & ink corrections, where appropriate, to the original text in the manual with a citation to the service document; i.e. see SB9X-1. For paragraphs or entire sections, draw an “X” through the affected information in the manual and reference the service document containing the correction.

Service Bulletins Release After This Manual

Bulletin Number:	_____	Release Date:	____/____/____	Affected Sections:	_____
Title:	_____				
Bulletin Number:	_____	Release Date:	____/____/____	Affected Sections:	_____
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Title:	_____				



Scope and Purpose of this Manual

This manual provides installation, operation, maintenance and overhaul instructions applicable to D-2000 and D-3000 series magnetos manufactured by Continental Motors. Instructions apply only to the Continental Motors magneto series listed; for magnetos, engines and accessories beyond the scope of this document, refer to the appropriate instructions for continued airworthiness.

Exploded assembly illustrations accompany instructions throughout the manual. Parts in illustrations (Figure A) are identified with numerical callouts (indices). Corresponding parts listings follow the illustrations for reference. The first time instructions refer to an illustration, the figure number is identified in parentheses, followed by the callout. In subsequent parts references, only the callout will be specified unless the referenced illustration changes.

Referenced illustration

1. Carefully slide the sleeve (Figure 6-15) (13) and drive gear assembly (12) out of the accessory drive adapter through the crankcase magneto pad opening.
2. Remove the nuts (10 & 11), lock washers (8 & 9) and washers (6 & 7). Remove the accessory drive assemblies from the rear of the crankcase. Discard the lock washers (8 & 9).
3. Remove and discard the gasket (1) and residue from the crankcase and the face of the accessory adapter.
4. Repeat steps 1 through 3 for the second accessory drive adapter.
5. Disassemble the accessory drive adapters according to instructions in Chapter 7.

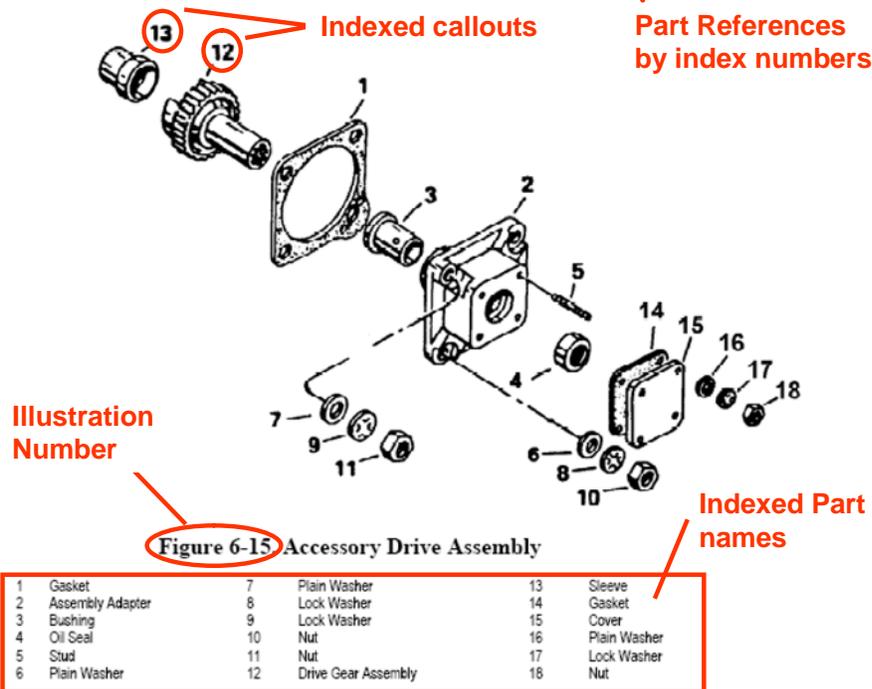


Figure A. Figure and Index Reference



Publications

Service Documents

Continental Motors may issue Service Documents in one of six categories ranging from mandatory (Category 1) to informational (Category 6). Definitions of the categories are listed below:

NOTE: Upon FAA approval, Continental Motors publishes service documents for immediate availability on our web site, <http://continentalmotors.aero>. The service document cover page indicates the magnetos affected by the service document. Service documents may alter or replace the manufacturer's Instructions for Continued Airworthiness. Insert a copy of applicable Service Documents in affected manuals until the service document instructions are incorporated in the manual, or the service document is cancelled or superseded.

Category 1: Mandatory Service Bulletin (MSB)

Used to identify and correct a known or suspected safety hazard which has been incorporated in whole or in part into an Airworthiness Directive (AD) issued by the FAA or have been issued at the direction of the FAA by the manufacturer requiring compliance with an already-issued AD (or an equivalent issued by another country's airworthiness authority). May contain updates to Instructions for Continued Airworthiness to address a safety issue.

Category 2: Critical Service Bulletin (CSB)

This category identifies a condition that threatens continued safe operation of an aircraft, persons or property on the ground unless some specific action (inspection, repair, replacement, etc.) is taken by the owner or operator. Documents in this category are candidates for incorporation into an FAA Airworthiness Directive. May contain updates to Instructions for Continued Airworthiness to address a safety issue.

Category 3: Service Bulletin (SB)

Information which the product manufacturer believes may improve the inherent safety of an aircraft or aircraft component; this category includes the most recent updates to Instructions for Continued Airworthiness.

Category 4: Service Information Directive (SID)

The manufacturer directs the owner/operator/mechanic in the use of a product to enhance safety, maintenance or economy. May contain updates to Instructions for Continued Airworthiness in the form of maintenance procedures or specifications.

Category 5: Service Information Letter (SIL)

This category includes all information (not included in categories 1 through 4) that may be useful to the owner/operator/technician. May contain updates to Instructions for Continued Airworthiness for optional component installations, which are not covered in the Applicable Operator, Maintenance, or Overhaul Manuals.

Category 6: Special Service Instruction (SSI)

This category is used to address an issue limited to specific model and/or serial number engines. Continental Motors will distribute SSI notification directly to the affected engine's owners. SSIs will not be included in the general service document set but will be made available through Customer Service to owners of the affected engines only. An SSI may update the applicable engine's Instructions for Continued Airworthiness.



Publication Access

Continental Motors web site provides an array of benefits including access to electronic versions of Continental Motors technical publications (manuals, service documents, and parts catalogs) via the Internet. Internet Service memberships are free to Continental Motors engine owners. Our Internet Service is available to Fixed Base Operators and Repair Stations with a paid subscription fee. Contact an authorized Continental Motors distributor to discuss service subscription options and pricing or visit our web site (See “Contact Information” on page vii).

Printed Continental Motors publications may be ordered through a Continental Motors authorized distributors or via our web site. See “Contact Information” on page vii.

Publication Changes

The instructions in this manual represent the best and most complete information available at the time of publication. Product or process improvements may trigger changes to existing product design specifications or procedures contained in publications. As new technical information becomes available, Continental Motors will make the information available to the customer.

WARNING

New information may be contained in Continental Motors service documents. Service documents applicable to engines and accessories within the scope of this manual must be complied with as defined in these documents. This manual and other related publications noted herein constitute the Instructions for Continued Airworthiness (ICAs) prepared by Continental Motors and approved by the Federal Aviation Administration (FAA).

Continental Motors releases publication changes in the form of either change pages or complete publication revisions, depending upon the extent of change. Service Documents may supplement or replace technical information contained in one publication or an entire series of publications. Such Service Documents represent a change to the published ICA until the individual publications incorporate the latest technical information.

Document updates are available via the Continental Motors web site upon notification of FAA document approval. Printed publication subscribers receive printed changes and revisions as they are released.

Document revisions are released if the update changes more than 50% of the contents of a publication. Revisions replace the previous version of a publication from cover to cover. Minor corrections are released as change pages to the original publication, identified with a change number and effective change date in the page footer. Information on the page that changed from the previous edition is identified by a vertical, six-point black line (Figure B), referred to as a “change bar” in the outside margin of the page. A change page replaces only the previous edition of the affected page.



7-2.3. Flight Check and Break-In

An Operational Check and a normal preflight ground run-up in accordance with the Airplane Flight Manual or Pilot's Operating Handbook (AFM/POH) must be completed before the A&P mechanic can approve the airplane for a Flight Check. A Flight Check is required after engine installation, inspection, repairs, or adjustments. Follow these same parameters for the first 10 hours of operation to complete the recommended break-in for TCM engines.

New and rebuilt engines shipped by TCM are calibrated in a test cell prior to shipment. However, the flight check ensures the engine meets all operational parameters after installation and prior to release for normal service. Refer to "Engine Specifications and Operating Limits" for specific limits for your engine model.

CAUTION: High power ground operation resulting in cylinder and oil temperatures exceeding normal operating limits can be detrimental to cylinder walls, valves, and rings.

1. Start the engine according to the procedure in Section 7-3.2, "Engine Start."
2. Conduct a normal take-off according to instructions in Sections 7-3.3 "Engine Run-up before Takeoff", 7-3.4 "Taxi/Departure", and 7-3.5 "Take-Off."
3. Monitor the following engine operating indicators:
 - a. Engine RPM
 - b. FADEC HSA or ECP
 - c. Fuel flow
 - d. Oil pressure
 - e. Oil temperature
 - f. Cylinder Head Temperature
 - g. Turbine Inlet Temperature/Exhaust Gas Temperature
4. Reduce the engine speed to climb power in accordance with the airframe manufacturer's AFM/POH. Maintain a shallow climb attitude and the optimum airspeed and cooling airflow.
5. At cruise altitude:
 - a. Maintain level flight cruise at 75% power for the first hour of operation.
 - b. During second hour of flight, alternate power settings between 65% and 75% power.

Change Bar



Figure B. Change Page Identification

Page A of this manual contains the original publication date and an itemized list of changes issued for the technical manual (Figure C). If change pages are issued for the manual, the change will be identified, with an effective date under the heading "Effective Changes for This Manual" on the inside front cover of the manual, Page A. The list of effective pages, itemizes the pages in each section, by change number. Original pages are designated by a 0 in the List of Effective Pages "Change" column.

Suggestions and Corrections

Continental Motors solicits and encourages user comments regarding suggested changes to this manual. Direct recommended changes or questions to the attention of "Publications" at the address listed in "Contact Information" on this page or via email to CM.techpubs@continentaomotors.aero.



1 12 Oct 2007

2 1 Mar 2008

Effective Manual Changes and Change Dates

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 Publication Number: OI-24

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Figure C. List of Effective Pages

Contact Information

Notify Customer Service immediately, using our toll-free number, if you discover incorrect information which adversely affects safety.

Continental Motors is available to answer technical questions and encourages suggestions regarding products, parts, or service. If customers have an inquiry or require technical assistance, they should contact their local Continental Motors distributor or field representative. To contact our factory customer service department, refer to the contact information below:

Continental Motors, Inc.
 P. O. Box 90
 Mobile, AL 36601

Customer Service Department:
 Toll free within the Continental United States: 1-888-826-5465
 International: 1-251-438-8299

Internet: <http://continentalmotors.aero>.



PREFACE

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

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 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.-certified aircraft are specified in Federal Aviation Regulations (FAR) 43.13 and FAR 145.205. 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 91.7, FAR 121.363, and FAR 135.419.

Identification of Approved Parts

Approved serviceable replacement parts are identified as follows:

- 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.
- By an FAA Technical Standard Order (TSO) number and identification mark that indicates the part or appliance has been manufactured under FAR 37 requirements.
- 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.
- 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.
- By a certificate of airworthiness for export issued by a foreign government under the provisions of FAR 21, Subpart N.

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.

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.

Advisories

This manual utilizes three types of advisories; defined as follows:

WARNING

A warning emphasizes information which, if disregarded, could result in severe injury to personnel or equipment failure.

CAUTION: Emphasizes certain information or instructions, which if disregarded, may result in damage to the engine or accessories.

NOTE: Provides special interest information, which may facilitate performance of a procedure or operation of equipment.

Warnings and cautions precede the steps to which they apply; notes are placed in the manner which provides the greatest clarity. Warnings, cautions, and notes do not impose undue restrictions. Failure to heed advisories will likely result in the undesirable or unsafe conditions the advisory was intended to prevent. Advisories are inserted to ensure maximum safety, efficiency, and performance. Abuse, misuse, or neglect of equipment can cause eventual engine malfunction or failure.



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Section 1. Introduction and Specifications

1-1. General

This manual provides complete maintenance and overhaul instructions with illustrated parts list for D-2000 and D-3000 Series Magnetos and harnesses, manufactured by Continental Motors. D-2000 and D-3000 Series Magnetos convert mechanical energy into a sequenced series of high-voltage pulses for reciprocating engine ignition. The ignition harness conducts the high voltage pulses from the magneto to the spark plugs. Grounded coaxial braided shielding provides attenuation of radio frequency interference.

Revision service is available by subscription to Form X40000. Service Bulletins, included in the Master Service Manual Subscription or by visiting the Continental Motors web site. This manual may be inserted as Chapter 74-10 and 74-20 of applicable GAMA format publications.

Instructions in the manual 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, refer to Continental Motors Customer Service.

Maintenance instructions in this manual have been shop verified. Shop verified procedures are those by which the manufacturer has performed according to provided instructions on equipment identical in configuration to that described. Good standard shop practices and safety precautions should be observed at all times to avoid damage to equipment and/or injury to personnel.

For specific information regarding Continental Motors Ignition Harnesses, Ignition Switches, and Starting Vibrators used in conjunction with D-2000 and D-3000 Series Magnetos, consult the applicable service manual and all applicable service bulletins.

Service Bulletins issued subsequent to the date of this manual may supersede or 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.

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

Table 1-1. Abbreviations

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



1-2. Specifications

Table 1-2. Table of Leading Particulars

Subject	Data
Lubrication & Compounds	
Cam	Distributor Block Lubricant, Part No. 10-391200
Cam Follower Felt	Breaker Felt Lubricant, Part No. 10-86527
Distributor Block Bushing, Felt Washer	Distributor Block Lubricant, Part No. 10-391200
Impulse Coupling Spring	Clean Aviation Engine Oil
Magneto Shaft Taper	Anti-Seize Lubricant, Part No. 646943
Grommets, Sleeves	TFE Release Agent, Miller-Stephenson Part No. MS-122AD
Distributor Block, Buna Rubber	Distributor Block Coating, Part No. 10-391400
Testing	
Coming-in-speed	150 RPM
Spark gap setting	0.157 in. (4 mm)
Drive Speed	
D4 and D8 Magnetos:	equal to crankshaft speed
D6 Magnetos:	3/4 crankshaft speed
Tolerances	
Cam Washer Thickness	0.095±0.010 in.
Capacitor:	
10-400574 (4 Cyl.)	0.12-0.18 µfarads
10-400576 (6 Cyl.) & 10-400578	0.32-0.43 µfarads
All: Feed through resistance	.004 ohm maximum
All: Leakage	0.4 µA max. at 400VDC
Coil Resistance @ 68°F (20°C)	
10-382790-1 (4 Cyl.) Secondary Winding	13100 to 15900 ohms
10-38258801 (6 and 8 Cyl.) Secondary Winding	5900 to 7500 ohms
All: Primary Winding	< 1 ohm
Contact Point Clearance	
Left Main	0.016 ± 0.002 in.
Right Main, Retard & Tachometer Contacts	0.016 ± 0.004 in.
Contact Synchronization	within 1°
"E" Gap	8° ± 2°
Retard Angle	As marked on date plate, +2°/-0°
Pressurized Magneto Leakage	2.4 to 11.8 SCFH at 2.9 to 3.1 psig
Ground Return from capacitor case to magneto	3 m ohms, maximum
Torques	
Cam Screw ¹	21 to 25 in-lbs.
Capacitor Nuts	60-70 in-lbs.
Contact Screws, Coil Screws	20 to 25 in-lbs.
Drive Shaft Nut	180 to 300 in-lbs.
Cover Screws:	
unpressurized magnetos:	30 to 35 in-lbs.
pressurized magnetos:	40 to 45 in-lbs.
Distributor Block Screws	25 to 30 in-lbs.
Bearing Retaining Plate Screws	15 to 20 in-lbs.
Aluminum Plug, Bushing, or Orifice	60 to 80 in-lbs.
Nylon Plug, Ventilator Plug	10 to 15 in-lbs.
Switch and Retard Stud Nuts	15 to 17 in-lbs.

1. 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.

Section 2. Description and Operation

2-1. General

D-2000 and D-3000 Series Magnetos are designed to provide ignition for four, six, and eight cylinder aircraft engines. Each magneto system consists of a dual magneto and a harness assembly. These magnetos generate high voltage which is distributed through radio shielded harness leads to the spark plugs.

To obtain the retard spark necessary for starting, D-3000 Series Magneto Ignition systems employ an impulse coupling, and D-3200 Magneto Ignition Systems include an additional contact assembly used in conjunction with a starting vibrator. Figure 2-1 shows the components used in a typical D-3200 Ignition System incorporating a starting vibrator. This system consists of a dual magneto (item 1), an ignition harness (item 2), a combination ignition and starter switch (item 3), and a starting vibrator (item 4).

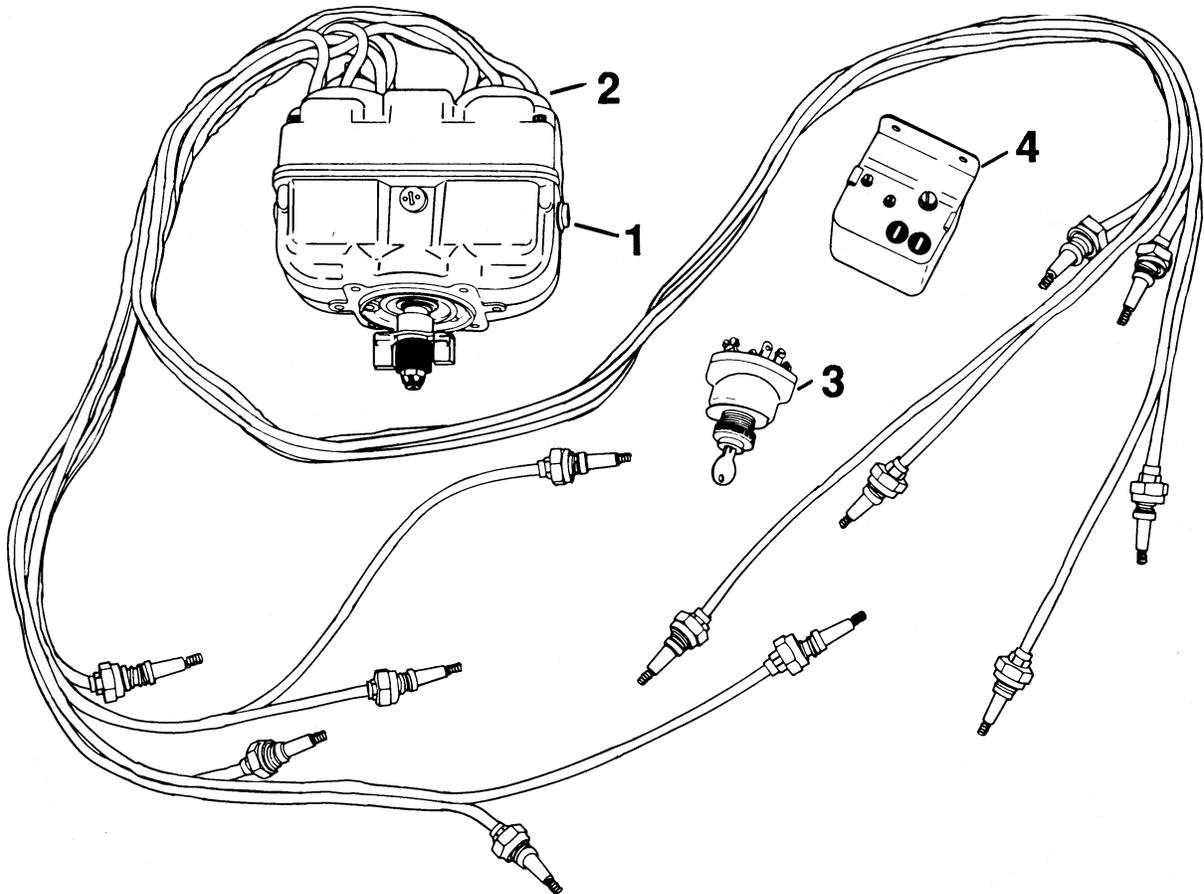


Figure 2-1. D-3200 Magneto and Associated Components



Description and Operation

Magneto model numbers contain information regarding design configuration. Magneto model numbers are defined in Figure 2-2.

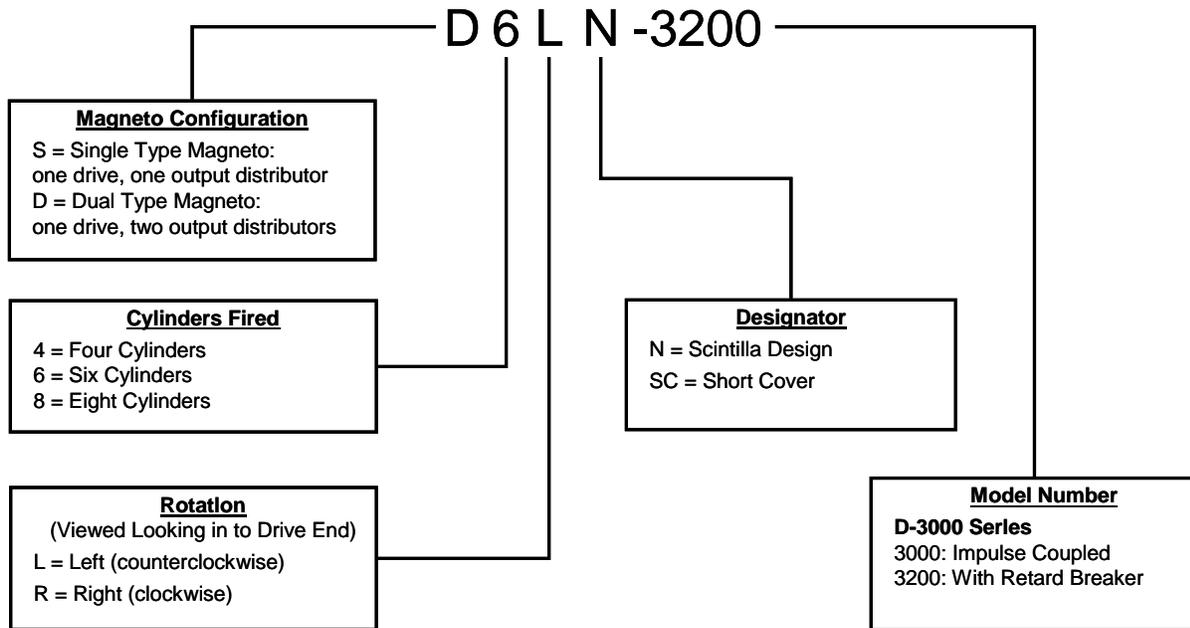


Figure 2-2. Magneto Model Number Elements

D-2000 Series Magnetos, predecessors to the D-3000 Series Magnetos, differ from their superseding part numbers in housing, coil securing, and distributor block fastening method. See Section 2-7, “D-2000 Series Magneto Difference Data” for detailed difference data.

2-2. Detailed Description

The D-2000 and D-3000 Series Magnetos feature two electrically independent ignition circuits in a single magnesium alloy housing. The single four-pole rotating magnet turns on two bearings, one roller bearing located at the contact assembly end and the other, a ball bearing, at the drive end. A two or four lobe cam is secured to the contact assembly end of the rotating magnet shaft. In a six cylinder magneto, the rotating magnet turns 3/4 times engine speed. Thus, 6 sparks are produced through 720 degrees of engine rotation. In a four or eight cylinder magneto, the rotating magnet turns at the engine speed. Therefore, four or eight sparks are produced through 720 degrees of engine rotation.

D-2021, D-2031, and D-3000 Type 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.

D-2200, D-2230 and D-3200 Type Magnetos incorporate a retard contact assembly, mechanically linked to the left main contact assembly (See Figure 2-3). This contact assembly is actuated by a cam above 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.

NOTE: Reference only; for actual engine schematic, see Airframe Service Manual.

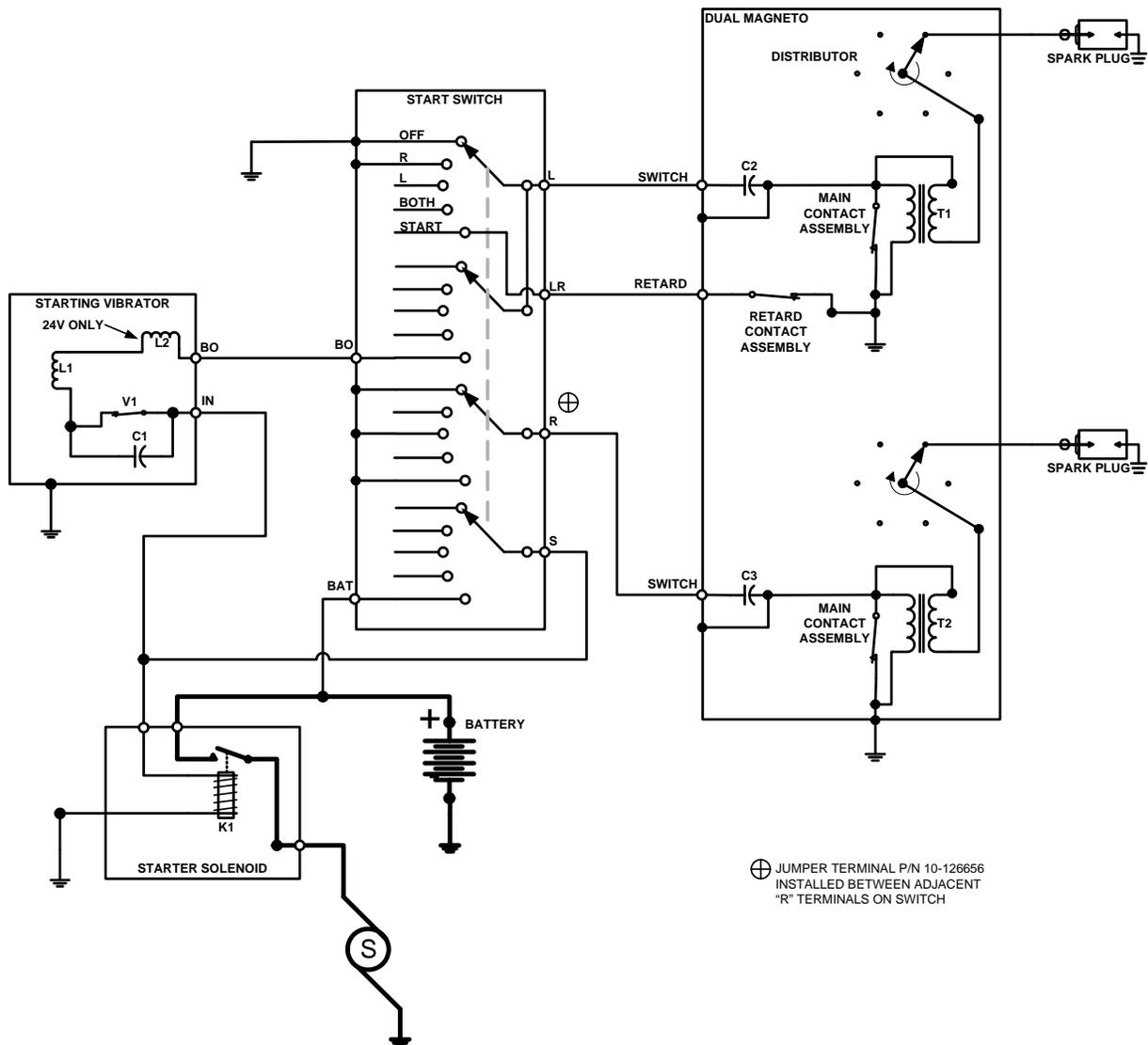


Figure 2-3. Sample Magneto Circuit with Starting Vibrator Schematic



Description and Operation

D-2000 Series and D-3000 Series Magnetos offer an optional set of tachometer contacts above the right main contact assembly. These contacts are actuated by a cam above the main contact assembly cam.

Pressurized D-2230 and D-3200 Series Magneto Systems are configured for attachment of engine induction system pressure air hoses. Increasing the pressure of the air inside the magneto above ambient pressure has the effect of increasing the insulation strength of the air per unit volume, thus improving high altitude performance.

D-3000 Gold Seal® Harnesses (also for D-2000 Series Magnetos) are assembled with 5 mm shielded ignition cable. This cable (Figure 2-6), with stranded stainless steel conductor, silicone insulation, tightly woven coaxial plated copper braid radio shield, and abrasion resistant outer jacket, is used to conduct high voltage pulses from the magneto to the spark plugs. Positive sealing individual grommets and high altitude spark plug terminals are attached to the cable ends. Harness design depends on the following factors:

- Lead length, lead routing, magneto rotation and engine firing order.
- Spark plug terminal type: 5/8-24 or 3/4-20 (Figure 2-4).
- Magneto type determines cover configuration: Impulse Coupled, Shower-of-Sparks, Tachometer.

Spare leads with spark plug ends pre-assembled are available in two lengths. Dura-Blue Harnesses may be repaired using Gold Seal Spare leads, as each Gold Seal spare lead includes inner ferrules (2-7a) for use in Dura-Blue assemblies. The part number suffix identifies the lead length, in inches. See Figure 2-4.

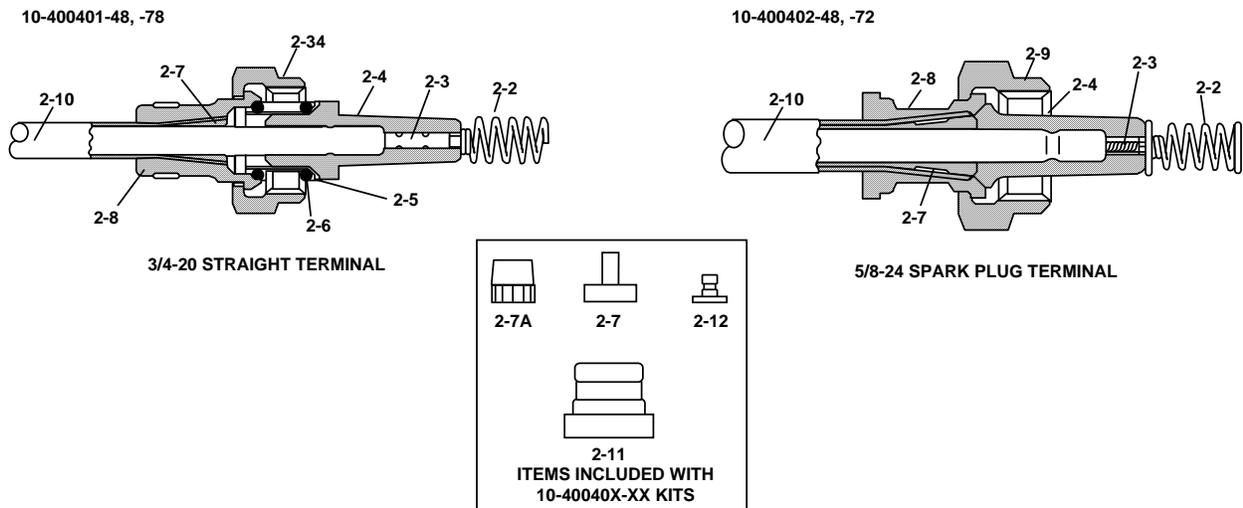


Figure 2-4. Lead Termination Detail

The Magneto Harness Cover is a machined magnesium alloy casting. The first cylinder in the engine firing order is cylinder No. 1; the corresponding No. 1 spark position on the magneto is identified by the numeral 1 in the cover casting. Depending on magneto rotation, the leads to the remaining cylinders in the firing order may be determined by the charts shown in Figure 2-5. Follow the Engine Manufacturer's instructions regarding lead routing, cylinder numbering and engine firing order.

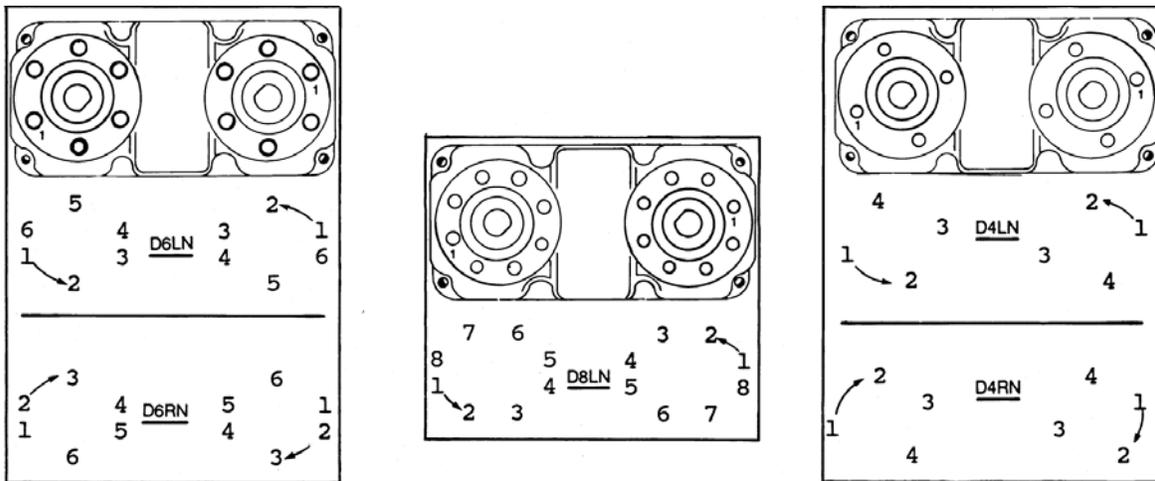


Figure 2-5. Harness Outlet Cover Configuration

High Tension cable (Figure 2-5) is available in 100 foot rolls. The cable is rated to withstand temperatures up to 400°F; flexibility is retained to -65°F.

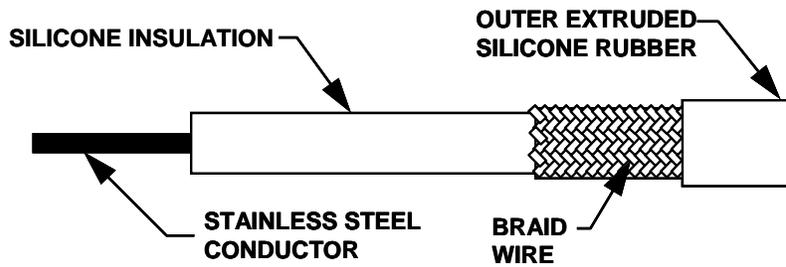


Figure 2-6. Gold Seal® Cable



2-3. Maintenance and Overhaul Periods

In addition to performing all magneto-related operational checks as specified by engine and/or airframe manufacturer, prior to each engine shut down, and prior to performing any maintenance on the engine, perform the Magneto RPM drop-off Test as detailed in the Pilot's Operating Handbook (Normally found under Preflight Engine Run-Up Procedures). Refer to "Hot Magneto Test" in Section 3-4 in the event of adverse indications.

If magneto timing is found to be outside engine manufacturer's limits for magneto-to-engine timing, check the contact assemblies (11, 12 & 13) according to the instructions in paragraph "Contact Assembly Inspection" in Section 6-2.1.

Pressurized Ignition Systems must be tested for integrity of the pressurization system at intervals not to exceed 100 hours in service in accordance with Textron Lycoming Service Instruction 1308D or later revision.

Inspect magnetos equipped with snap-ring impulse couplings (39) at the first 500 hours in service and every 500 hours thereafter according to the "Impulse Coupling Inspection" in Section 6-2.2. Inspect magnetos equipped with riveted impulse couplings (39) at the first 100 hours in service and every 100 hours thereafter according to the "Impulse Coupling Inspection" in Section 6-2.2.

Inspect all magnetos according to the "500 Hour Inspection" in Section 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 the inspections.

Ignition systems are subject to the same environmental conditions and wear as the engine. Therefore, overhaul the magnetos and replace the ignition harnesses at the same time as the engine. Engine overspeed, sudden stoppage or other unusual circumstances may require engine overhaul prior to engine manufacturer's recommendations. In such circumstances overhaul the magneto, regardless of "in service time", with particular attention focused on rotating parts, bearings and electrical components.

Inspect magnetos and harnesses for airworthiness at the expiration of four years, without regard to the accumulated operating hours since new or last overhaul.

2-4. D-2000 and D-3000 Magneto Operation

2-4.1. General Theory of Operation

The rotating magnet is of a four pole design. As the magnet is turned the polarity continually changes, thereby producing flux reversals in the magneto coil core. Four flux reversals occur during one complete revolution of the magneto.

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 cam pushes 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. The capacitor,



connected in parallel across the contacts to ground, suppresses arcing across the opening contacts by providing a low impedance path to ground for the continuing induced primary voltage. The high voltage induced in the coil secondary winding 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 D-3200 Magneto System with Starting Vibrator

A schematic diagram of the magneto with a starting vibrator is shown in Figure 2-3. The starting vibrator supplies interrupted battery current to the left magneto. This type of vibrator is often used with one of the Continental Motors combination ignition and starter switches which controls the vibrator current flowing to the retard contact assembly and main contact assembly in the Left magneto, and grounds the Right magneto during start. In Figure 2-3, all switches are shown in their normal OFF position. Figure 2-3 must only be used for following the electrical operation of the magneto circuit, and not for installation purposes.

With the combination ignition and starter switch in its START position, the Right magneto is grounded (refer to Figure 2-3). Starter solenoid relay K1 is energized, closing the contact points to allow current to flow through the starter to rotate the engine. Battery current flows through vibrator points V1, coil L1 (and L2 in 24 volt models), through the BO (Booster Output) terminal to the switch, where it is split and flows to both the main and retard contact assemblies of the Left magneto to ground. The magnetic field built up in coil L1 causes vibrator points V1 to open. Current flow ceases through coil L1 causing the magnetic field to collapse and the vibrator points to close. This allows coil L1 (and L2, where applicable) to energize and vibrator points V1 to again open. This interrupted battery current will be carried to ground through the main and retard contact assemblies so long as they remain closed.

When the engine reaches its normal advance firing position, the main contact assembly 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.

When the engine fires and begins to pick up speed, the switch is released and returns to the BOTH position, rendering the starter circuit, 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

Manufacturing numbers, commonly referred to as serial numbers, are used to identify Continental Motors magnetos. These manufacturing numbers employ a coding system illustrated in Figure 2-7, Table 2-1 and Table 2-2. The build date derived from this code, rather than the magnitude of the numbers, determines the recency of manufacture. For Service Bulletin compliance, all magnetos manufactured, rebuilt or overhauled by Continental Motors may be considered to have a “higher” serial number than magnetos manufactured or “remanufactured” by the Bendix corporation.

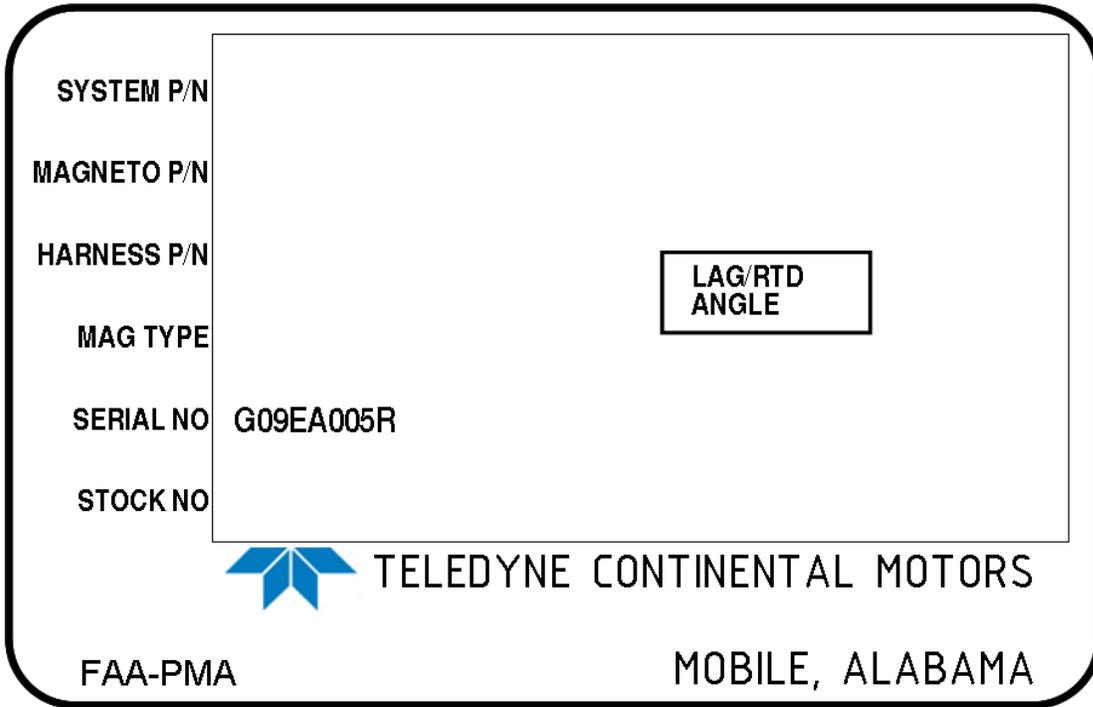


Figure 2-7. Magneto Data Plate

Table 2-1. Legacy Magneto Serial Number Code

Example: B138901GR					
B	13	89	01	G	R
↓	↓	↓	↓	↓	↓
Month Manufactured A: January B: February C: March D: April E: May F: June G: July H: August I: September J: October K: November L: December	Day of Month Manufactured	Year Manufactured 89= 1989	Sequence number for unit. First unit produced in month. Begins with 01 at the start of each month.	Product ID D: S-20 E: S-200 F: S-1200 G: D-3000 H: Ignition Switches J: Ignition Vibrators K: Ignition Harness	Condition Blank= New R= Rebuilt (No letter for new)



Table 2-2. Current Magneto Serial Number Code (since Jan 2001)

Example: G09EA005R				
G	09	E	A005	R
↓	↓	↓	↓	↓
Component ID D: S-20 E: S-200 F: S-1200 G: D-3000 H: Ignition Switches J: Ignition Vibrators K: Ignition Harness	Year Manufactured 09= 2009	Month Manufactured A: January B: February C: March D: April E: May F: June G: July H: August I: September J: October K: November L: December	Unit Number Fifth unit produced in month. Number resets to A001 each month. After unit 999, alpha character increments and numbers restart.	Condition Blank= New R= Rebuilt (No letter for new)

2-6. Part Numbers

Since May 28, 1999, Continental Motors factory rebuilt magnetos and rebuilt D-3000 Ignition Systems (harness and rebuilt magneto supplied assembled) have been marked with part numbers beginning with BL- (“Blue Label”) to distinguish them from new 10- prefix assemblies. For example, the data plate for a factory rebuilt magneto formerly marked “10-349350-4” is identified as “BL-349350-4.” Data plates for rebuilt units are blue in color and include the word “REBUILT.”

Magnetos and Ignition systems marked with a BL- prefix part number are FAA/PMA for all applications approved for the corresponding 10- prefix units. Units marked with a BL- prefix are fully interchangeable with the corresponding units marked with a 10- prefix. To maintain BL- prefix magnetos and ignition systems, use the corresponding 10- prefix service and parts list data. When ordering rebuilt units, specify BL- prefix part numbers. 10- prefix applies to new units only.



2-7. D-2000 Series Magneto Difference Data

The D-2000 Series Magneto was the predecessor to the D-3000 Series units. Most parts are interchangeable between the two model series. In terms of fit and function, D-2000 and D-3000 units are fully interchangeable between the superseding and superseded part numbers. D-2000 Series to D-3000 Series Model conversion is listed in Table 2-3:

Table 2-3. D-2000 Supersedure

Legacy D-2000 Magneto	Replacement with:
D4LN-2021	D4LN-3000
D4RN-2021	D4RN-3000
D4LN-2200	D4LN-3200
D6LN-2031	D6LN-3000
D6LN-2230	D6LN-3200
D6RN-2230	D6RN-3200
D8LN-2200	D8LN-3200

Part number supersedure: A detailed list of superseded D-2000 Series System part numbers and D-2000 Series Magneto part numbers is provided in the “Superseded, Discontinued & Interchangeable Items” found in Table 11-2.

Procedures for D-3000 Series magnetos and systems may be applied to superseded D-2000 magnetos and systems except in regard to (1) housings; (2) coil securing hardware; and (3) distributor block securing. This information is included in the appropriate section of the main text.

2-8. Storage

Magnetos may be stored up to five years following overhaul in an unsealed plastic bag. Place the packaged magneto in climate controlled, indoor storage between 50-80°F (10- 26°C). Inspect the magneto upon removal from storage for evidence of corrosion. If no exposure is indicated, continue with normal acceptance inspection and installation.



Section 3. Testing & Troubleshooting

3-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

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

WARNING

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

2. Perform a Magneto RPM drop-off test according to the instructions in the applicable Airplane Flight Manual (AFM)/Pilot's Operating Handbook (POH) to assess the ignition system operation. A drop in RPM is expected when one magneto in a redundant ignition system is shut off. Absence of an RPM drop may indicate:
 - The magneto timing has been advanced beyond setting specified, or
 - A Magneto primary lead is open (Hot Magneto), or
 - The ignition switch is inoperative, or
 - The grounding circuit of the feed-through capacitor is open, or a combination of these factors.
3. An engine which does not exhibit 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 AFM/POH and the Engine Maintenance and/or Overhaul Manual.
4. As a precautionary measure, test the Magneto grounding circuit prior to shutting down the engine using the following procedure:
 - a. With the engine at normal idle, rotate the switch key or lever momentarily to the off position, 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, determine and correct the cause prior to continued operation of the engine and before the next flight.
 - d. Return the switch key or lever to the “BOTH” position and shut down the engine using normal procedures.
5. If problems persist, replace the magneto with a known serviceable unit and send the suspect unit to the overhaul shop for test and repair.



6. If a replacement unit is not readily available, inspect the following to isolate the cause of the malfunction:
 - a. Remove harness securing screws and separate the cover from the magneto. Inspect for presence of moisture and foreign matter on rubber grommets and high tension outlet side of the distributor block. Check for broken or burned outlet towers. If either is present, remove magneto and replace as necessary.
 - b. Check block tower springs for proper height. End of spring shall not be more than 0.422 inch from top of tower. Replace burned or otherwise short springs according to the instructions in Section 9-2.4. Check for broken leads or damaged lead insulation. If either is present, replace magneto.
 - c. Inspect contact assemblies according to the “Contact Assembly Inspection” in Section 6-2.1.

3-2. Post Overhaul Testing

1. Mount the magneto on a 11-10500 test stand. Connect the high voltage outlet to spark gaps on test stand using a standard harness assembly. Set spark gaps at 0.157 in. (4 mm) as shown in Figure 3-1.

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

Do not operate magneto on test stand with oil seal installed for longer than five minutes as hidden damage may result.

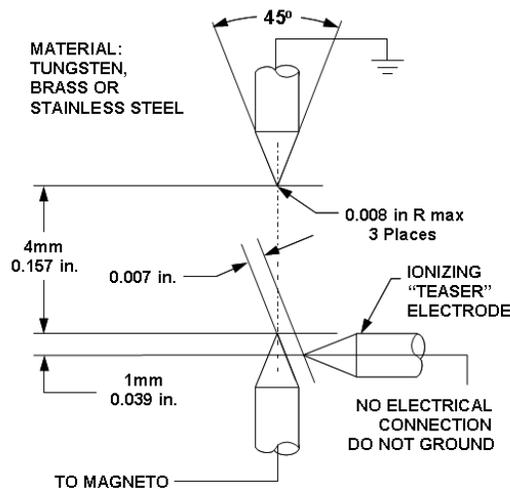


Figure 3-1. 5mm Spark Gap Setting

2. Install magneto grounding leads, fabricated using 10-382698 ground terminal lead kits, to capacitors. When applicable, install a retard lead (made with 10-157208 kit) and/or tachometer lead (made with 10-157209 kit).
3. 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 greater than 150 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, try a new coil or capacitor, recharge magnet, recheck distributor gear, recheck contact assembly adjustment and repeat test.

4. 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. Ensure the magneto ceases to fire when grounding leads are connected to ground.
5. Test magnetos equipped with impulse couplings. Couplings must engage fully at speeds up to 150 RPM minimum. Four cylinder impulse couplings must engage fully at speeds up to 100 RPM minimum. Six cylinder impulse couplings must engage fully at speeds up to 75 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.
6. After testing, check rotating magnet for 0.002 to 0.005 in. end (axial) play and no perceptible radial play. If end play or radial play is out of limits, replace parts as necessary and re-test.
7. For pressurized ignition systems, pressurized magnetos and pressurized harnesses only:
 - a. If ignition system is already installed on engine, test pressurization system according to Textron Lycoming Service Instruction No. 1308D or later revision.

NOTE: Magneto and harness must be fully assembled together as an Ignition System according to instruction in Section 9-4. If magneto or harness is to be tested separately, a slave harness or magneto, respectively, must be assembled to the unit under test to complete the pressure vessel. Cap retard bushing, or assemble slave pressurized retard terminal made with kit P/N 10-382813.

- b. For ignition systems, spare magnetos and spare harnesses not installed on an engine, perform the following air leakage rate test in the shop prior to installation.
 - (1). Install an MS20822-4 elbow in the bushing (Figure 1) (61). Install a cap on the open end of the tee. Attach 11-10097 tube assembly to elbow.
 - (2). Place air valve lever in the open (up) position. Turn pressure regulator knob fully counterclockwise for minimum pressure.
 - (3). Connect air source (100 psi maximum) to air input fitting. Adjust the pressure regulator for pressure at the gauge (G1) of 10 psi.
 - (4). Install tube assembly in the regulated output fitting of tester. Pressure on the gauge (G1) will drop momentarily when the connection is made, then return to 10 psi setting. If necessary, adjust the pressure regulator to maintain 10 psi reading on gage.

- (5). Snap air valve lever to the closed (down) position and measure the time required for pressure to drop to 1 psi. Time interval must be between 9 and 45 seconds.
- (6). If the leak-down time is shorter than 9 seconds, verify all connections are tight. Use soapy water to detect excessive leakage source. Tighten or replace parts as necessary and retest.
- (7). If the leak-down time is longer than 45 seconds, the hole in the orifice fitting (65) is restricted. Remove the orifice, clean the hole of obstructing material, reinstall the orifice, and retest.

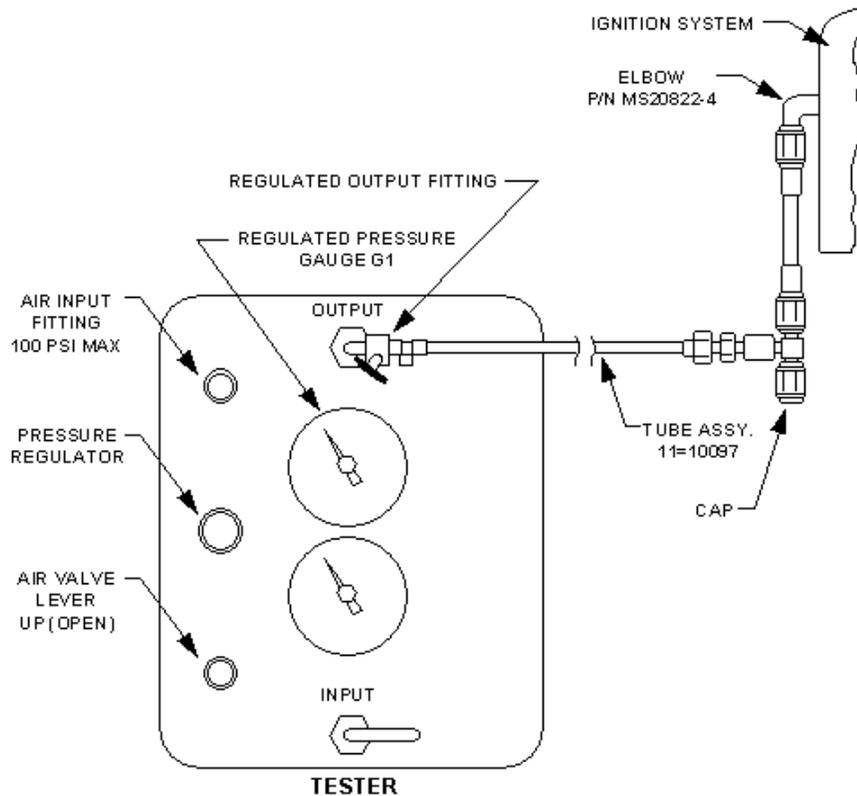


Figure 3-2. Pressurized Magneto Test Stand-Block Diagram

3-3. Harness Testing

1. Using continuity circuit of 11-8950-2 lead tester, test for continuity between each spark plug terminal spring (Figure 2) (2) and its respective eyelet (12). Proper assembly may be confirmed by comparing engine manufacturer's recommendations for lead routing and firing order with spark plug numbers marked on identifier tags on each lead and arrangement of leads in the cover (16). Continuity must be observed between each outer ferrule (8 or 13) and elbow (Figure 2) (15) to the cover (16). Check for continuity between the threaded portion of each capacitor (Figure 1) (6) and the cover (Figure 2) (16).



2. Using 11-8950-2 high tension lead tester, check harness leads for high voltage breakdown as follows:
 - a. Connect red high voltage test lead to spark plug terminal spring (Figure 2) (2). Connect black ground lead of tester to the ferrule (8), elbow (15), or cover (16).
 - b. Depress PUSH-TO-TEST switch.
 - c. Verify the INDICATOR lamp flashes and GAP fires simultaneously as long as the switch is depressed. If the INDICATOR lamp fires and GAP fails to fire, the lead under test is malfunctioning and must be replaced.

3-4. Hot Magneto Test

1. In addition to performing all magneto-related operational checks as specified by engine and/or airframe manufacturers, prior to each engine shut down, and prior to performing any maintenance on the engine, perform the Magneto RPM drop-off Test according to the AFM/POH (normally found under Preflight Engine Run-Up Procedures).
2. If no RPM drop is noted when a magneto is individually selected, either the magneto selected is timed far in advance of the other magneto, or the primary circuit between the alternate magneto and airframe ground is mis-wired or faulty. Either condition must be remedied before further flight and before moving the propeller by hand.
3. Shut down the engine according to the instructions in the AFM/POH.

3-5. Troubleshooting

WARNING

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

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

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

NOTE: Do not use an ohmmeter or continuity tester to troubleshoot the magneto grounding circuit with the magneto connected; false continuity to ground will be read through the points or coil primary windings. Instead, position the magneto shaft so that the points are open, and use a magneto timing light to troubleshoot the magneto grounding circuit.



Table 3-1. Troubleshooting Chart

Symptom	Probable Cause	Test
Hard Starting	Worn or fouled spark plugs; arcing ignition lead	Inspect and replace or repair as necessary
	Impulse Coupling not operating properly	Remove and check for binding, worn or broken impulse coupling parts. Ensure D6LN-2031 model magnetos incorporate latest "Heavy Spring" Impulse Coupling Assembly.
	Impulse Coupling is magnetized	Remove and demagnetize or replace impulse coupling. Inspect engine for magnetized components and demagnetize all such components
	Low voltage at vibrator input	Measure voltage between vibrator terminal marked "in" and the ground terminal while operating starter. Must be at least 8 volts on 12 volt systems, or 13 volts on 24 volt systems.
	Inoperative vibrator	If voltage is within specification, listen for buzzing of vibrator during starting. If no buzzing is heard, either the vibrator is inoperative or the circuit from the "Output" terminal on the vibrator to the switch and magneto points is open. Check both "Switch" and "Retard" circuits. Check for continuity from the BO terminal, through the switch and through both the main and retard magneto points.
	Retard contact assembly in retard (dual contact) magneto not operating electrically. Engine may kick back during cranking due to advance timing of ignition	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.
	Vibrator-magneto combination not "putting out" electrically	Turn engine in the normal 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.
	Magneto improperly timed to engine	Check magneto-to-engine timing according to the Engine Manufacturer's instructions. Inspect contact assemblies according to instructions in Section 6-2.1 and adjust and replace parts as necessary.
	Main contact assembly out of adjustment (internal timing off).	Check magneto internal timing according to instructions in Section 9-2.8.
Retard points opening too late.	Check timing of retard points according to instructions in Section 9-2.8.	



Table 3-1. Troubleshooting Chart

Symptom	Probable Cause	Test
Engine Roughness	Worn or fouled spark plugs	Install new spark plugs.
	Worn ignition leads.	Check plug leads for continuity and breakdown.
	Worn or fouled magneto contact assemblies.	Check magneto contact assemblies for burning, melting or contamination according to instructions in Section 6-2.1.
	Carbon tracked distributor block.	Replace distributor block
Magneto Drop-off Check Out of Limits	Magneto to engine timing incorrect.	Check magneto-to-engine timing according to the Engine Manufacturer's instructions. Inspect contact assemblies according to instructions in Section 6-2.1 and adjust and replace parts as necessary.
	Contact assemblies not opening properly.	Inspect contact assemblies for proper opening according to instructions in Section 9-2.8.
	Main contact assembly out of adjustment (internal timing off).	Check magneto internal timing according to instructions in according to instructions in Section 9-2.8.
	Faulty plugs or leads.	Check plugs and leads.
	No drop-off noted -- open switch connection.	Check capacitor according to instructions in Section 7-2.5.
	Carbon tracked distributor block.	Replace distributor block
Radio Noise	Faulty spark plugs.	Replace spark plugs
	Frayed shielding at spark plug terminal, magneto cover, or intermediate point on harness lead.	Replace ignition lead
	Inadequate shielding ground at spark plug terminal or magneto cover.	Remove and replace inner ferrule according to instructions in Section 9-3.



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Section 4. Disassembly

4-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Complete disassembly of magneto is not necessary in all instances. Disassemble the magneto only to the extent required for maintenance procedures involved. Refer to Table 10-1 for a list of tools and materials required for magneto disassembly. Capacitors (Figure 1) (6) are part of the magneto assembly and are essential to magneto operation. When replacing the magneto, replace the capacitors as well.

4-2. Detailed Disassembly Procedures

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: Lock washers (2 & 33), Screws (9, 14, 18, 46 & 54), Retaining ring (22 & 43), Washers (3 & 47), Bearings (30 & 50), felt strip (28), identification plate (65), Bearing retainer (51), Springs (56), Pin (7), Spring (41) and Gasket (8). The following parts may be re-used after maintenance inspection according to Section 6-2.1 and Section 6-2.3, but must be replaced at overhaul: Main, Retard & Tachometer assemblies (11,12 & 13), felt washer (26), carbon brush (24), and capacitors (6).

4-2.1. Initial Inspection Disassembly

1. Remove the cover retention screws (Figure 1) (1) and washers (2 or 3) from cover (16). Carefully remove the cover (16) away from housing (66). Remove and discard the gasket (8), if installed. Pry capacitor (6) lead terminals from the contact assembly terminals (11, 12 & 13).
2. Remove the plug (59, 60 & 63), bushing (61), and orifice (62) from the housing (66). Remove screws (18). Disconnect the coil (58) primary leads from contacts (11, 12 & 13). Loosen the cam securing screw (14) and turn screw halfway out. Place the ends of two screwdrivers between the bottom of the main contact cam (16) and the surface of the distributor block. Apply even pressure to both screwdrivers to pry the main contact cam (16) loose from the taper on the rotating magnet shaft (48). Remove the cam securing screw (14), washer (15), retard cam (17) and main contact cam (16); discard the screw (14). Remove the distributor block (27) from the housing (66).

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

3. Using No. 2 retaining ring pliers, remove retaining rings (22) securing the gear (21) to the distributor block (27), and discard the ring (22). Remove washer (23) and slide gear (21) from the distributor block (27). Remove washers (25 & 33). Using a pointed tool, remove felt washer (26) and felt strips (28) from the distributor block (27). Remove the carbon brushes (24) from distributor gear (21).



4-2.2. General Overhaul Disassembly

1. Remove contact assemblies (Figure 1) (11, 12 & 13) from the distributor block by removing screws (9) and washers (10); discard the contact assemblies (11, 12 & 13) and screws (9).

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

2. Loosen and remove the nuts (4), lock washers (5) and capacitors (6) from the cover (Figure 2) (16).
3. Remove the two tapered fishpaper strips (Figure 1) (57) which retain the coil leads against the magneto housing (66). For D-3000 Series Magnetos, remove and discard the four coil retaining screws (54). For D-2000 Series Magnetos, remove and discard the four coil retaining screws (54a), washers (54b), and nuts (54c). Remove the plates (55). Position the rotating magnet shaft (48) with timing mark "K" centered in the timing window. Turn the housing (66) over and lightly tap the mating surface of the housing on the work stand. The coil (58) and springs (56) will drop from the housing. Repeat to remove the other coil and springs. Discard the springs (56).

4-2.3. Drive Plate and Front End Hardware Disassembly

1. Remove the cotter pin (Figure 1) (7) from the magnet shaft.
2. While holding the drive member with a crescent wrench, remove the nut (32). Lift off the lock washer (33) and bushing (34). Protect the rotating magnet shaft threads by loosely threading the nut (32) on the shaft far enough to cover the cotter pin hole and all end threads.

CAUTION: Do not strike puller with hammer. If puller is struck with hammer, magneto ball bearings MUST be replaced. If necessary, apply soldering tip to drive plate (37 & 38). Refer to Section 4-2.4, step 6.

3. Remove the drive plate using a CG240 puller.
4. Remove Woodruff key(s) (35) as necessary.

4-2.4. Impulse Coupling Disassembly

WARNING

Use of makeshift tools or tools and procedures other than those specified herein for impulse coupling removal may damage the magneto or magneto components.

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

1. Remove the cotter pin (Figure 1) (7) from the rotor shaft. While holding the impulse coupling body (40) drive dogs with a crescent wrench, remove the nut (32). Lift off the lock washer (33) or bushing (34); discard the lock washer.

2. Using heavy gloves or a shop towel, grasp coupling body (9) firmly to prevent the internal spring from unwinding suddenly. Pull outward on the impulse coupling body only enough to release it from the cam assembly (11). Keep the impulse coupling body close against cam and allow the impulse coupling body to turn as the spring (10) unwinds. After one or two turns, spring coils will wedge against projections on body, restraining spring from further unwinding.
3. Look through the hole in the impulse coupling body and note the location of the inner eye of spring where it engages with the mating recess (Figure 4-1) in the cam hub. Insert a screwdriver under the spring end and pry the spring eye out of the recess. Remove the impulse coupling body and spring together. Uncoil the spring from the body and pry the spring eye from the impulse coupling body recess to disengage spring; remove and discard the spring (Figure 1) (10).

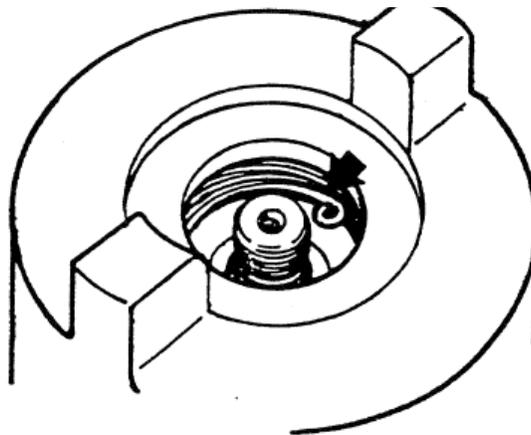


Figure 4-1. Spring Engaged with Cam

4. Assemble nut (Figure 1) (2) to support cotter pin holes in end of shaft. Engage puller over shaft and cam assembly with jaws of puller hooked under the cam assembly as shown in Figure 4-2.

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

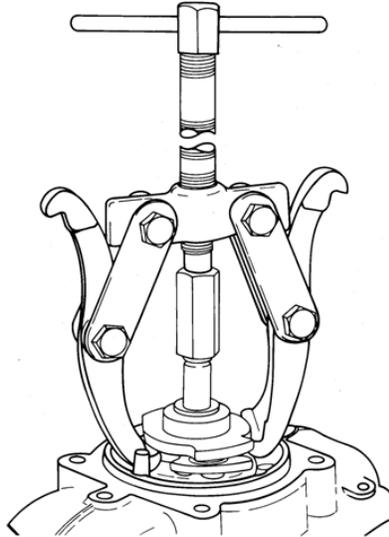


Figure 4-2. Coupling Cam Removal

5. Tighten puller handle to remove the impulse coupling from shaft. If cam assembly (11) does not release with maximum hand torque at puller handle, apply penetrating thread release compound between the cam assembly (11) and the shaft. While the puller is still fully tightened, hold tip of hot heavy-duty soldering iron in contact with the cam assembly (Figure 4-3) hub. Wetting the tip of the soldering iron at the point of contact with the cam hub will assist in heat transfer to the parts. Retighten puller after about a minute of heat application.

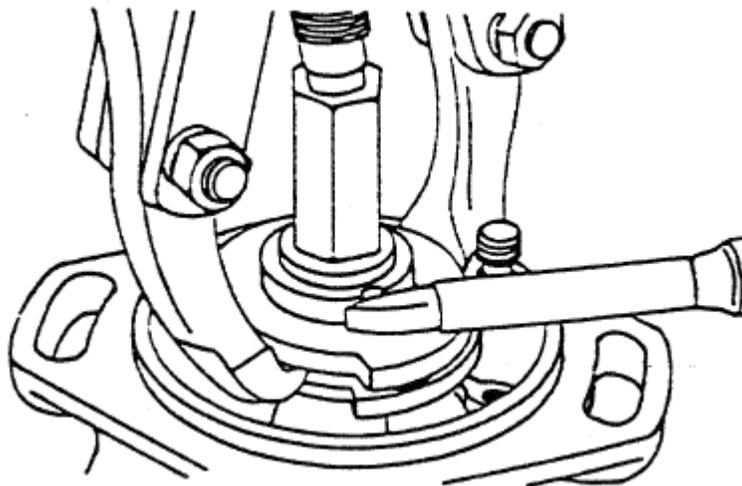


Figure 4-3. Apply Heat to Release Coupling

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

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

6. Remove puller. Holding the toe of the flyweight inward, lift the cam from rotating magnet shaft. See Figure 6-3 for flyweight terminology.
7. Remove the woodruff key(s) (Figure 1) (53) from the rotating magnet shaft and discard the woodruff key.

4-2.5. Rotating Magnet Disassembly

1. Unseat retaining ring (Figure 1) (43) using No. 2 pliers. Remove and discard the ring (43). Remove flat washer (44) and bowed washer (45). Using two offset screwdrivers or similar small prying tools, pry the oil slinger (49) evenly off the rotating magnet (48).
2. Remove and discard the four front bearing retainer securing screws (46) and four sealing washers (47). Loosely install the nut (32) on the rotating magnet shaft to protect the threads. Using arbor press, press the rotating magnet (48), front bearing (50), and bearing retainer (51) from housing (66), ensuring housing has adequate support and shaft is not damaged when it falls free.

4-2.6. Bearing Removal

1. Fabricate two support bars and a support plate similar to the ones shown in Figure 10-6 and Figure 4-4, respectively. Position the rotating magnet assembly on the fabricated support bars and support plate as illustrated in Figure 4-4. Loosely install the nut (Figure 1) (32) on the rotating magnet shaft to protect the threads. Press the rotating magnet shaft (48) out of the front bearing (50) and bearing retainer (51). Discard bearing (50) and bearing retainer (51).

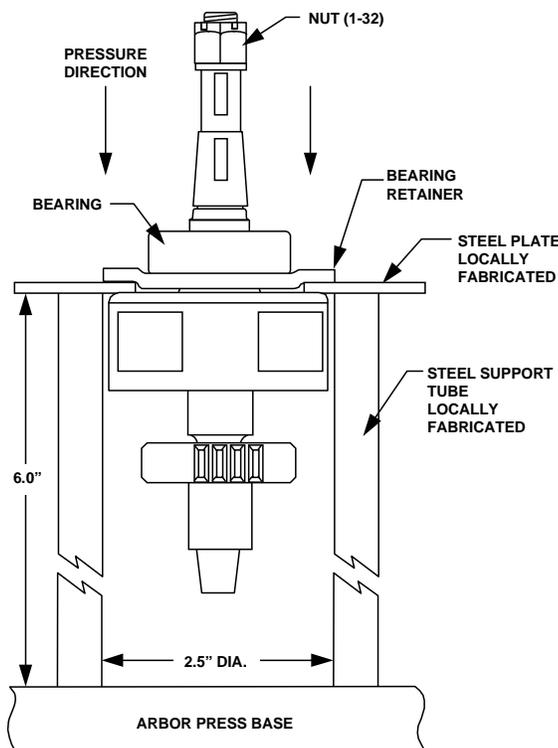


Figure 4-4. Rotor on Support Bars for Bearing Removal



Disassembly

2. Position the distributor block (27), distributor well side down, on the hollow end of the 11-9999 bearing pressing support (Figure 10-5) so the block insert rests on the support as illustrated in Figure 4-5. Using the 11-9998 bearing pressing tool (Figure 10-4), press the bearing (Figure 1) (30) from the distributor block (27) and discard the bearing (30).

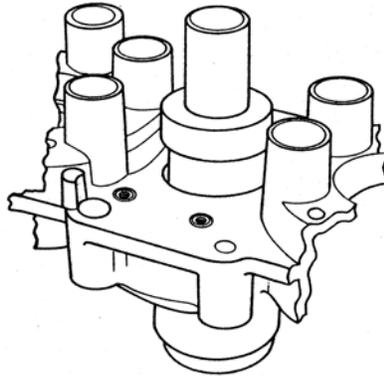


Figure 4-5. Bearing Pressing Tool in Position

4-2.7. Spur Gear and Bearing Bushing Removal

NOTE: Remove the small gear (52) and rear bearing bushing (53) only if replacement is indicated by visual and dimensional inspection in Section 7-2.9. These parts become sized to the rotating magnet shaft (48) during assembly and must not be reused once they have been removed.

1. Fabricate a set of support bars and plate matching the dimensions in Figure 10-6 and Figure 10-7. Thread a scrap screw into the cam securing hole in the rotating magnet shaft (Figure 1) (48) to protect the shaft taper during arbor press operation.
2. Place a protective pad on arbor press base. In arbor press, set up support bars, brass drift and support tube with rotating magnet shaft (48) as shown in Figure 4-6. Press gear (Figure 1) (52) and bushing (53) off of the rotating magnet (48). Discard the gear (52) and bushing (53).

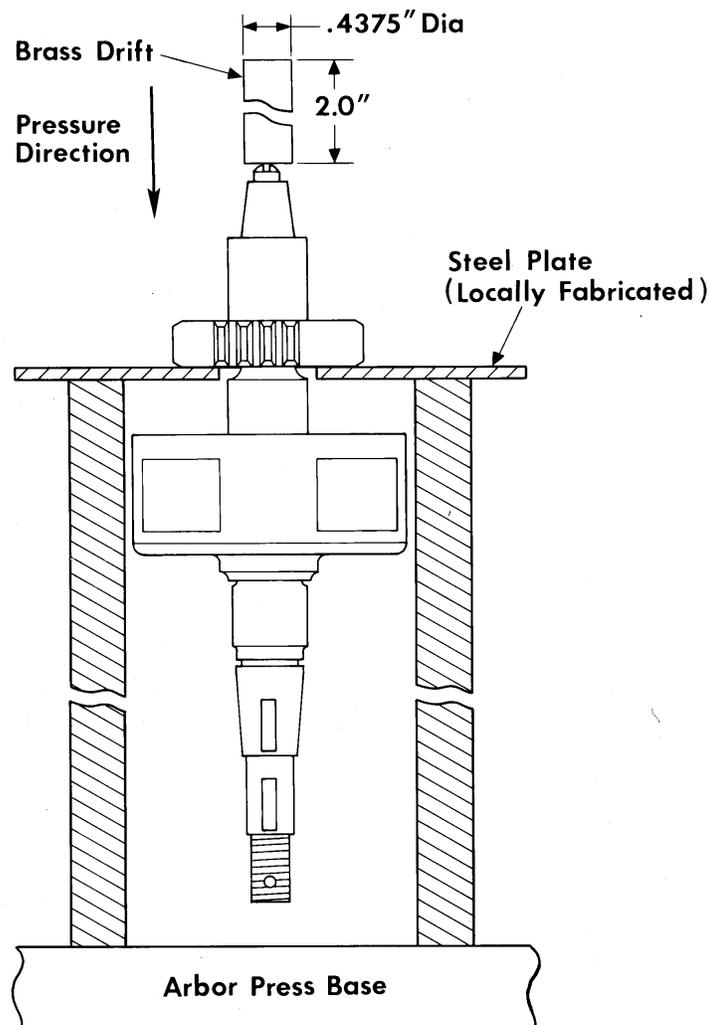


Figure 4-6. Rotor on Support Bars for Small Gear and Bushing Removal

4-3. Harness Disassembly

1. Remove the inner ferrules (Figure 2)(7, 7a or 14) from the outer ferrules (8 or 13) or cover (16) using 0.25 inch drift and arbor press. Discard all used inner ferrules (7, 7a or 14).
2. All other harness hardware may be disassembled using standard shop practices. Discard eyelets (12) and terminals (3) following disassembly.



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Section 5. Cleaning

5-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Using a clean, dry, lint-free cloth, wipe accessible areas of the housing (66), cover (16) and other external surfaces free of grease, oil film or other contaminants.

CAUTION: Magneto (66) housing and harness cover (16) are made of magnesium alloy. Use only fresh, clean nylon scouring pads to brighten areas where oxidation may be present.

5-2. Detailed Magneto Cleaning Procedures

1. Clean breaker points (Figure 1) (11, 12 & 13) using any hard finished paper (i.e., a typical business card), close contacts on cleaning paper, then open breakers and remove paper. Do not drag paper through closed contacts; do not use emery cloth.

CAUTION: Do not immerse cams (16 & 17) or distributor block (27) in solvent. Solvents will damage these items.

WARNING

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

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

2. Clean the remaining parts of the magneto except capacitor (6), distributor block (27), cams (16 & 17), and coils (58) with isopropyl alcohol and dry with compressed air. Blow out holes in ventilator plug (59) and orifice (62) with compressed air; ensuring holes are clear of any blockage.
3. Clean the capacitor (6), breaker cams (16 & 17) and coils (58) with a clean, dry, lint-free cloth.
4. Install 10-70506-10S protector caps to cover both ends of the distributor block bronze bushing to prevent contamination of the bearing during the second stage of the cleaning operation.
5. Clean distributor block (27) with a clean dry lint free cloth, carefully wipe the internal and external surfaces of the distributor block clean and free of all contaminants. If the dry, lint free cloth is insufficient, moisten the cloth with isopropyl alcohol and wipe the accessible surfaces of the distributor block free of contaminants. Do not allow alcohol to contact the brass bushing or roller bearing (30).



6. Hold the distributor block (27) with the outlet towers in a vertical plane. Using a 1/2 inch bristle brush dipped in isopropyl alcohol, clean in and around the block outlet towers and the distributor block electrodes, allowing the cleaning fluid to flush out any remaining contaminants from inside the distributor block.
7. Use dry, oil free compressed air to dry the distributor block and remove the protective caps from the bronze bushing.
8. Treat the distributor block according to the instructions in Section 7-2.4.

5-3. Ignition Harness Cleaning

WARNING

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

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

Use of chlorinated solvents (Ex: "Tuner Cleaner") for cleaning any portion of the harness may result in a chemical reaction which will dissolve the insulating sleeves (4), grommets (11), or silicone portion of the cable (10).

1. Wipe the insulating sleeves (4) and springs (2) with a clean lint-free cloth moistened with isopropyl alcohol to remove dust, dirt and debris.

CAUTION: Do not immerse the harness in cleaning solution.

2. Wipe the exterior of the harness with a clean lint-free cloth moistened with isopropyl alcohol to remove dust, dirt and debris.

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

3. Dry the ignition harness parts with compressed air.



Section 6. Periodic Maintenance

6-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

Refer to Table 10-1 for a list of special tools and materials required during “Periodic Maintenance.”

1. Use a 4X-5X magnifying glass for all visual inspections.
2. 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: lock washers (Figure 1) (2, 33), screws (9, 14, 18, 46, 54), retaining ring (22, 43), washers (3, 47), bearings (30, 50), felt strip (28), identification plate (65), bearing retainer (51), springs (56), pin (7), spring (41) and gasket (8).

The following parts may be re-used after maintenance inspections according to instructions in Section 6-2.1 and Section 6-2.2, but must be replaced during Magneto Overhaul: Main and retard contact assemblies (11, 12, 13), felt washer (26), carbon brushes (24), and capacitors (6).

3. Periodic Maintenance Intervals
 - a. At each magneto inspection or maintenance, inspect the ignition harness components, particularly the terminal sleeves (Figure 2) (4), grommets (11), and springs (2) for tears, cracks, contamination, arcing, distortion or chafing. Replace ignition harness components exhibiting these conditions.
 - b. Inspect the integrity of the pressurization system any time the Ignition System, Magneto, or Harness is removed or replaced, or at intervals not to exceed 100 hours in service according to Textron Lycoming Service Instruction 1308D or later revision.
 - c. Perform the procedure outlined in Section 6-2.1 any time magneto-to-engine timing is found to be outside the engine manufacturer's limits.
 - d. Follow the instructions in Section 6-2.2 at the first 500 hours in service and every 500 hours thereafter for magnetos with impulse couplings (Figure 1) (8) installed or at the first 100 hours in service and every 100 hours thereafter for magnetos with riveted impulse couplings installed.
 - e. Complete the inspection items in Section 6-2.3 for all magnetos at the first 500 hours in service and every 500 hours thereafter.
 - f. Make appropriate log book entries signifying compliance with Section 6-2.1, Section 6-2.2 or Section 6-2.3, referencing the magneto serial numbers on which the inspections were conducted.



6-2. Detailed Maintenance Procedures

6-2.1. Contact Assembly Inspection

If magneto timing is not within the engine manufacturer's specified magneto-to-engine timing limits, inspect contact assemblies:

1. Remove cover (Figure 2) (16) from housing (Figure 2) (66) according to instructions in Section 4-2.1.
2. Turn magneto drive shaft until the cam follower rests on a high lobe of the cam, holding the contact points in their open position. Use a fiber or plastic rod with a screwdriver-shaped end, prod contact points as indicated in Figure 6-1. If looseness is noted, replace contact assembly.

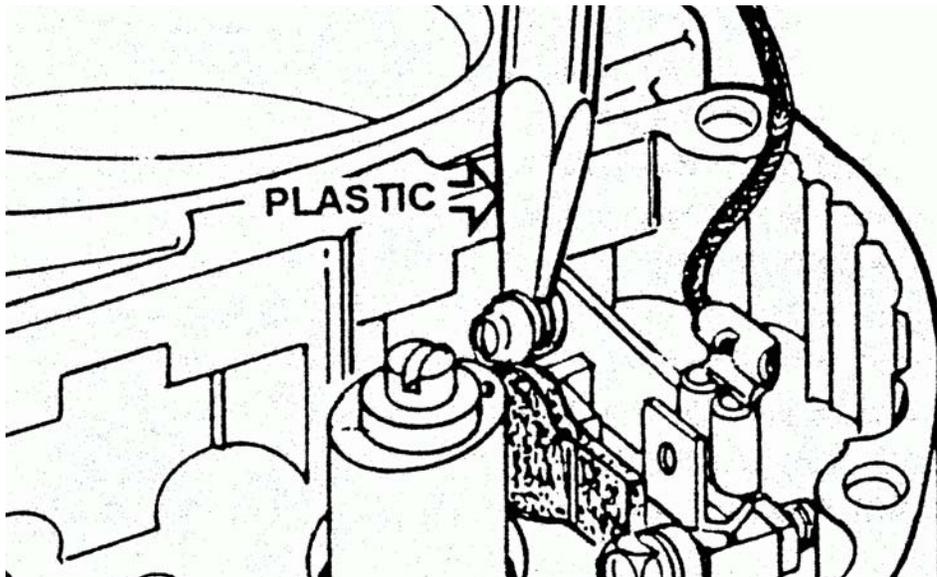


Figure 6-1. Check Contact Point Security

NOTE: Do not attempt to burnish or “dress” contact points. Do not clean contact points with emery cloth. Should contact assembly have bad points, replace the contact assembly.

“SERVICEABLE” CONTACT POINTS ARE SMOOTH AND FLAT WITH A DULL GRAY “SANDBLASTED” APPEARANCE.

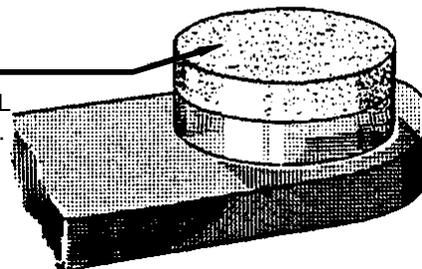


Figure 6-2. Normal Contact Point

3. Examine contact points for wear or burning. Replace contact assemblies (Figure 2) (11, 12 & 13) with deeply pitted or burned contact points. Figure 6-2 shows how the



average contact point will look when surfaces are separated for inspection. Desired contact surfaces have a dull gray, sandblasted (almost rough) or frosted appearance, over the contact surface, indicating the 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.

4. Inspect nylon cam follower where it bears against the breaker cam and where it bears against the point spring. Each end is identical when the follower is new. Gradual flattening of the radius against the cam is a normal wear condition. Discoloration, scoring, and smearing of the nylon against the cam is cause for rejection of the contact assembly, and calls for examination of the other contact assembly for similar damage, as well as examination of the cam and needle bearing. Replace the cam if it appears damaged or contaminated. Replace the bearing if it exhibits signs of overheating, such as discoloration or lack of lubrication.

If the end of the follower is deformed, assuming the shape of the spring, whether or not it is bulged or discolored adjacent to the spring, replace the contact assembly and its associated capacitor.

5. Check the condition of the cam follower felt. Squeeze the 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. Excess oil may foul contact points and cause excessive burning.
6. Clean dirty breaker points according to instructions in Section 5-2, step 1.
7. Check magneto-to-engine timing as follows:

WARNING

When the P-lead terminal is removed from the magneto, the spring inside the capacitor DOES NOT ground the magneto. Should the propeller be moved by hand during maintenance procedures and a functional (“hot”) magneto condition exists, the engine may fire and cause injury to personnel!

- a. If necessary, ensure the 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.
- b. Slowly rotate the crankshaft to position the piston of the No. 1 cylinder on the compression stroke at the full advance firing position according to the instructions in the appropriate engine maintenance manual. The timing light should indicate proper magneto to engine timing. If the timing light does not indicate proper magneto to engine timing, remove the magneto from the engine and perform internal timing check and inspection according to instructions in Section 6-2.3.

6-2.2. Impulse Coupling Inspection

Inspect snap ring impulse couplings (Figure 1) (39) at the first 500 hours in service and every 500 hours thereafter. Inspect riveted impulse couplings (39) at the first 100 hours in service and every 100 hours thereafter. Snap ring cam assemblies may be distinguished by the “S” mark on both sides of the toe of each flyweight as shown in Figure 6-3.

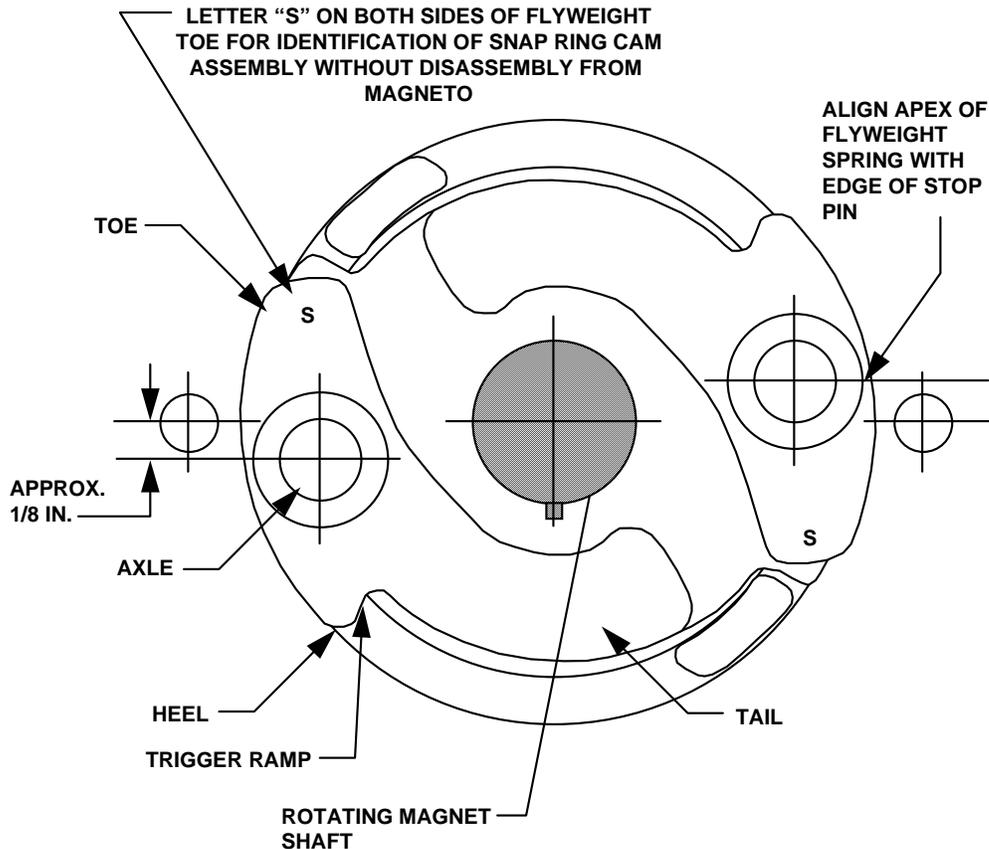


Figure 6-3. Flyweight Terminology

1. Rotate the impulse coupling so the flyweight axles are next to the stop pins. Position flyweight as shown in Figure 6-4 and check flyweights and axles for wear:

WARNING

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

WARNING

Lock the rotor on drive-shaft end only. Do not use gear lock devices, which could cause gear tooth damage and subsequent magneto failure.

- a. Inspect the heels of the flyweights for wear indicated by what appears to be a polished surface in the area depicted in Figure 6-4.

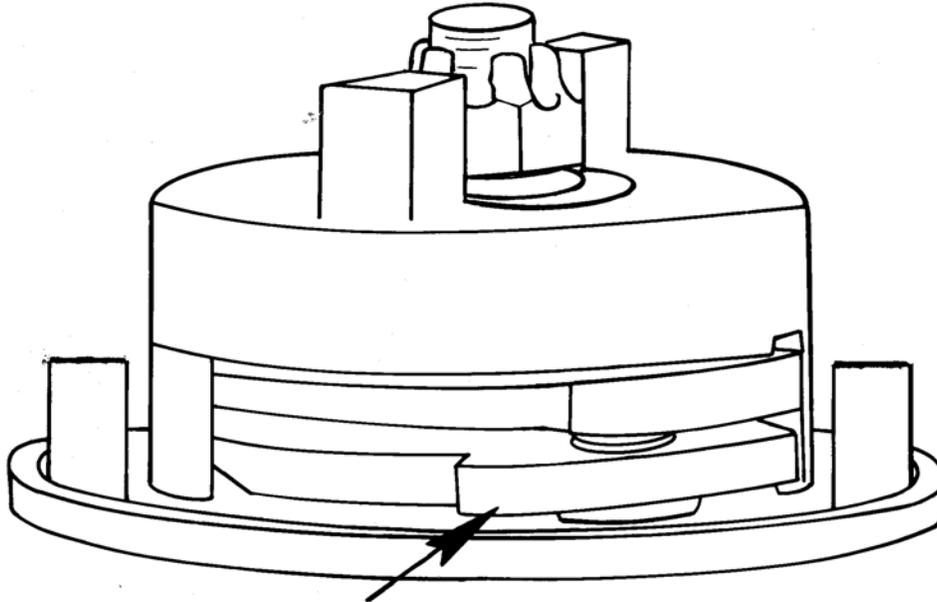


Figure 6-4. Flyweight Heel Inspection

- b. Lock rotor in place using an 11-8465 rotor holding tool (Figure 6-5).

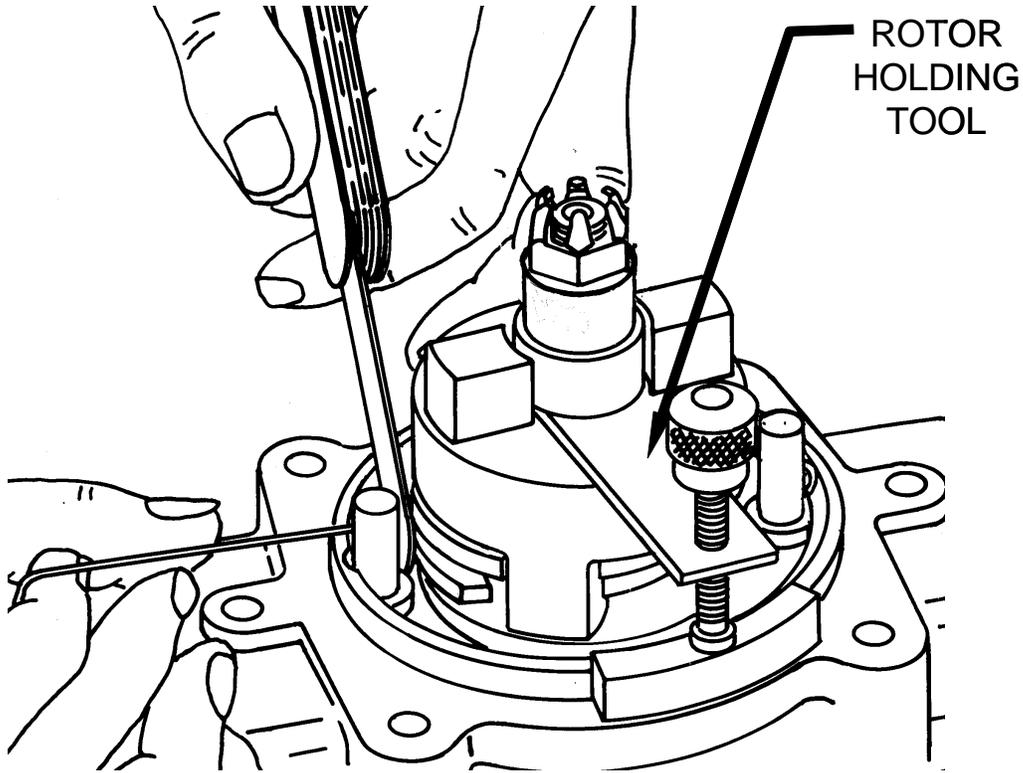


Figure 6-5. Inspection Setup

- c. Form a piece of wire into hook as shown in Figure 6-6. Reach between the cam and the flyweight with the wire hook as near as possible to the stop pin. Pull outward on the flyweight as shown in Figure 6-7.

NOTE: All dimensions in Figure 6-6 are approximate.

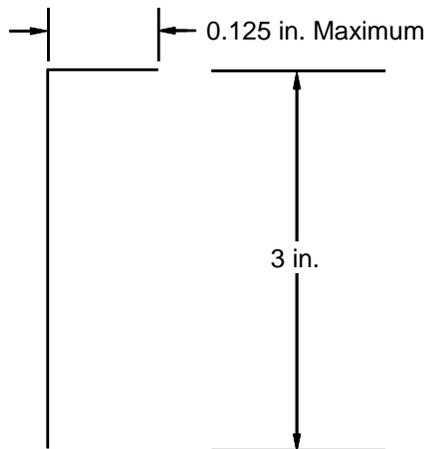


Figure 6-6. Wire Hook Configuration

- d. Insert a feeler gauge between the stop pin and flyweight to determine clearance (“X” of Figure 6-7) while the flyweight is forced outward. Maintain constant outward force on the flyweight while measuring clearance to ensure accuracy.
- e. Remove the wire to relax the flyweight. Add 0.014 feeler gauge to the “X” value (Figure 6-8). Attempt to pass an “X plus 0.014” feeler gauge between the flyweight and stop pin. If the feeler gauge passes, remove and discard the worn cam assembly.

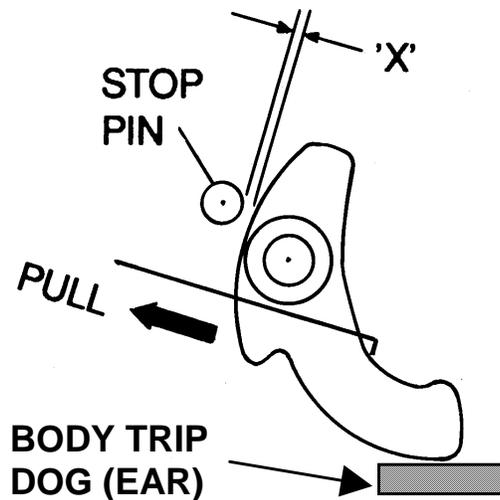


Figure 6-7. Flyweight to Axle Wear Check

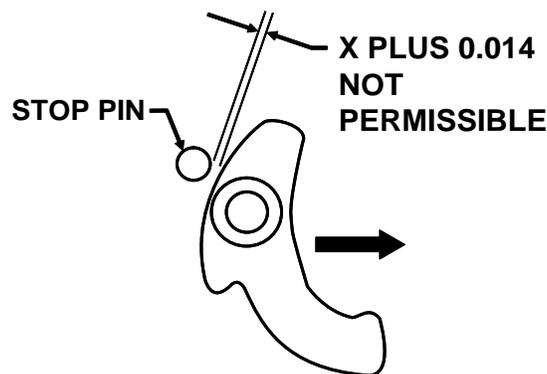


Figure 6-8. X Value Measurement

2. If the impulse coupling fails to successfully pass any of the preceding checks, replace the entire impulse coupling assembly or worn parts. Replace the spring (Figure 1) (41) whenever the impulse coupling is disassembled.
3. Inspect the stop pins in the magneto flange or housing: A shiny spot at the point of flyweight contact is acceptable, a step catch at this point is unacceptable. A damaged or worn stop pin is cause for replacement of the magneto stop pin, or flange, depending on extent of damage or wear.



6-2.3. 500 Hour Inspection

1. Check magneto-to-engine timing according to the Engine Maintenance Manual prior to magneto removal or disassembly.
2. Disassemble the magneto according to instructions in Section 4-2.1. Remove and inspect the contact assemblies (11, 12 & 13) according to instructions in Section 6-2.1.
3. Inspect and treat the distributor block (27) according to the instructions in all the steps of Section 7-2.4, except step 3.
4. Inspect the distributor gear assemblies (21) and carbon brushes (24):
 - a. Wipe distributor gears and axles (21) free of all oil film and other contaminants. Inspect for damage or unusual wear; replace as necessary.
 - b. Remove carbon brush and spring (24) from the hole in the gear axle (21). Clean each hole with a pipe cleaner. Check carbon brush for side loading or unusual wear. Measure the carbon brush from the spring shoulder to working end of the brush. Overall length shall be 0.375 in. minimum. Replace worn brushes, as necessary, with a new brush and spring assembly (24). Seat the new brush and spring (24) in the gear (21) axle hole and compress brush to within 1/8 in. of gear, then release slowly. Brush shall move freely within the hole in the axle.
 - c. Generously apply MS-122AD dry lubricant spray to the distributor gear teeth.
 - d. Ensure washers (23 & 25) are in place on the gear axle and in good condition. Ensure the nylon washer (25) is positioned against the distributor gear.
5. Inspect the housing (66) for physical damage. Clean housing (66) with a clean, dry, lint-free cloth.
6. Inspect the coils (58) as follows:
 - a. Using a dry, lint free cloth, clean contaminants from accessible surfaces of coil.
 - b. Ensure coil outlet tab is parallel with the housing to cover mating surface. Bend tab with finger as necessary to straighten.
7. Inspect roller bearing (30) for evidence of side play or overheating. If either is present, replace the bearing (30) according to instructions in Section 9-2.4.

WARNING

Do not lubricate the roller bearing under any circumstance!

8. Assemble distributor block (27) and distributor gear (21) assemblies in the magneto housing (66) according to instructions in Section 9-2.5 and Section 9-2.6. Pay particular attention to proper distributor gear positioning.
9. Inspect contact assemblies (11, 12 & 13) and related components:
 - a. The contact assembly area shall be free of moisture, dirt, oil or grease residue. Clean as necessary.
 - b. Ensure cam securing screw (61) is tightened to a torque value of 21-25 in.-lb.



- c. Check magneto internal timing according to instructions in Section 9-2.8.

WARNING

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

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

10. If equipped, adjust the tachometer contact point gap to 0.019 ±0.003 in. at the highest point on the cam lobe.
11. Inspect the magneto cover (16) for damage. Check capacitors (1-6) for security of flag terminal, boot, and threaded tip. Inspect the capacitor lead for chafed insulation. Using clean, dry compressed air, clean as necessary and replace any damaged component(s). See appropriate procedures in Section 4-2.2 and Section 9-4 if capacitor replacement is necessary.

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

12. Clean and inspect the harness lead wires, spark plug terminal ends, clamps and related fasteners for damage or wear. Replace damaged or worn parts according to Section 9-3.
13. Replace missing terminal eyelets (Figure 2) (12) on the harness wires before reinstalling the ignition harness onto the magneto. Check the harness grommets (11) for signs of tears or burns. Replace as necessary, according to instructions in Section 9-3.
14. Test the capacitor according to instructions in Section 7-2.5. Form capacitor and coil leads and install the magneto cover (16), with a new gasket (8), if installed, on the housing (66) according to instructions in Section 9-4.
15. Inspect pressurized ignition systems according to Textron Lycoming Service Instruction 1308D or later revision.
16. Install the magneto on the engine. Check and adjust “magneto-to-engine” timing to comply with the engine manufacturer's specifications.
17. Reinstall the ignition harness adapter plate to the magneto. Evenly torque four securing screws initially to 4-8 in. lb. and then to 25-35 in. lb.
18. Complete installation by properly attaching the aircraft primary wiring and any other miscellaneous hardware items removed.



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Section 7. General Overhaul

7-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

1. Use a 4X-5X magnifying glass for all visual inspections.
2. Replace the following parts with new parts, regardless of condition, following disassembly from the magneto at overhaul: Main and retard contact assemblies (Figure 1) (11, 12, 13), lock washers (2, 33), screws (9,14, 18, 46, 54), retaining ring (22, 43), washers (3, 47), oil slinger (49), bearings (30, 50), felt strip (28), felt washer (26), identification plate (65), carbon brushes (24), bearing retainer (51), springs (56), capacitors (6), and pin (7). Also if installed, spring (41) and gasket (8).
3. “General Overhaul,” as specified in Section 7-2, must be performed at the same interval as 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.

7-2. Detailed Overhaul Procedures

7-2.1. Magneto Disassembly

Completely disassemble the magneto according to instructions in Section 4, “Disassembly.”



7-2.2. Distributor Gear Inspection

NOTE: Gears may be marked with an “X” and no circle; discard gears marked with only an “X”.

1. Examine gears for markings shown in Figure 7-1. Discard gears without markings or markings other than those depicted in Figure 7-1. Stamp the nameplate (Figure 1) (65) with the letter “X” in the upper-left-hand corner to indicate compliance with this step.

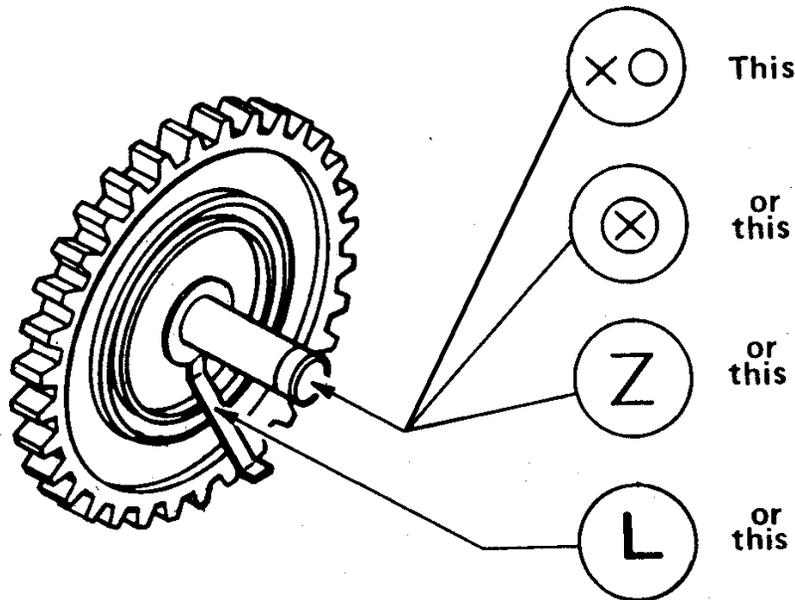


Figure 7-1. Distributor Gear Identification Marks

2. Inspect distributor gear (21) for evidence of damaged gear teeth, gear cracking, electrode looseness (Figure 7-1), axle scoring or overheating. Inspect electrode for spark erosion by measuring the entire length of the electrode with vernier calipers or a micrometer. Minimum thickness at any point is 0.040 in. Replace any gear (21) exhibiting any of these conditions.
3. Wipe gear (72) free of all oil film and other contaminants.
4. Using Red Dykem, paint timing marks on the gears. Refer to marks on the carbon brush side of gear only. For D4RN and D6RN magnetos, paint tooth and dot shown by CW trace line. For D4LN, D6LN, and D8LN magnetos, paint tooth and dot shown by CCW trace line.

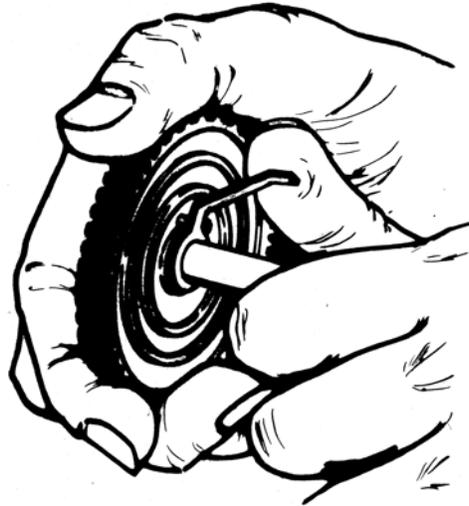


Figure 7-2. Check Electrode Security

7-2.3. Breaker Cam Inspection

1. Inspect breaker cams (Figure 1) (16, 17) for scratches or wear; replace the cam if it exhibits scratches or wear. Ensure outer surface is not contaminated with plastic or dried oil; replace if any of these conditions are found.
2. Wipe the cam with a clean, lint-free cloth.
3. Submerge cams completely in a vat of 10-391200 Distributor Block Lubricant heated to 200°F for 30 minutes.
4. While still submerged in oil, allow cam and oil to cool to room temperature together.
5. After cooling, remove cam from oil, wipe with lint free cloth and put into service or store in a sealed plastic bag until needed.

7-2.4. Distributor Block Inspection

NOTE: Current design distributor blocks are made of brown polyester material and have a part number and batch code molded into the surface on the tower side. Older blocks made of phenolic (black) material may remain in service in unpressurized applications if they pass tests outlined in this section. For pressurized magnetos and eight cylinder applications, use only brown polyester blocks. Green distributor blocks must not be used; see the Illustrated Parts Breakdown for a suitable replacement for green distributor blocks found on some D-2000 applications.

1. Visually inspect the distributor block (Figure 1) (27) for damage. Inspect threaded inserts for stripped or mutilated threads. Brown blocks must have 0.427 inch diameter counterbore at locations shown in Figure 7-6. Reject brown blocks with 0.359 inch counterbore in these positions.
2. Inspect bronze oilite bushings: both must be tight in the block; the inner diameters of both bushings must measure 0.376-0.377 inches. Discard blocks with any oversize bushing.



3. Inspect bearing bore for roller bearing; bore must measure 0.9982-0.9987 inches. Discard blocks with oversize bearing bore.
4. Inspect brown polyester blocks for batch code; replace polyester blocks with batch code 8552 or lower.
5. Examine distributor block (27) for cracks, particularly around high tension terminal towers, mounting ears, bushings in center of distributor wells. Figure 7-3 illustrates a permissible material flow line, which may appear as a “crack.” This line is a result of a join point of material flow around the rear bearing liner insert during the molding process, and may appear in any distributor block. Replace the distributor block if:
 - a. There is more than one material flow line extending or radiating out from the rear bearing liner.
 - b. The material flow line extends beyond the permissible area shown in Figure 7-3.
 - c. The material flow line extends into the vertical area of the pilot skirt.
 - d. The material flow line is apparent in the dielectric material on both the top and bottom sides of the block.

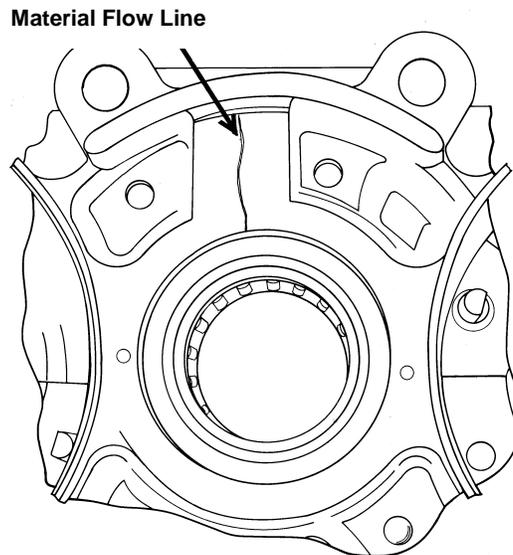


Figure 7-3. Stress Line in Distributor Block

6. Clean the distributor block according to instructions in Section 5-2, step 5.
7. After cleaning, inspect for the distributor block carbon tracking, which appears as a thin wavy line across the dielectric surface. If suspicious areas are noted, check with the 11-8950-2 High Tension Lead Tester Kit as follows:
 - a. Connect the tester ground lead to a distributor block electrode with a medium alligator clip.
 - b. Attach the tester high voltage lead (Figure 7-4) to one of the electrodes adjacent to the grounded one.

- c. Tester high voltage will follow a carbon track. Test all inter-electrode spaces. Test between the grounded center bushing and all electrodes. Temporarily assemble the distributor block (Figure 1) (27) in the housing (66) and test for carbon tracking between electrodes and housing by connecting to housing and each electrode. Reject the distributor block (27) if it exhibits carbon tracking.

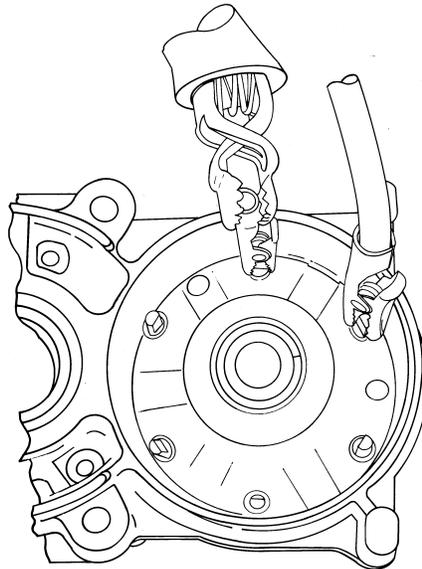


Figure 7-4. Check Distributor Block for Carbon Tracking

8. Inspect contact springs (29), on the tower side of distributor block (27). If contact spring appear 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 the top of the tower. If measurement exceeds the 0.422 inch (Figure 7-5), the spring may be deformed or improperly installed. Using a scribe, or similar pointed instrument, wiggle top of spring in a circular motion to ensure only bottom turn of spring is captive in groove of block insert. Recheck spring height; if measurement still exceeds 0.422 inch, remove and replace the spring.

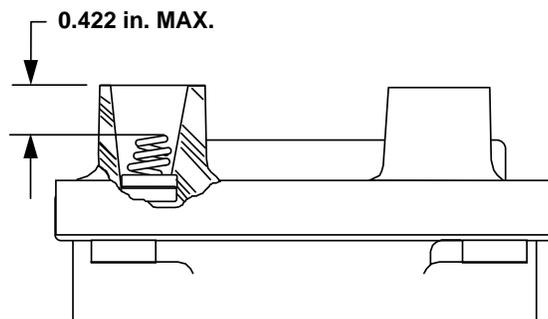


Figure 7-5. Contact Spring Height

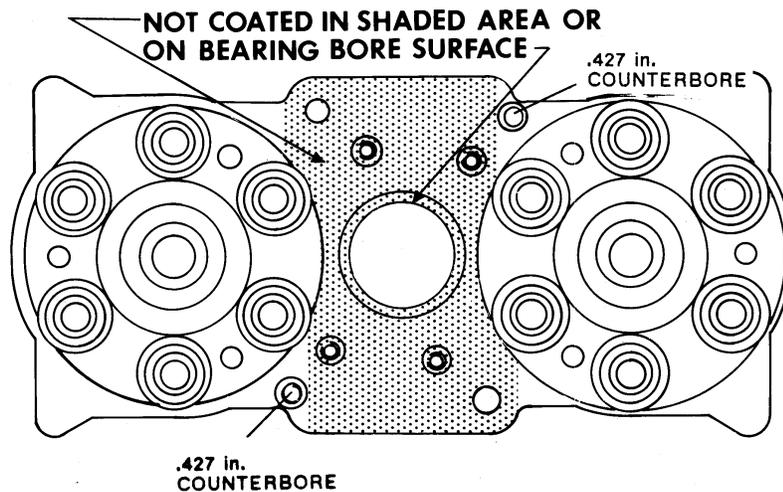
9. Using a small scraper or knife, clean distributor block (27) electrodes to remove any carbonized deposits. Do not attempt to grind or machine electrodes.



10. Impregnate bronze bushing and coat distributor block as follows:

NOTE: Only “black” phenolic distributor blocks 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 must be oil impregnated at each 500 hour inspection and at each overhaul period. The bronze bushing in the distributor block is impregnated with oil to provide proper lubrication for distributor shaft. The phenolic dielectric surfaces are coated to inhibit moisture from sheeting and possibly causing electrical failure. Care should be taken to keep coating away from bronze bushing and to keep oil from coated surfaces.

- a. Install a 10-70506-10S protective cap over each end of bronze bushing in the distributor block. Brushcoat all surfaces of the distributor block insulating material with 10-391400 Distributor Block Coating as illustrated in Figure 7-6. Do not apply the coating to any exposed surface of the bronze bushing. Allow the distributor block coating to dry for a minimum of 30 minutes before continuing to the next step.
- b. Remove 10-70506-10S protective caps from distributor block. Insert a cork stopper in one end of the bushing and fill bushing with 10-391200 Distributor Block Lubricant.



NOTE: APPLY COATING TO BLACK BLOCKS ONLY.
INSPECT COUNTERBORE ONLY ON BROWN BLOCKS.

Figure 7-6. Lubrication Identification Mark

- c. Using care not to spill oil on coated surfaces, place the distributor block in oven and bake the distributor block at 190-210°F (88-99°C) for two to three hours.
- d. Remove distributor block and oil from oven and allow them to cool to room temperature together. (Oil is absorbed into bushing during cooling).
- e. Carefully remove cork stopper and allow excess oil to drain from bushing.

CAUTION: Do not lubricate the felt strip!

11. Install a new **dry** felt strip (Figure 1) (26) in the groove on the electrode side of the distributor block. When the strip is properly installed, approximately 1/16 inch of the bushing shall be exposed above the strip.
12. For all blocks, before installing new felt washer (82) into the distributor block (79), saturate the washer with 10-391200 Distributor Block Lubricant. Blot excess oil from the washer until flat surfaces take on a “frosted” appearance, and seat the washer in the recess on the tower side of block.

7-2.5. Capacitor Inspection

NOTE: The capacitor on all D-2000 and D-3000 magnetos must be replaced at the time of magneto overhaul.

1. Inspect new capacitors for a date code (Figure 7-7) of 9943 ore newer.



Figure 7-7. Capacitor Date Code

1. Visually inspect capacitor mounting brackets for cracks or looseness. Check capacitor lead for damaged insulation and loose terminal connections. If any damage is found, discard capacitor (Figure 1) (42).
2. Using a LC101 capacitor tester, measure capacitance and leakage according to Table 7-1 specifications. Using a multimeter, measure DC resistance, in series. Replace the capacitor if it does not meet Table 7-1 specifications.

Table 7-1. Capacitor Test Values

Capacitor Part No.	4 Cylinder 10-382807	6 or 8 Cylinder 10-382681 or 10-382681-1
Capacitance at 70°F, microfarads	0.12-0.18	0.32-0.43
DC series resistance, ohms	1.0 max	1.0 max
Leakage current @ 400 VDC, 190±10°F	0.4 µA max	0.4 µA max



7-2.6. Coil and Clamp Inspection

1. Inspect coils (Figure 1) (58) for cracks in molding, frayed or damaged lead insulation, corrosion or looseness of flag terminal, and for damaged or corroded coil laminations. Corroded laminations may be wire brushed. Coil leads and terminals may be repaired according to instructions in Section 8-2.1.

Inspect high tension tab for wear caused by carbon brush (73), indicated by a visible depression in the tab. If tab is worn more than 0.015 inch or exhibits an irregular surface, replace the coil.

2. Using a Fluke 8840A Digital Multimeter or equivalent, measure primary resistance (from flag terminal to coil core) between coil leads. Primary resistance must be less than one ohm. Measure secondary resistance between the coil core and high tension tab. Four cylinder secondary coil resistance must be between 13,100 and 15,900 ohms. Secondary coil resistance for six and eight cylinder must be between 5900 and 7500 ohms. Replace coils not within specifications.

7-2.7. Impulse Coupling and Related Component Inspection

WARNING

Regardless of condition, discard and replace impulse coupling springs after disassembly.

1. During overhaul, all type D6LN-2031 magnetos must incorporate current improved “heavy spring” design impulse coupling. Compare impulse coupling body (Figure 1) (40) and cam assembly (42) part number markings to part numbers listed in Table 11-5. Replace components identified with part numbers other than those listed in Table 11-5 with the current part number components.
2. Ensure impulse coupling cam flyweights have been properly heat treated:

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 7-8 or with more than 300 hours service are not subject to this test. Proceed to step b.

XXX in Figure 7-8 indicates the location of stamped numbers.

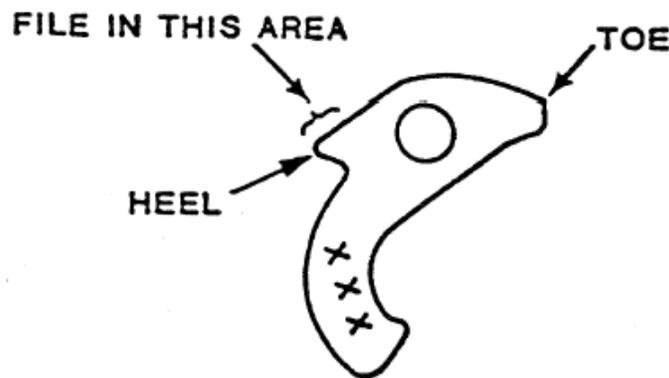


Figure 7-8. Soft Flyweight Check

- 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 (removal of black oxide finish is to be expected). 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 (Figure 1) (65).
3. Visually inspect riveted flyweight securing washers, snap rings, and flyweights for cracks. For riveted cam assemblies, grip washer as shown in Figure 7-9, and exert a turning force in each direction. If washer moves, or if any cracks are found, reject and replace the cam assembly.

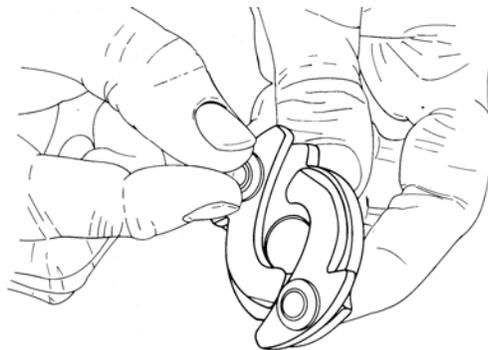


Figure 7-9. Inspect Flyweight Washers

CAUTION: Never attempt to repair any part of a rejected cam and flyweight assembly.

4. Inspect coupling body drive lugs (Figure 1) (40). If wear is noted, measure difference between worn and unworn areas of the drive lug surface. If the difference exceeds 0.015 inch, replace the impulse coupling body (40).
5. Inspect the impulse coupling body trip dogs (40) for grooves worn by the tail of the flyweight and wear at triggering ramp and cam stop contact areas (Figure 7-11). If either ear shows a perceptible groove or a ridge can be felt when fingernail is drawn across surface, reject the impulse coupling body (Figure 1) (9).

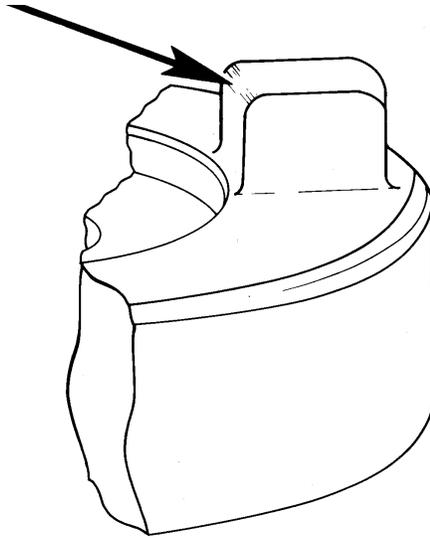


Figure 7-10. Worn Drive Lug

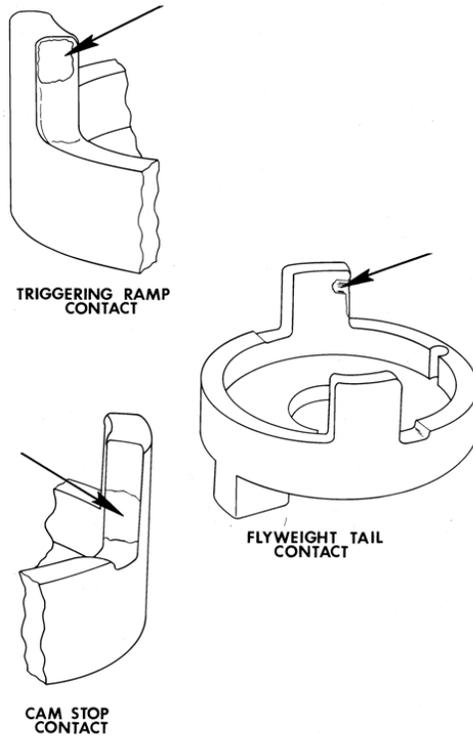


Figure 7-11. Coupling Body Wear Points



7-2.8. Magneto Housings and Cover Inspection

1. Visually inspect the housing (Figure 1) (66) 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.
2. Perform a Fluorescent Penetrant Inspection on the cleaned, non-ferrous magneto housing and cover according to ASTM E1417 methods. ASTM E1208, ASTM E1209, ASTM E1219 methods may be used. Inspection must be performed by qualified technicians certified to perform the inspection.
 - a. Look for cracks or indications of cracks, especially in the areas adjacent to the mounting flange.
 - b. Cracks in the magneto housing or cover is cause for rejection; destroy cracked magneto housings or covers to prevent possible return to service.
 - c. Look for indications which break into corners, edges, holes, or fillets. Identify parts that contain linear indications which cannot be reworked.
 - d. Follow the fluorescent penetrant manufacturer's instructions for the equipment and materials required to perform the inspection, safety precautions and disposal of used inspection media.
 - e. Label each part's inspection status and required action, if any.
 - f. Follow the fluorescent penetrant manufacturer's instructions to remove penetrant residue from the inspected, serviceable parts.

WARNING

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

3. Measure each bearing bore at 90° intervals for a diameter of 1.5746-1.5751 inches. If bearing bores are worn, peened or exceed dimensional limits, replace the housing. Replace the housing if, at the time of assembly of new bearing races, an interference (press-fit) condition is not obtained.
4. Check housing pole shoe laminations for evidence of scoring. No scoring of housing pole shoes in the rotor bore is allowed. If scoring is evident, replace the housing. Minor corrosion of the pole shoes may be removed with 320 grit emery cloth, followed by a thorough cleaning, according to instructions in Section 5-2.
5. Clean threads as necessary. Stripped threads may be repaired by installation of the applicable size helical coil (helicoil) insert.
6. Inspect impulse coupling stop pins. If any stop pin is bent, damaged, loose, or shows signs of wear, replace the housing. Stop pins are not replaceable. Each stop pin hole in the housing must be sealed with a stop pin to prevent engine oil from entering the magneto.
7. Inspect D-2000 housings, most readily identified by lack of threads for coil securing screw, according to the special inspection instructions in Section 9-2.5.



7-2.9. Rotating Magnet Inspection

1. Visually inspect rotating magnet (rotor) assembly (Figure 1) (48) for damage to the threaded portion of the shaft. Minor thread damage may be repaired by chasing the original threads with a 0.3750-24 die.
2. Repair light scoring of the magnet section with a polishing stone or a fine wire brush in the affected area. No projections or burrs are allowed above the surface of the laminations.
3. Check the shaft at the front bearing seating position for presence of wear or score marks which would allow engine oil leakage between the shaft surface and inner race of the front bearing. If scoring is noted, replace the entire rotating magnet assembly.
4. Inspect gear (52) and bearing bushing (53) for score marks or wear. Replace the gear and bearing bushing if either part exhibits score marks or wear.

7-2.10. Drive Bushing, Drive Plate and Washer Inspection

Inspect the drive bushing (Figure 1) (34), drive plate (37 & 38), washers (36 & 44) and bowed washer (45) for wear; replace as required.

7-2.11. Magneto Assembly

Assemble the magneto according to instructions in Section 9.

7-2.12. Magneto Post Overhaul Testing

Test the magneto according to the instructions in Section 3-2.

7-3. Harness Overhaul

Remove and replace the ignition harness at overhaul.

Section 8. Repair

8-1. General

NOTE: Index numbers in parentheses refer to the exploded views of the magneto in Figure 1 or the harness in Figure 2 and the “Illustrated Parts List” in Section 11 unless otherwise specified.

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

8-2. Detailed Repair Procedures

8-2.1. Coil Lead Repair

1. Coil leads and flag terminals may be repaired with a 10-400419-3 kit if the damaged area is more than one inch from the coil plastic molded surface. If damage to the lead is less than one inch from the coil plastic mold surface, discard the coil.

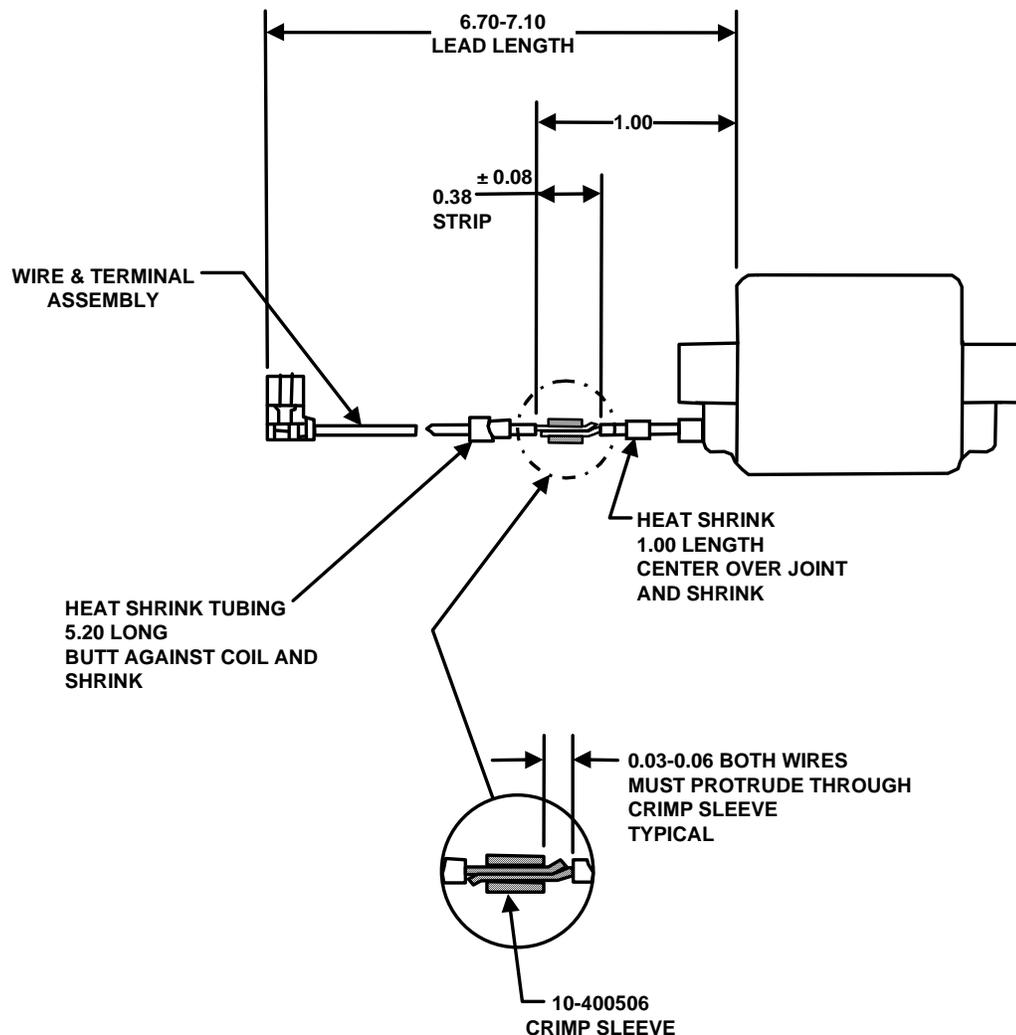


Figure 8-1. Coil Lead Repair

2. Using wire cutters and strippers, trim the coil lead as shown in Figure 8-1. Discard the existing tubing.

3. Apply lengths of heat shrink tubing over the lead and terminal assembly. Crimp 10-400506 sleeve in place as shown in Figure 8-1.
4. Using a heat gun, position the heat shrink tubing in place and apply heat to the tubing to shrink the tubing into place as shown in Figure 8-1 (using the lowest heat setting capable of melting the heat shrink tubing).

8-2.2. Threaded Hole Repair

Threaded holes in the housing (Figure 1) (66) may be repaired as shown in Figure 8-2, using threaded insert (part numbers shown in Figure 8-2) according to the latest instruction from the supplier (Emhart Fastening Teknologies (See Table 10-1)).

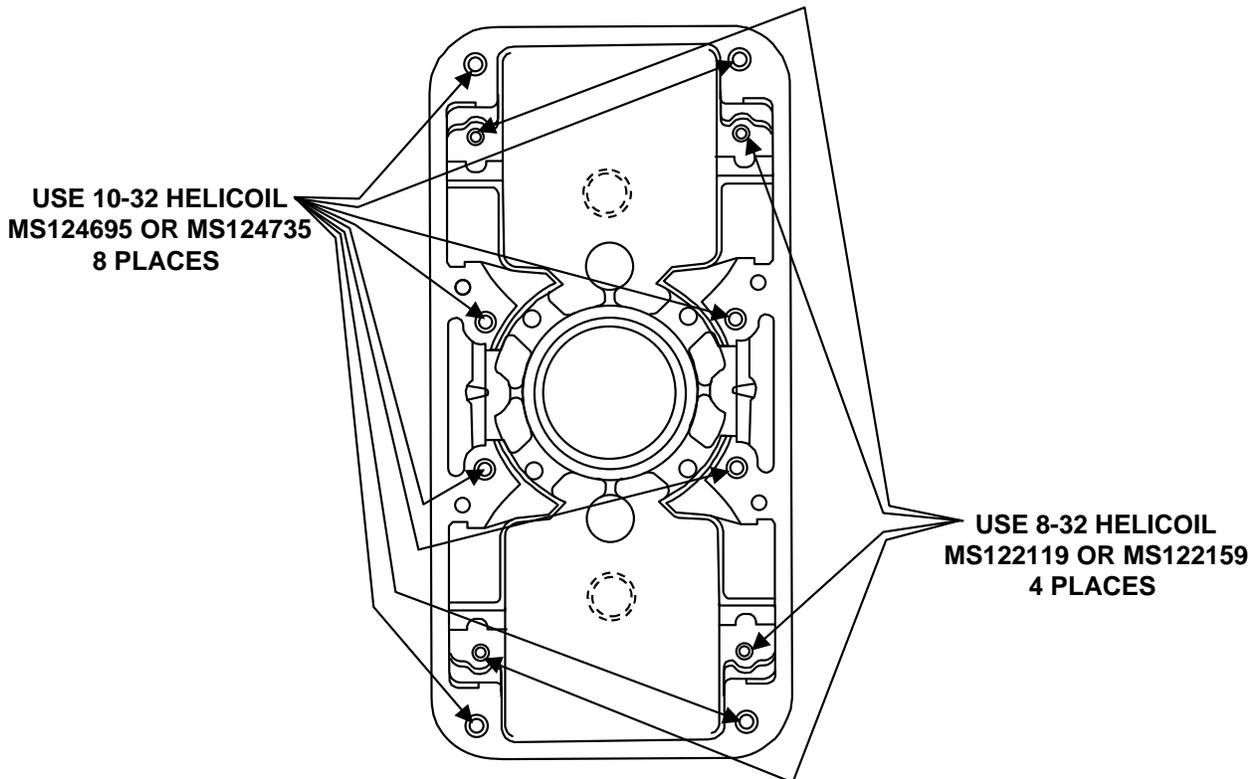


Figure 8-2. Helical Coil Repair



Section 9. Assembly

9-1. General

Refer to Figure 10-1 for a list of materials and tools required during assembly. Refer to Figure 1 in Section 11 for magneto exploded view. Refer to Figure 2 in Section 11 for harness exploded view. Numbers in parenthesis following part names correspond to the index numbers in the exploded view.

WARNING

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

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: Lock washers (2, 33), Screws (9, 14, 18, 46, 54), Retaining ring (22, 43), Washers (3, 47), Bearings (30, 50), felt strip (28), identification plate (65), Bearing retainer (51), Springs (56), Pin (7), Spring (41) and gasket (8).

The following parts may be re-used after maintenance inspection according to Section 6-2 but must be replaced at overhaul: Main, Retard & Tachometer assemblies (11,12 & 13), felt washer (26), carbon brush (24), and capacitors (6),



9-2. Detailed Assembly Procedures

9-2.1. Coil Installation

Separate instructions are provided to install the D-2000 and D-3000 Coils. Adhere to the appropriate instructions during assembly.

9-2.1.1. D-3000 Series Magneto Coil Installation

1. Position coils (Figure 1) (58) in the housing, with ends of the high tension terminals pointed toward the center of the housing.

CAUTION: Discard any springs that become deformed during installation.

2. Hold spring (56) with “Duck Bill” pliers, using care to avoid crushing or deforming the spring. Apply pressure at points (Figure 9-1) “A” and “B,” and insert spring with “B” side towards the coil core. Repeat for all springs (Figure 1) (56).

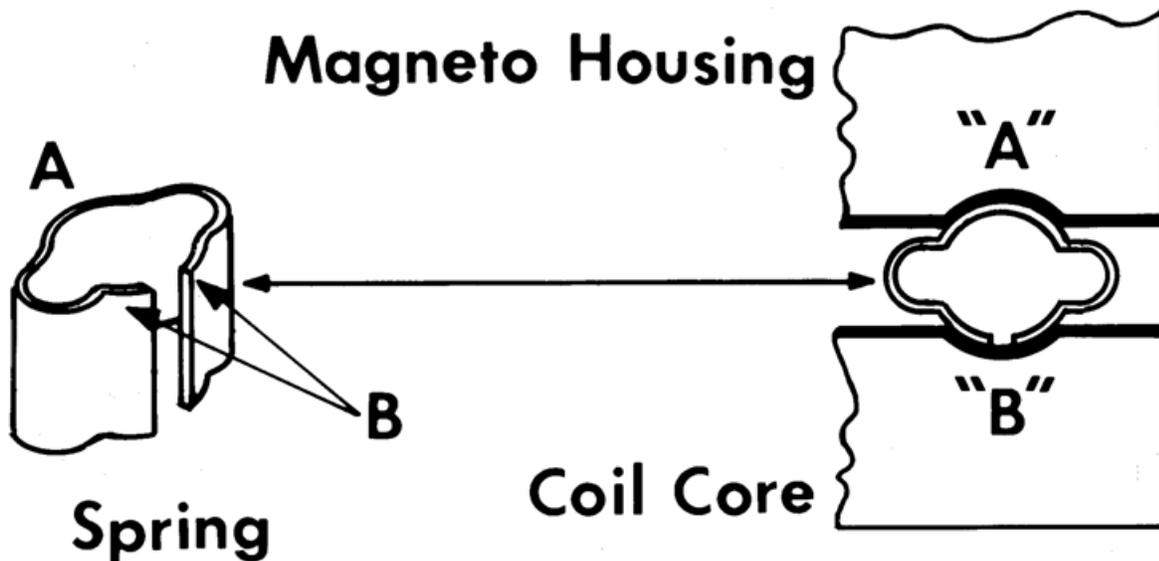


Figure 9-1. Position Springs in Magneto Housing

3. Install the plates (55) with recessed sides facing springs (56) and pointed ends turned toward the center of the housing. Where appropriate, ensure that plates (55) are seated below the coil lead and against the coil core, as shown in Figure 9-2

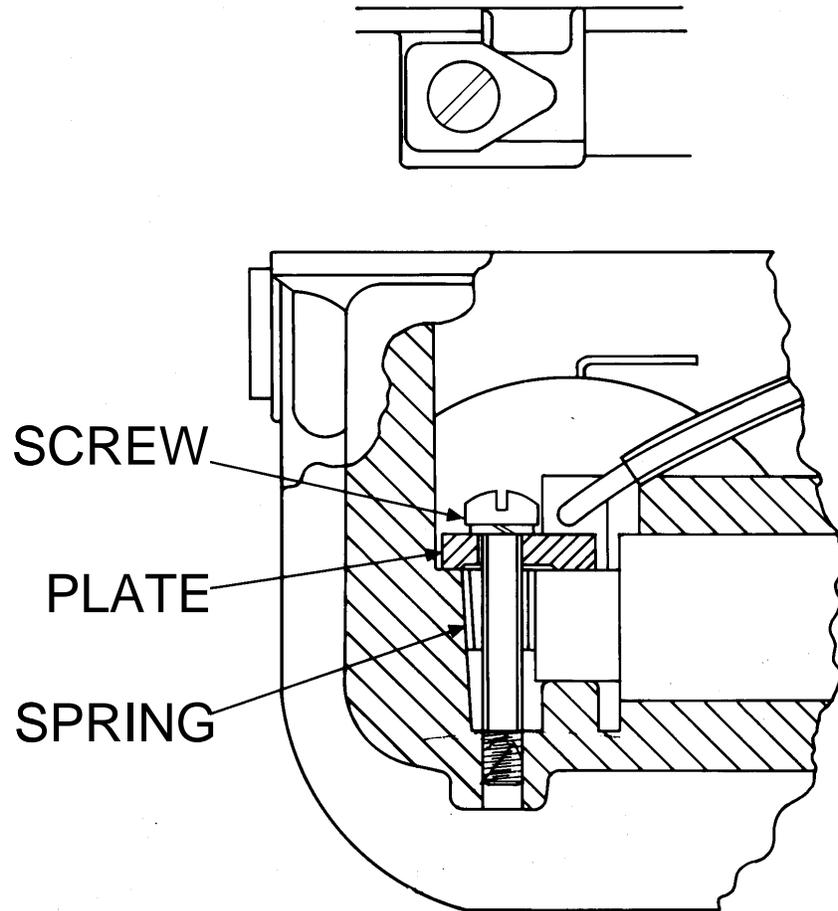


Figure 9-2. Position Plate with Recess Facing Up

4. Insert new screws (Figure 1) (54) down through the plates (55) and springs (56). Tighten screws evenly to a final tightening torque value of 20 to 25 in.-lbs.
5. Route coil leads to outside corners of the housing and fully seat tapered fish paper strips (57), small end down.
6. Place a straight edge along the long center line of the housing/cover mating surface. The coil tabs must be parallel to the straight edge within four degrees. If required, carefully bend coil tab to meet this dimension.

9-2.1.2. D-2000 Series Magneto Coil Installation

Coil securing kit P/N 10-382939 contains a quantity of four of each item identified in Figure 9-3. This hardware is the only acceptable to secure the coil in the D-2000 Series Magnetos.

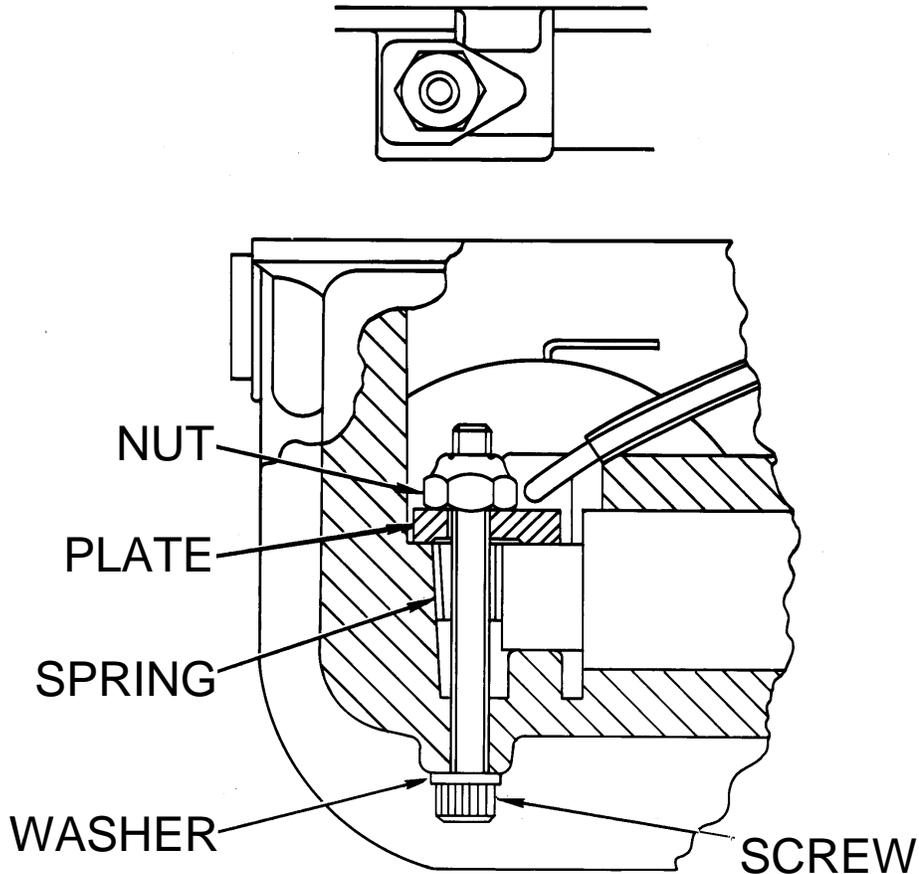


Figure 9-3. Kit Parts Installed in D-2000 Magneto

1. If not previously accomplished, modify the housing to accommodate the coil securing kit:
 - a. Prepare two lengths of 1/4 in. steel rod approximately 3.5 in. long and grind to a 45° point on both rods so they can be used as center punches.
 - b. Position a coil (Figure 1) (58) in the housing (66) and insert both rods, point down, in each of the circular recesses between the coil core and the housing.

CAUTION: Use only enough force in tapping the center punch rods to make an indent.

- c. Visually center the coil and hold it against the pole shoe extensions. Tap each rod to produce a center punch indent on the housing inner surface.



- d. Remove the coil and center punch rods and repeat steps b and c for the coil at the opposite end of the housing.
 - e. Using a No. 14 (0.182 in. dia.) drill in a drill press, drill through the housing at each of the center punch marks to produce clearance holes for an 8-32 UNEF-2A screw.
CAUTION: Remove only enough material from the housing to produce a flat counterface.
 - f. Using a 5/16 in. counterbore with a 0.182 in. dia. pilot, counterface the outside of the housing to obtain a flat seating surface at each of the four screw hole locations.
 - g. Thoroughly clean the housing of all chips and foreign material; then paint the newly machined counterface surfaces.
2. Install and secure coils using 10-382939 kit as follows:
CAUTION: Discard any springs that become deformed during installation.
 - a. Position coils (58) in housing, with ends of high tension tabs pointed toward the center of the housing.
 - b. Hold spring (56) with “Duck Bill” pliers, using care to avoid crushing or deforming the spring. Apply pressure at points “A” and “B” illustrated in Figure 9-3. Insert spring with the “B” side towards the coil core. Repeat for all springs (Figure 1) (56).
 - c. Install a plate (55) with recessed side facing the spring (56) and pointed end turned toward the center of the housing. Where appropriate, ensure the plate (55) is seated below the coil lead and against the coil core, as shown in Figure 9-3.
 - d. Insert a socket head screw (Figure 1)(54a), with a flat washer (54b) through the housing (66), spring (56), and plate (55).
 - e. Install nut (54c) on screw (54a). While holding nut (54c) with 11/32 thin wall socket wrench, tighten the screw (54a) with a 9/64 in. hex wrench to 20-25 in-lbs. torque. Repeat steps c, d and e for the remaining three screws.
 - f. After coil retention parts have been installed, ensure the magneto is free from any foreign particles.
 3. Route the coil leads to the outside corners of the housing and fully seat tapered fish paper strips (57), small end down.
 4. Place a straight edge along the long center line of the housing/cover mating surface. The coil tabs must be parallel to the straight edge within four degrees. If required, carefully bend the coil tab to meet this dimension.

9-2.2. Assemble Gear and Bushing on Rotation Magnet

CAUTION: If the gear and bushing have been removed, they must both be discarded and replaced with new parts.

1. If spur gear (Figure 1) (52) was removed, fabricate a wood support block as shown in Figure 10-8 to support the rotating magnet shaft while pressing the new spur gear (Figure 1) (52 and bushing (53).

CAUTION: Failure to use the support block to hold the rotating magnet during pressing operations will likely result in damage to the rotating magnet.

2. Position the gear (52) on the rotating magnet shaft (48). Referring to Figure 9-4, use a No. 41 drill bit between two gear teeth to obtain the proper alignment. Using an arbor press, 11-1471 drift (Figure 10-3), and wooden support, press the gear down onto the shaft until it is seated against the shaft shoulder. Ensure gear teeth are aligned as illustrated in Figure 9-4.

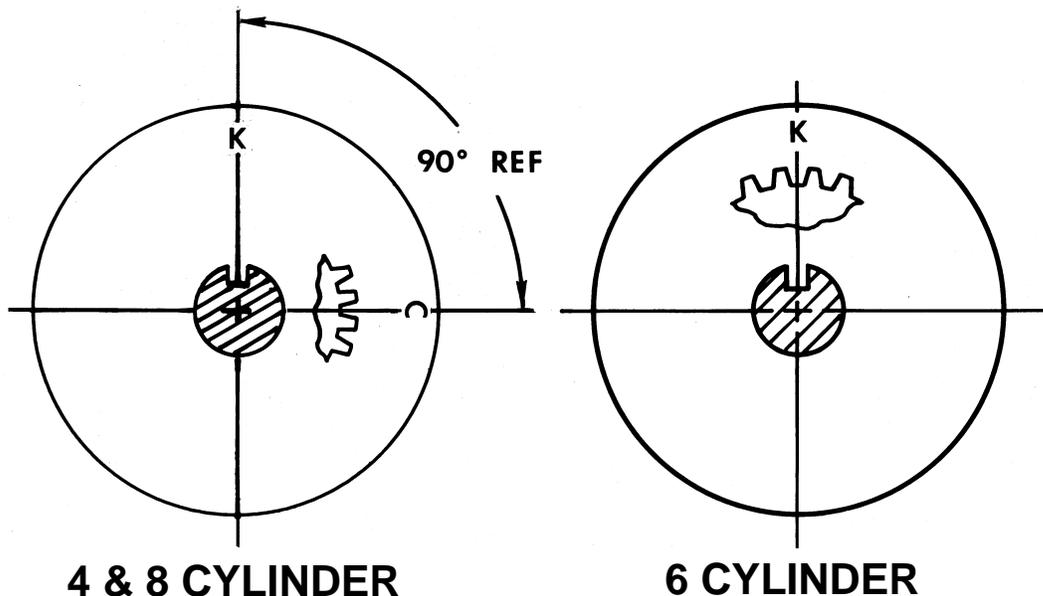


Figure 9-4. Spur Gear Alignment on Shaft

CAUTION: Do not twist gear on shaft to correct alignment. If alignment is not correct after the gear is pressed on, it must be removed and a new gear installed

3. Ensure correct press fit of the gear is obtained by wrapping the gear (Figure 1) (52) in a shop towel and attempt to turn it by hand on the shaft. The gear must not move.
4. Using an arbor press, 11-1471 drift, and wooden support, press bushing (53) over the shaft until it seats against the gear (52).



9-2.3. Install Bearing and Magnet in Housing

CAUTION: Use extreme care when working with the bearing to avoid disturbing lip of seals where they contact the inner race.

1. Place the magnet assembly in the wooden support block (Figure 10-8), with the gear resting on the block. Place a new retainer plate, recessed side toward the bearing, over the magnet shaft (Figure 1) (48). Apply Loctite grade B compound to the bearing (50) inner diameter. Using an arbor press and 11-1471 drift, press the bearing (50) on to the shaft until it is firmly seated against the magnet shoulder. Coat pole pieces of rotating magnet lightly with rust preventative or clean SAE-30W oil.
2. Using a clean, lint-free cloth soaked with isopropyl alcohol and a pointed non-metallic tool, clean the Loctite residue from the bearing bore of the housing. Allow alcohol to evaporate. Apply a light coating of rust preventative or clean SAE-30W oil to the surfaces of the four pole shoes in the housing. Place the housing assembly, flange end down on the work block. Install the rotating magnet assembly in the housing, with the tabs of the bearing retainer plate (51) facing toward the coils. Using hand pressure, push on rotor assembly and bearing to seat bearing (50). If hand pressure is not sufficient to seat bearing (50), use an arbor press and soft brass or wood drift to lightly press the magnet assembly and bearing until the bearing is seated.
3. Turn the housing over and tuck the coil leads inside the housing. Place the housing, coil side down, on the work block and install new self-locking retaining plate screws (46), with new aluminum sealing washers (47) in the housing. Alternately tighten the screws in the bearing retainer plate to a final torque value of 15-20 in-lbs.

CAUTION: Do not press directly against the tapered end of the shaft to avoid damage to the taper.

4. Install a new oil slinger (49) over the drive end of the rotating magnet shaft and, using arbor press and 11-1471 drift, press the slinger down until it seats against the front bearing inner race. The oil slinger (49) must not rub against the magneto housing when the rotating magnet is turned; replace the oil slinger if rubbing is encountered. Place a bowed spring washer (45), concave side against oil slinger, along with flat washer (44) and retaining ring (43), sharp side out, on to shaft. Support the tapered end of the shaft on a wood block and using an arbor press and 11-8822 drift, press retaining ring (43) until it fully seats in the groove in the shaft.



9-2.4. Distributor Block Assembly

CAUTION: Ensure roller bearing does not become contaminated with debris prior to or during assembly.

NOTE: Springs, pre-lubricated roller bearing, and felt strips are pre-assembled into spare distributor blocks. Distributor gear bushings are supplied pre-lubricated.

Installation of distributor block kits, part numbers 10-682054, 10-682056, or 10-682058, or installation of roller bearing, P/N 10-382971, according to the following procedures, ensures compliance with Service Bulletin 600, Part 2, paragraph F or H, as applicable.

1. If new tower springs (Figure 1) (29) are to be installed, refer to Figure 9-5 and use the 11-8627 Spring Seating Kit. Insert the Spring Insertion Guide in the block (27) tower outlet hole as shown. Place contact spring (29), large end down, in top of the Guide. Position the Plunger Assembly with the Handle attached, over the small end of spring. With a firm counter-clockwise pushing motion, seat spring in the recess of block tower (27). Spring is properly installed when the bottom turn is caught in the bushing of block and top turn is approximately centered in the tower outlet. Check spring height according to instructions in Section 7-2.4, step 8.
2. Install the bearing (30) in the distributor block (27).
 - a. Position the distributor block (Figure 1) (27), tower side up, on the solid end of the 11-9999 bearing pressing support (Figure 10-5), so the block insert rests on the support.
 - b. Using 11-9998 bearing pressing tool (Figure 10-4), place a new bearing (Figure 1) (30) over the large end of tool so press will be against the lettered side of the new bearing. Using an arbor press, press the bearing (30) in to the distributor block until the bearing seats against the support.
3. Test the bearing (30) to bushing (53) fit by temporarily positioning the distributor block assembly on the housing. The new bearing (30) must slide freely over the rear bearing bushing (53). To check bearing fit, position hand to catch distributor block (27) and invert the magneto housing (66). The distributor block (27) must fall free of the magneto shaft assembly. Replace the bearing (30) if it fails this test.
4. Form felt strips (28) into rings and install them dry into the annular groove adjacent to gear bushings on distributor well side of the distributor block. When strips are properly installed, approximately 1/16 inch of the bushings must be exposed above the strips.
5. Saturate new felt washers (26) with P/N 10-391200 distributor block lubricant. Blot excess oil from washers (26), until flat surfaces take on a "frosted" appearance. Seat washers in the recesses on the tower side of block (27).

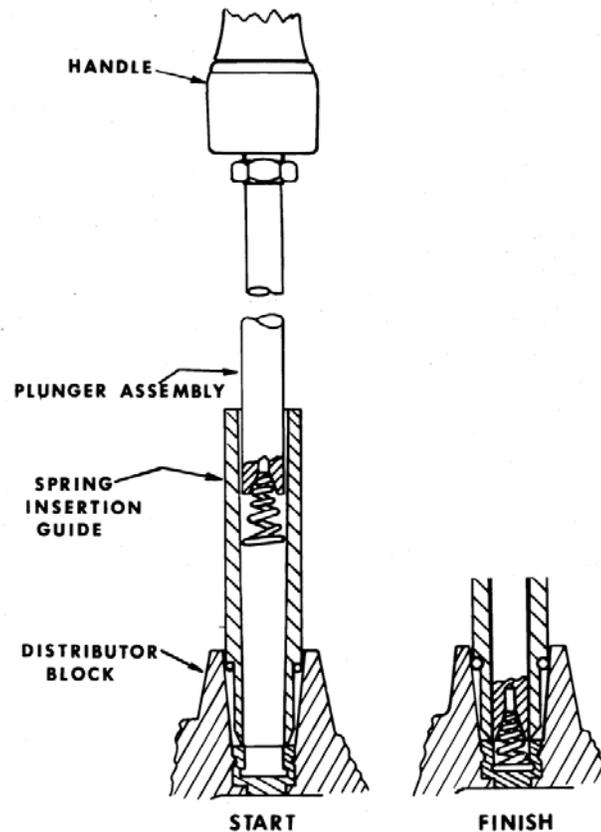


Figure 9-5. Contact Spring Installation

9-2.5. Distributor Block and Gear Assembly

1. Mark gears (Figure 1) (21) to identify magneto rotation according to instructions in Section 7-2.2.
2. Generously apply an even coating of MS-122AD dry lubricant to the gear teeth. Repeat for second gear. This procedure will provide sufficient lubrication for the gears; Excess lubricant will be thrown off during magneto operation which may lead to service difficulty due to contamination.
3. Install one insulating washer (25) onto each gear axle. Install one plain steel washer (23) on top of each insulating washer.
4. Slide the clean and dry gear axle in to the distributor block bushing. Install one plain steel washer (23) over the protruding axle end and reservoir felt washer (26). Repeat for the second gear (21).
5. Using No. 2 retaining ring pliers, install new retaining rings (22), with sharp side facing out, into the axle grooves. Check for freedom of gear rotation by turning each gear through several complete revolutions.
6. Install new carbon brush and spring assemblies (24) in each gear axle by rotating carbon brush clockwise. Brushes must move freely up and down in the axle hole after assembly.



9-2.6. Distributor Block and Gear Installation

1. Using the appropriate view in Figure 9-6 as a guide, align the proper red dot of each distributor gear with the timing mark dot on the distributor block. Be certain to align the gears for the correct rotation of the magneto. The “CW” or “CCW” markings on the gears refer to the direction of magneto shaft rotation as viewed from the drive end of the magneto, and correspond with the “R” or “L” appearing in the magneto Type number.
2. Position rotating magnet:
 - a. For D4LN-2200 and D4LN-3200 magnetos, position rotating magnet so the “C” mark is centered in the timing window on the top (data plate side) of the magneto. This positions the keyway at the three o'clock position as viewed from the drive end.
 - b. All other magnetos are timed with the keyway at the 12 o'clock position. Turn the rotating magnet so the “K” mark is centered in the timing window on the top (data plate side) of the magneto.
3. Position the distributor block and gear assembly so the witness marks on the block align with the witness marks on the top outside edge of the housing.
4. Lower the distributor block carefully over the rotating magnet (48) until the gears mesh and the distributor block seats squarely against the housing. The two distributor gears should easily mesh with the spur gear. If gears do not mesh, recheck the magnet keyway position and the alignment of the gears with the marks on the distributor block. Correct alignment and reassemble, as necessary.
5. Look through each of the timing windows at the ends of the housing to ensure that both carbon brushes are seated against the coil secondary tabs.
6. For D-3000 Series Magnetos with brown distributor blocks, install a new screw with new lock washer (Figure 1) (18) and 0.396 in. O. D. flat washer (31) in each of the two counterbored holes in the distributor block. Tighten the screws but do not torque at this time.

D-3000 Series magnetos with black distributor blocks require washers (31) with an outer diameter of 0.328 in. in the counterbored distributor block holes. These washers, P/N 10-4987, are no longer available. In the event that more than two of the 0.328 in. O. D. washers must be replaced, replace the black distributor block with a current production distributor block.

D-2000 Series Magnetos require only two screws (18), and two of either size flat washer to secure the distributor block in place. For D-3000 Series Magnetos, proceed to step 8.

7. Inspect D-2000 Series Magneto Housing:
 - a. Attach the Dial Indicator Mounting Plate (Figure 10-9) to the magneto housing as shown in Figure 9-7.

- b. If not previously disassembled, loosen the two distributor block securing screws (Figure 1) (18) just enough to release the lock washer compression.

CAUTION: Force applied in either direction must not exceed 2.5 pounds.

- c. Steady the magneto housing with one hand at the indicator end. With the other hand, and with finger force only, attempt to shift the distributor block laterally in the distributor block pilot bore of the housing.

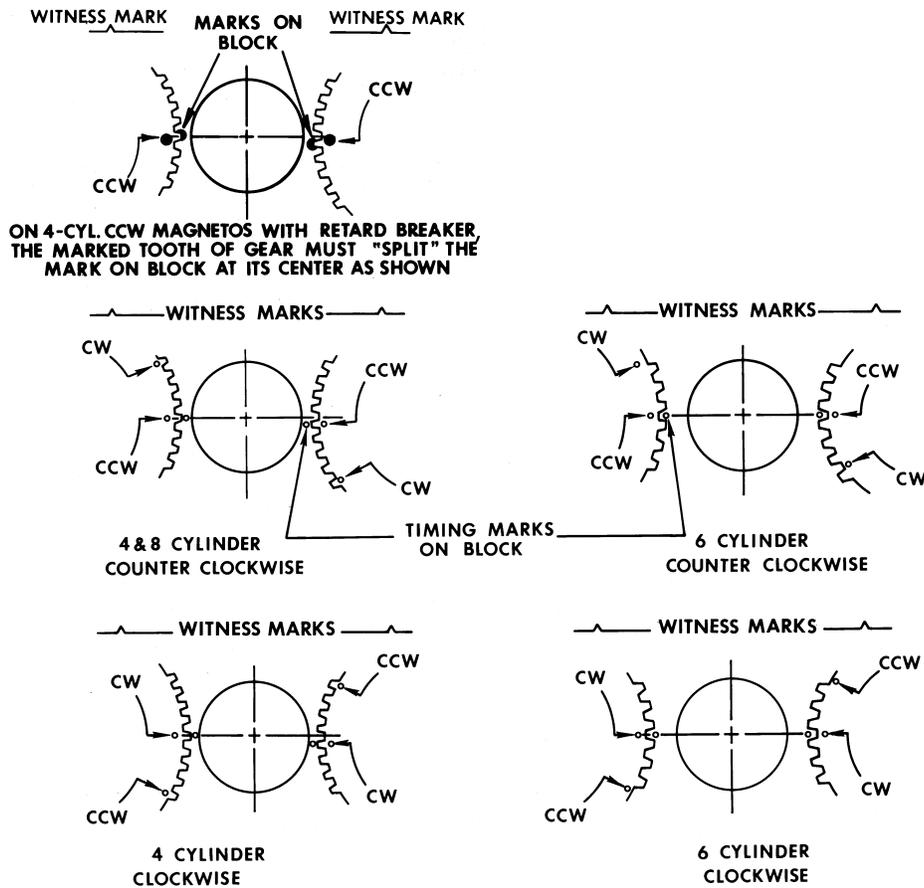


Figure 9-6. Distributor Block Timing

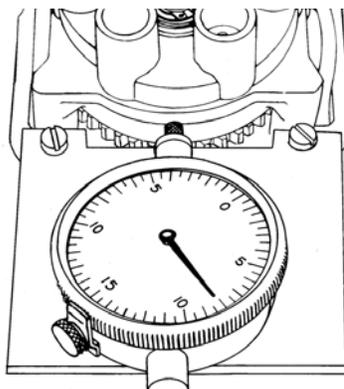


Figure 9-7. Dial Indicator Mounted on Housing



- d. Measure the block-to-housing clearance by observing the total indicator movement registered when the block is moved to the extreme shift limits.
 - e. If the total movement is more than 0.008 in., scrap the housing and convert the magneto to the D-3000 configuration. If the total indicator movement is 0.008 in. or less, perform the following inspection.
 - f. Prepare four pieces of non-metallic 0.007 m shim stock, 1 in. wide x 4.5 in. long.
 - g. Position the rotating magnet as described in step 2. Insert one piece of the shim stock between each pole piece of the housing and the rotating magnet. Angle the shim stock so the exposed ends come out between the cover attaching holes in the housing (Figure 9-8).
 - h. If step g cannot be accomplished, disassemble and discard housing. Convert the magneto housing to the D-3000 configuration. Otherwise, leave the shims in position and assemble distributor block and gears in position as described in step 1 through step 5. When seating the distributor block to the housing, ensure none of the shims are caught between the block and the housing (Figure 9-9).
 - i. Install the two connector strips (20), distributor block securing screws (18), and washers (31), taking care to align the holes in the connector strips with the contact assembly securing holes in the block (contact assemblies may be temporarily installed on the block to help align the strips.) Tighten screws to 25 - 30 in.-lbs. One at a time, carefully pull the four shims from the assembly. Ensure no part of the shims remains inside the magneto assembly. If magneto must be disassembled to remove debris, repeat step g through step i to ensure proper centering of rotating magnet.
8. Turn the rotating magnet in the normal direction of rotation until the “L” or “R” align with the built-in timing pointer in the center of the timing window on the top side of the magneto. This is the “E-Gap” position of the rotating magnet: 8° past neutral. With the magnet in this position, the red painted tooth of each distributor gear must be approximately centered in each timing window at the ends of the housing. It is permissible for the red tooth to be on the “incoming” side of the window, less than one tooth-width from the center.

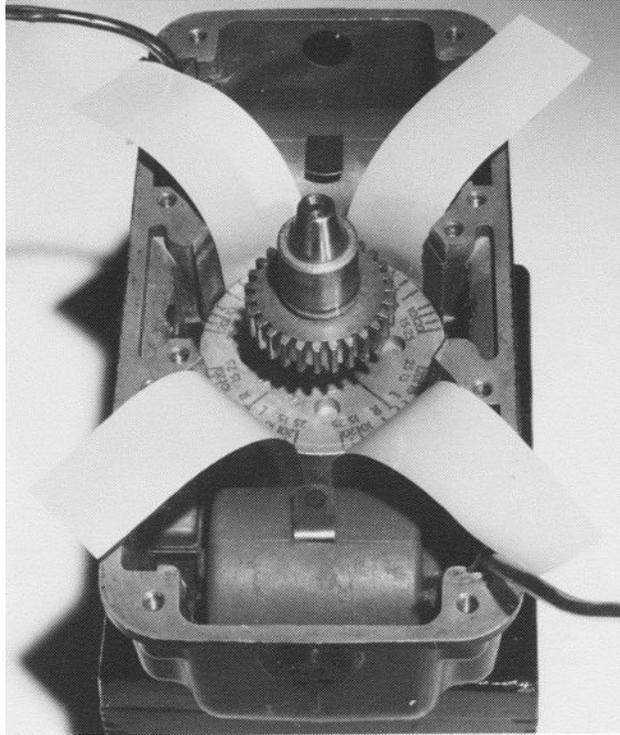


Figure 9-8. Shims Positioned Around the Rotating Magnet

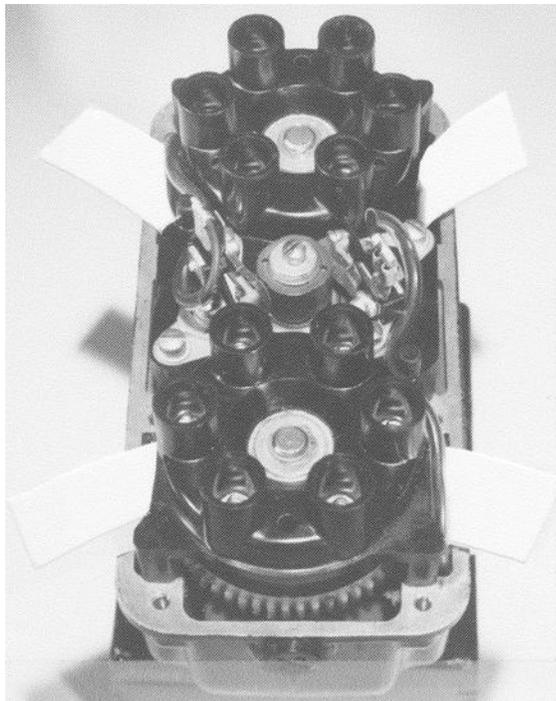


Figure 9-9. Distributor Block Secured and Centered



9-2.7. Contact Assembly Installation

NOTE: The presence of oil on contact points will tend to attract and hold contaminating metallic particles. This will adversely affect contact assembly performance. Do not remove the new contact assemblies from the shipping containers until ready for installation. At installation, carefully blot any oil on contact point surfaces with a piece of clean hard cardboard, such as a business card. Ensure no paper particles are left between the contact surfaces.

Current design stacked contact assemblies include a relief in the steel support which allows them to be used with current replacement coil lead flag terminals as used only on reworked coils, as well as with flag terminals used on new production coils. Older design stacked contact assemblies cannot be used with reworked coils as the terminal will short to ground through the contact support.

1. Before installing new contact assemblies (Figure 1) (11, 12 & 13), 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 30 minutes for the oil to penetrate the felt and for the thinner to evaporate. Avoid getting oil on contact points; blot excess oil with a clean cloth.
2. Install connector strip (20), new distributor block screws (18), and 0.396 in. O. D. flat washer (31) at each side of the distributor block. For D-2000 Series Magnetos, these are the only screws to secure the distributor block. Tighten, but do not torque the screws (18) at this time.
3. Install new contact assemblies (11, 12 & 13) on top of connector strips (20). Loosely secure contact assemblies in position with new screws (18), lock washers (9) and flat washers (10). The flat washer (10) is used only at the elongated hole side of the contact assemblies.
4. On magnetos using main contact assemblies only, the contact assemblies and their positions on the distributor block are interchangeable. On magnetos using a stacked main and retard contact assembly (13), install the assembly on the side of the magneto opposite the identification plate (Figure 9-10). On magnetos using a stacked main and tachometer contact assembly (Figure 1) (12), install the assembly on the side of the distributor block near the identification plate. The silver-cadmium tachometer contacts may be readily identified by their obviously smaller diameter than the main contacts.
5. After assembling the appropriate contact assemblies, center distributor block and tighten all four distributor block securing screws. (D-2000 block securing screws should already be tight. See Figure 9-2.6, step 7, sub- step i) Tighten in a crisscross pattern to seat the block evenly. Apply final torque of 25-30 in.-lbs. to each of the four screws.
6. Remove all surface oil from the main contact cam (16) and retard/tachometer cam using a clean, dry, lint-free cloth. Install the main contact cam (16) on the rotating

magnet shaft. Using No. 2 lock ring pliers in the small cam holes, position the cam (16) so the lobes are centered on the contact assembly cam followers.

- Loosely secure the cam(s) to the magnet shaft with a screw and a new lock washer (14), and with flat washer (15) next to the cam. Use the short screw for one cam; use the long screw for two cams.

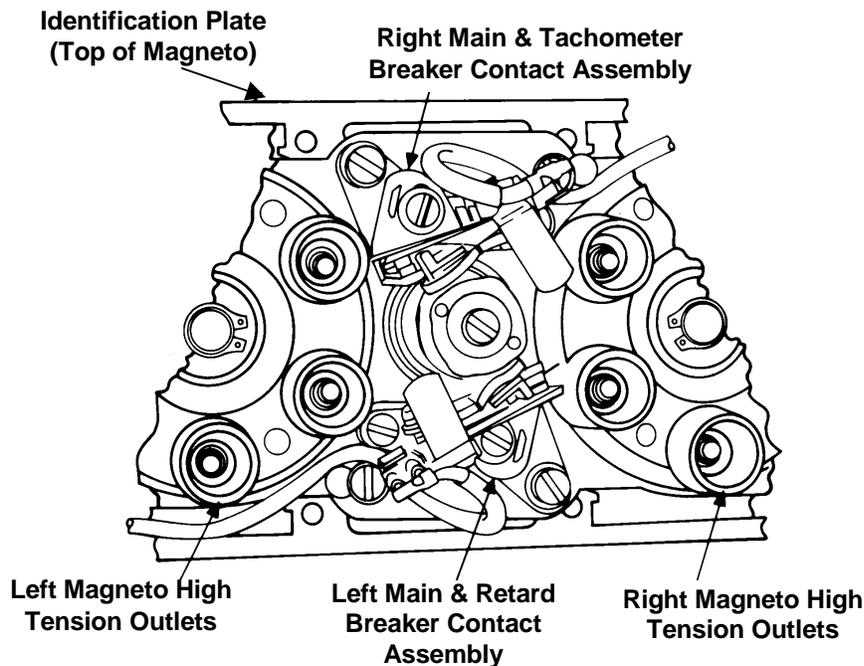


Figure 9-10. Cam End View of Magneto

- Rotate the cam(s) so the high lobe(s) is (are) under the cam followers of the contact assemblies. Adjust the left main contact to obtain 0.016 ± 0.002 inch opening. Check the retard contacts for 0.016 ± 0.004 inch clearance.

CAUTION: Bend the contact assembly frame carefully. It requires very little movement of the bracket to change the contact opening clearance. If the bracket is bent too much, do not attempt to bend it back, as this will weaken the bracket. Use another new contact assembly.

- If proper retard contact clearance cannot be obtained, loosen the contact assembly securing screws (9), move the contact assembly away from the cams, and retighten the screws. If the clearance was over 0.020 inch, bend the steel upright frame of the contact assembly away from the cam. If the clearance was under 0.012 inch, bend the frame toward the cam. Readjust the left main contact assembly for the 0.016 ± 0.002 inch clearance, and recheck the retard clearance.
- Support the drive end of the rotating magnet (48) shaft on a non-metallic surface, and install woodruff key(s) (35).
- Apply a thin film of P/N 646943 anti-seize lubricant to the taper on the rotating magnet (48) and install a drive plate (37 & 38) or cam assembly (42) over the taper. Install bushing (34) and nut (32); do not tighten the nut at this time.

9-2.8. Magneto Internal Timing

NOTE: The timing marks on the rotating magnet have a width of two degrees.

1. Turn rotating magnet to the No. 1 neutral position. For D4LN-2200 and D4LN-3200 magnetos, this position is with the “C” mark on the rotor centered in the timing window and the red gear teeth on the edges of the windows on the ends of the magneto. For all other magnetos, position “K” mark on the rotor in the center of the timing window and the red gear teeth on the edges of the windows on the ends of the magneto.

CAUTION: When timing magneto, do not use any gear holding timing device as hidden gear tooth damage may result.

2. Loosen drive shaft nut to position the 11-8465 rotor holding tool under the washer or bushing on the drive end of the rotor shaft with a clamp at the 4 o'clock position, so any shaft deflection caused by clamping action will be in a plane parallel to the contact assembly. Check to ensure proper location of rotor before tightening the holding tool adjusting screw (Figure 9-11) to lock the rotor in position.

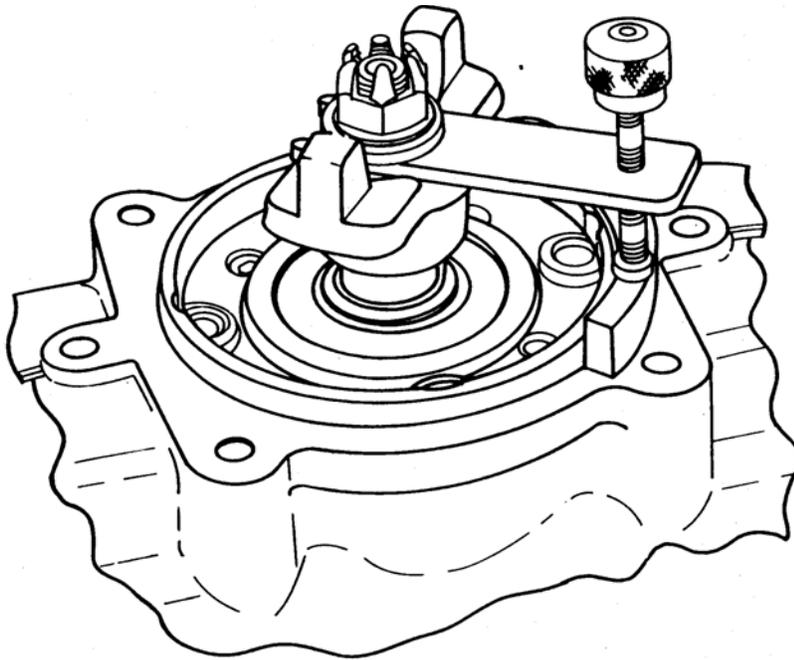


Figure 9-11. 11-8465 Rotor Holding Tool in Position

3. The magneto incorporates timing marks printed on the rotating magnet and a built-in timing pointer. The marks indicate magnetic neutral (K, A, B, C), E-gap (L, R) and retard angle references of 10, 15, 20, and 25 degrees past E-gap. These marks are set up for clockwise (R) or counterclockwise (L) rotation, as viewed from the magneto drive end.
4. Loosen the 11-8465 rotor holding tool to turn the rotor in the normal direction from No. 1 neutral position. Align the adjacent, applicable “R” or “L” mark (Figure 9-13) with the pointer. Lock the rotor in this position. Both red painted gear teeth

(Figure 9-14) must be approximately centered (or within one tooth width of center, on the incoming side) in the windows.

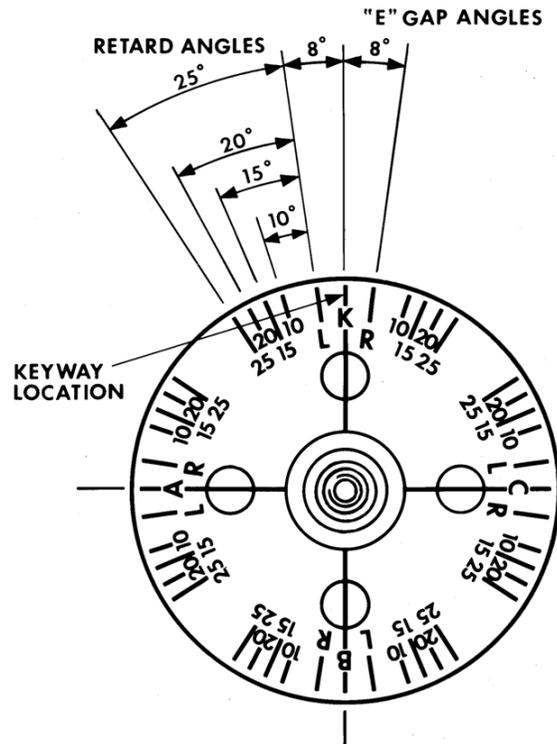


Figure 9-12. Timing Marks on Rotating Magnet

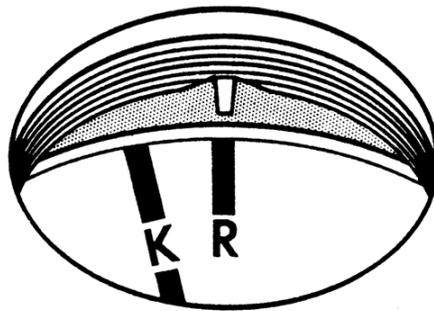


Figure 9-13. Rotor Timing Marks Aligned with Pointer

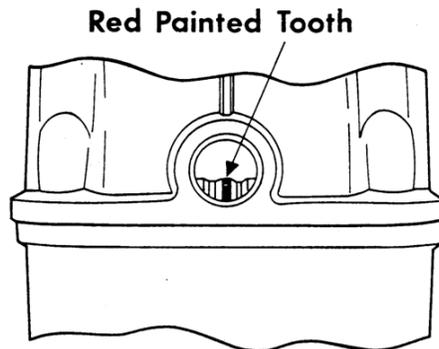


Figure 9-14. Painted Tooth Centered in Window



5. Connect the 11-9110-1 timing light to left and right main contact assembly terminals and to ground.
6. Loosen the cam securing screw (Figure 1)(14) and unseat main contact cam from taper. Finish removing screw (14) and remove washer (15) and retard/tachometer cam (17), if used. Using No. 2 Retaining ring pliers inserted in the two small holes in the cam (16), rotate the cam in the normal direction of rotation until the left main contacts just open. Press cam onto taper. Install retard/tachometer cam (17), if used, washer (15), and screw (14). Tighten screw (14) to seat main contact cam.
7. Loosen the rotor holding tool to turn the rotating magnet back to the neutral position, then turn rotor back in normal direction. Timing light must go out when timing pointer is aligned with appropriate “R” or “L” (E-gap) mark. Lock the rotating magnet where the contacts just open.
8. Loosen the right main contact assembly securing screws to allow adjustment of the right main contacts. Adjust right main contacts to just open.
9. Repeat step 7, this time ensuring that both sets of contacts open within one degree (half the width of the “R” or “L” mark) of one another. If contacts are not properly synchronized, reset the right contact assembly.

*CAUTION: The self locking screw (14) is a single use fastener. If the self-locking screw is removed or loosened at any time, replace it with a **new** self-locking screw and apply 21 - 25 in.-lbs. torque.*
10. Check right main contacts for 0.016 ± 0.004 inch opening at high lobe of cam. If clearance is correct, apply 21 - 25 in.-lbs. torque to the right contact assembly securing screws (9). If clearance is out of limits, repeat timing procedure, setting left main contact as follows: If right main contacts open more than 0.020 in., set left contacts to 0.018 inch. If right main contacts opened less than 0.012 in., set left contacts to 0.014 inch. Always torque the contact assembly retaining screws (9) before checking clearances. If magneto does not use a retard and/or tachometer contact assembly, apply 21 - 25 in.-lbs. torque to new cam securing screw (14) at this time.

CAUTION: If the upper cam operates tachometer contacts only, cam position is immaterial; apply 21-25 in.-lbs of torque to the cam securing screw.
11. On magnetos employing a retard contact assembly, connect the 11-9110-1 timing light to the flexible tab terminal on the left contact assembly and to ground. Turn the rotating magnet in the normal direction of rotation until the specified retard angle (See Table 11-1 or identification plate (Figure 1) (65)) is aligned with the timing pointer. Lock the rotor in this position. Carefully loosen the cam securing screw (14) enough to allow only the retard cam (17) to turn. Turn the cam in the normal direction of rotation until the retard contacts just open. Apply 21 - 25 in.-lbs. torque to the cam securing screw (14).
12. Using 11-9110-1 timing light, recheck left and right magneto synchronization (both points must open within half the width of the L or R timing mark). Confirm retard



angle is set properly, and/or tachometer points make and break contact. Recheck point clearances at high lobe of cam: Left main: 0.016 ± 0.002 in.; all others: 0.016 ± 0.004 in.

13. Push coil lead flag terminals straight down over the outer spade terminal of each contact assembly. The flag terminal must fit snugly to the spade terminal. The flag terminal may be carefully pinched at each rolled edge to obtain the desired fit. Place each lead between the post and block tower (Figure 9-10).
14. Remove the rotor holding tool from the rotor shaft.

9-2.9. Plug Installation

9-2.9.1. Non-Pressurized Magneto Plug Installation

1. Install ventilated plugs (Figure 1) (59) in the windows at each end of the magneto.
2. Install solid plugs (60) in the top timing hole and bottom window.
3. Torque the plugs (59 or 60) to 5 - 10 in.-lbs.

9-2.9.2. Pressurized Magneto Plug Installation

1. Install a threaded plug (Figure 1) (61) in the window at the end of the housing nearest the data plate (65).
2. Install an orifice plug (62) in the bottom hole in the housing
3. Install the solid plugs (63) in the remaining two holes.
4. Tighten all aluminum plugs to 60-80 in.-lbs.



9-2.10. Impulse Coupling Assembly

If the magneto features impulse couplings (Figure 1) (39), assemble the impulse coupling according to these instructions:

NOTE: Induced magnetism from engine parts not thoroughly degaussed following magnetic particle inspection will result in a magnetized body (40). Ensure all engine parts are properly degaussed before reinstalling a body requiring degaussing.

1. Check cam assembly (42) and body (40) for magnetization which would prevent flyweights from engaging: Hold assembly as shown in Figure 9-15 and push upper position flyweight tail against body (Figure 1) (40) 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.

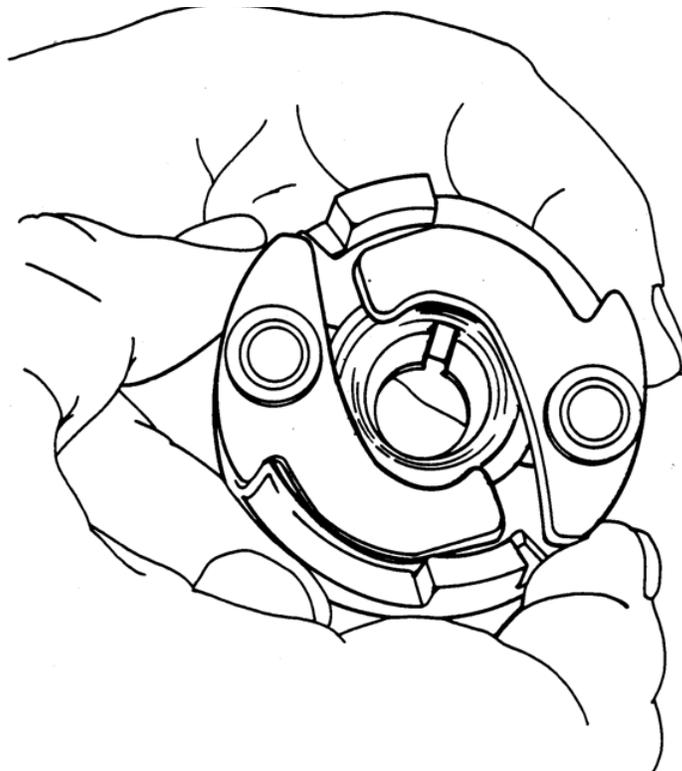


Figure 9-15. Check Impulse Coupling for Magnetism

2. If body is magnetized, demagnetize it using a degaussing coil.
3. Clamp one drive lug of body (40) in a soft jaw vise with the spring recess side up. Orient new spring (41) with body (40) for correct rotation (Figure 9-16). Insert eye of outer end of spring (Figure 1) (41) in the hole drilled in inner rim of body (40).
4. Using heavy gloves to protect the hands, wind the spring (41) in the impulse coupling body (40) manually, lifting the spring coils one at a time over projections on the impulse coupling body. Extreme care must be used to avoid scratching or nicking the spring. After winding the spring, brush a coating of light oil over spring coils.

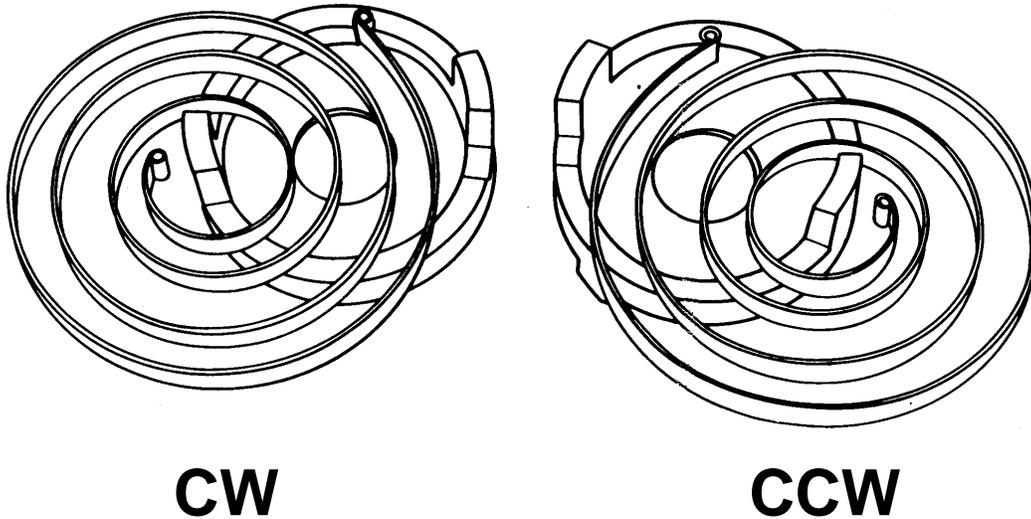


Figure 9-16. Impulse Coupling Spring Orientation

CAUTION: Nicks or scratches in the impulse coupling spring will cause the spring to break.

5. Using a small screwdriver with all sharp edges removed, pry up one and one half turns at the inner end of the spring and support in the position shown in Figure 9-17. Do not allow the screwdriver to scratch the spring.

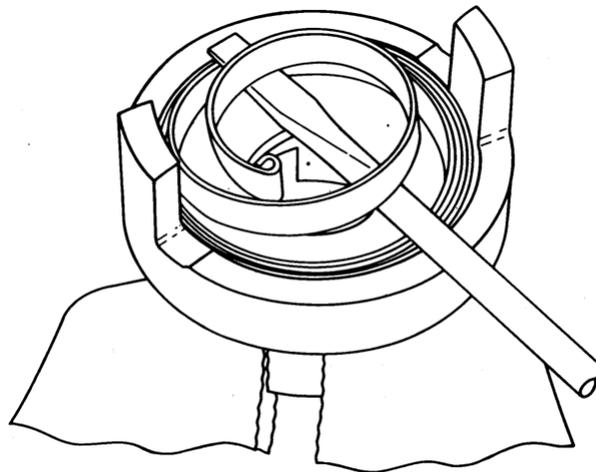


Figure 9-17. Lift Inner End of Spring

6. Engage the recess in hub on the cam assembly (Figure 1) (42) with the eye at the inner end of the spring. With the eye engaged, rotate the cam assembly slightly in the direction to unwind spring to permit hub of the cam to slip into the inner loop of the spring. Rotate the cam in the opposite direction, winding spring slightly, until trip dogs on the edge of the cam (42) clear the projections from the impulse coupling body (40). Push the cam assembly down in the impulse coupling body, while removing the screwdriver from the assembly.



7. For four cylinder applications only, insert a spare rotor with woodruff key installed in the tapered portion of the cam assembly. Turn the magnet slightly in the direction of coupling rotation (to wind spring). Lift the rotor with the cam only enough to clear the impulse coupling trip dogs. Wind spring one half turn and re-engage the cam assembly into the impulse coupling body. Six cylinder applications must utilize current heavy spring and compatible body and cam assembly, as specified in the Illustrated Parts List in Section 11. This arrangement does not require the extra spring tensioning procedure detailed above.

9-2.11. Impulse Coupling and Drive Plate Installation

1. Apply a light coating of 10-27165 Magneto Grease to the impulse coupling stop pins at the flyweight contact points.

WARNING

Use of unapproved hardware and/or failure to utilize the approved lubricants during magneto assembly will produce inaccurate torque values and increased stress on the impulse coupling during assembly.

2. Ensure woodruff key(s) are in place. Apply anti-seize as shown in Figure 9-18. Do not apply anti-seize lubricant to the shaft threads or nut threads. Install the impulse coupling assembly (Figure 1) (39) and washer (36), or drive plate (37 & 38). If applicable, install bushing (34) or lock washer (33).

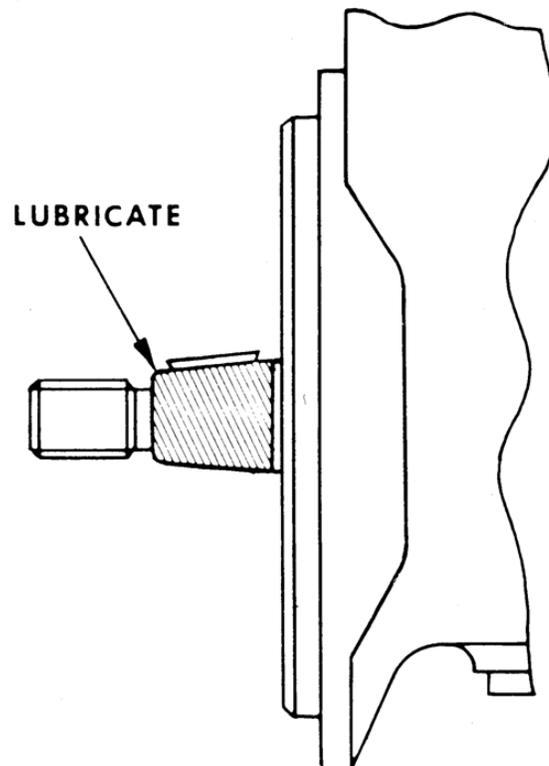


Figure 9-18. Apply Anti-seize to Magneto Shaft

WARNING

Do not exceed 300 in-lbs. torque on the castellated nut. If the nut will not align with the cotter pin holes within the torque specification, replace the nut. Exceeding the torque specification may damage the impulse coupling and require impulse coupling replacement.

- Using a calibrated torque wrench, tighten the nut to 180 in-lbs. Install and secure a new cotter pin (7) as shown in Figure 9-19. If the slots in the nut do not align with the cotter pin hole, gradually increase fastener torque to align the cotter pin hole with the first available slot in the castellated nut. Do not exceed 300 in-lbs. torque under any circumstances.

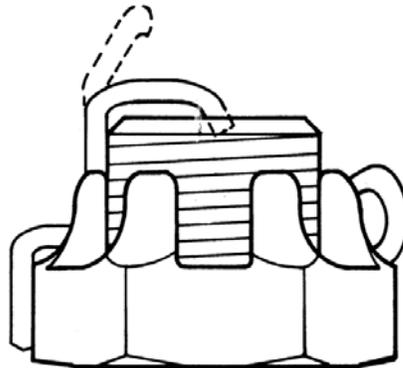


Figure 9-19. Proper Cotter Pin Installation

CAUTION: CAUTION: If the impulse coupling cam cracks (Figure 9-20) during this procedure, an audible cracking noise is evident and nut torque reduces immediately. If the cam cracks, replace it with a new cam.

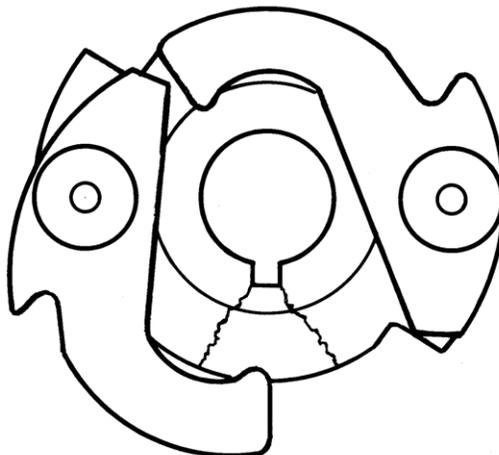


Figure 9-20. Typical Impulse Coupling Crack

- Inspect the impulse coupling according to instructions in Section 6-2.2.



9-2.12. Data Plate Installation

1. Type applicable magneto data on the new data plate. Apply a protective coating of clear enamel to the label and allow to dry.
2. Clean data plate attachment surface of housing (Figure 1) (66) by wiping with cloth moistened with isopropyl alcohol. Apply Permabond 910 Adhesive to the back side of the data plate.
3. Align the data plate (65) with the housing (66) and apply firm pressure across entire surface of the label.

9-2.13. Post-Overhaul Test

Perform the applicable Post Overhaul Testing according to instructions in Section 3-2.

9-3. Harness Assembly

9-3.1. Parts Supersedure

Spare piece parts for Gold Seal® Harnesses may be used to maintain Bendix Blue and Dura-Blue Harnesses and vice versa with the following exceptions:

1. Sleeve P/N 10-320466 (out of production) for 3/4-20 terminals cannot be used with Gold Seal® Eyelet (Figure 2) (5). When using Gold Seal® Eyelet (5), use Gold Seal® Sleeve (4).
2. For 3/4-20 applications, the Spring Assembly P/N 10-94225-2 (out of production) cannot be used with current Gold Seal “Low Profile” Outer Ferrules (Figure 2) (8). Use Gold Seal® Eyelet (5) and Gold Seal® Spring (6) only when using Gold Seal® Outer Ferrule (8).
3. Use P/N 10-620109 (7a) inner ferrule only to service Bendix Blue and Dura-Blue Harnesses with original outer ferrules and outlet plates. Use Retention Eyelet (7) only to service Gold Seal® Harnesses.

9-3.2. Lead Assembly Replacement

Except for 3/4-20 Elbow types, spare lead kits (Figure 2) (1) are supplied with spark plug terminals fully assembled. For replacement of 3/4-20 elbow leads, salvage spring (6), eyelet (5), and elbow (15); purchase spring (2) and sleeve (4) separately.

1. Disassemble the harness, as necessary, to remove the damaged lead. Press the old ferrule (7 or 7a) from the cover (16) using 0.25 inch drift. Measure lead length and cut the new lead slightly longer.
2. Insert 11-9596 nylon tube between shielding and insulation to approximately 1.5 inch depth as illustrated in Figure 9-21.

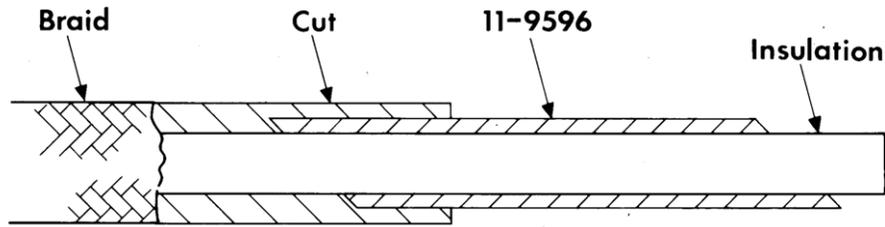


Figure 9-21. Lead Preparation

3. Assemble the Gold Seal® eyelet (7) into Gold Seal® Harness Cover (16):
 - a. With 11-9596 nylon tube acting as a protective sleeve, cut off 7/8 in. of shielding, and scrape off 3/16 to 1/4 in. of the silicone covering from the remaining shielding. Remove the 11-9596 nylon tube.
 - b. Cut and remove 5/16 in. insulation from the conductor (Figure 9-22) to facilitate crimping of eyelet (Figure 2) (12).
 - c. Insert a replacement lead through the cover (16).
 - d. Insert an eyelet (7) under the braiding to the depth specified in Figure 9-22.
 - e. Pull the cable with correctly positioned eyelet into the outlet and fully seat the eyelet in the cover using an Eyelet Pressing Tool (Figure 10-1).

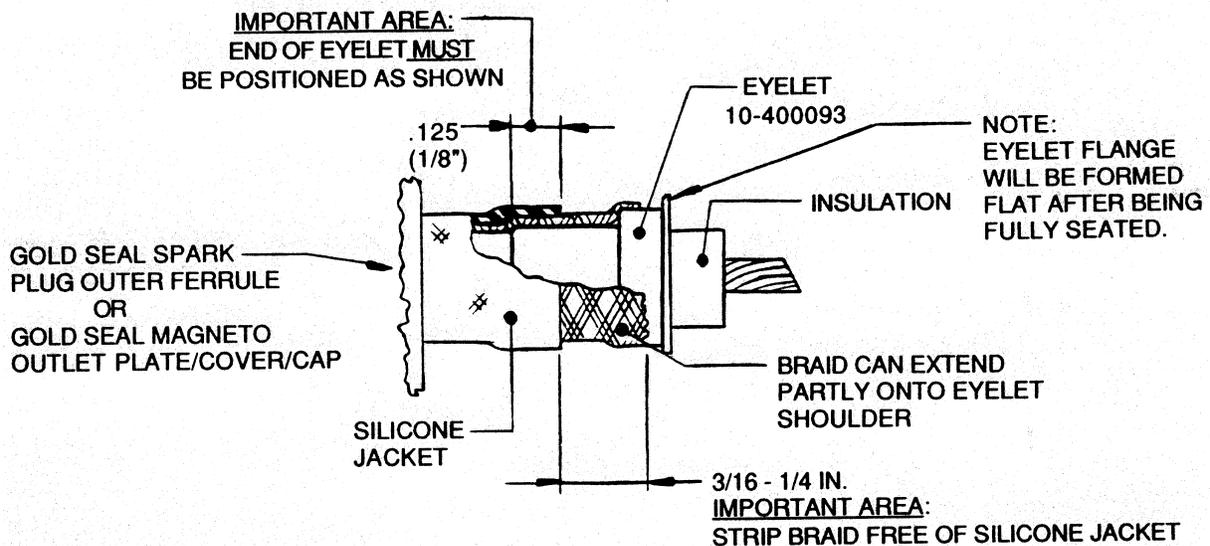


Figure 9-22. Lead Assembly Detail



4. Assemble Dura Blue ferrule (Figure 2) (7a) in the Dura Blue Harness Cover:
 - a. With 11-9596 nylon tube acting as a protective sleeve, cut off 7/8 in. of shielding, and scrape off 3/8 in. of gold silicone covering from remaining shielding. Remove 11-9596 nylon tube.
 - b. Cut and remove 5/16 insulation from conductor (Figure 9-23) to facilitate eyelet (Figure 2) (12) crimping.
 - c. Insert the replacement lead through the cover. Insert a ferrule (32) over the insulation and slide the tapered end under the braid. Cover approximately 3/4 of ferrule taper.
 - d. Pull the lead and ferrule back into the cover (16). Ensure the braid is flush with cover.
 - e. Fully seat the ferrule (7a) using an arbor press and seating tool shown in Figure 10-1. The ferrule (Figure 2) (7a) must seat flush to 0.031 in. below the adjacent surface of the cover.

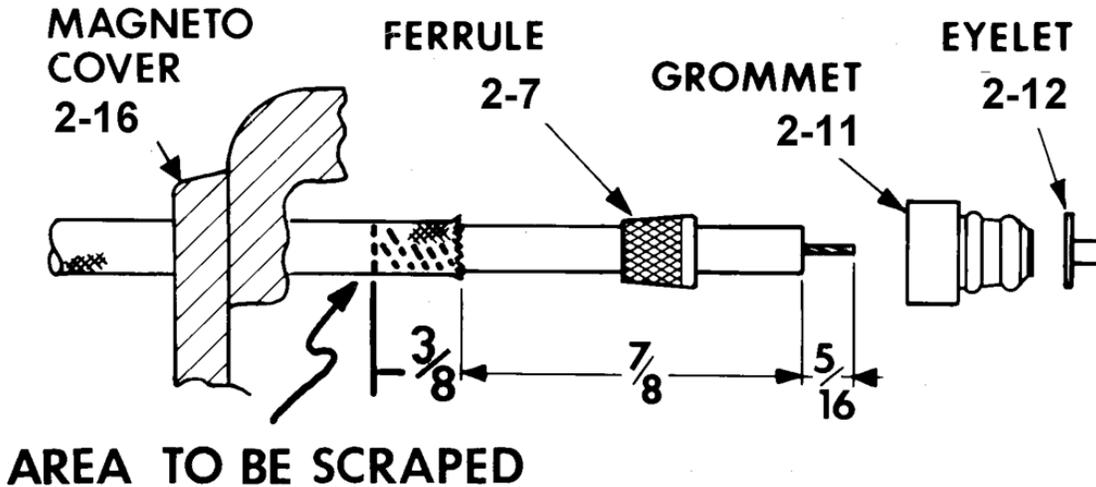
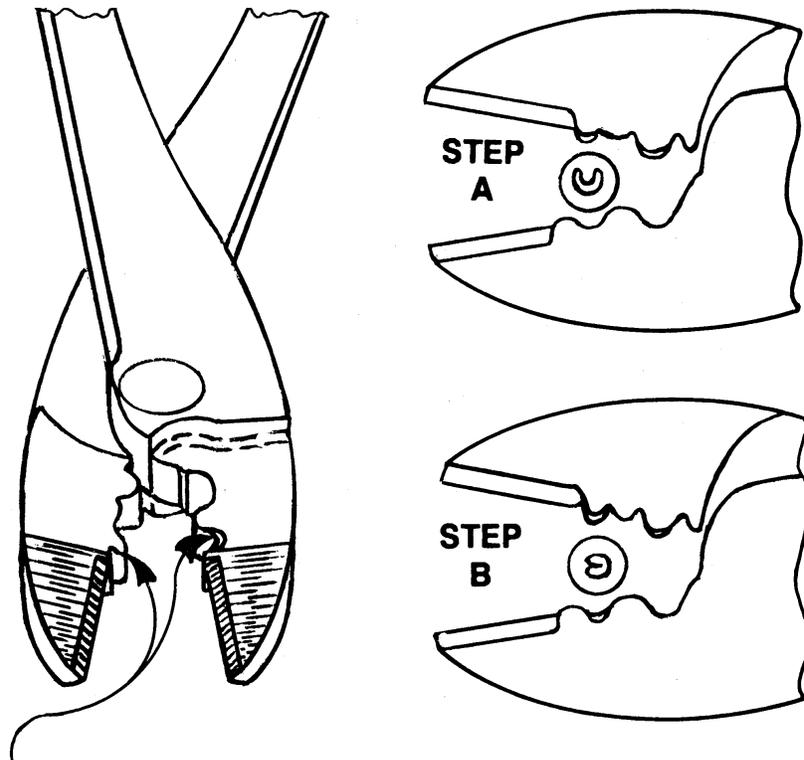


Figure 9-23. Dura Blue Lead Assembly

5. Using 11-9596 tube, remove any jacket shavings and/or stray shielding strands from the seating area. Use care not to nick insulation.
6. Install a grommet (11) over the insulation.
7. Using a WT-111M crimping tool modified according to Figure 9-24, crimp eyelet (Figure 2)(12):



CONTOUR INDICATED EDGES ROUND WITH A FILE. TEST WITH A SPARE EYELET AND A SECTION OF SCRAP CABLE TO VERIFY SATISFACTORY CRIMP QUALITY.

Figure 9-24. Eyelet Crimping Tool

- a. Seat eyelet (12) over inner conductor, flush against grommet (11).
 - b. Crimp the eyelet to the lead as shown in Figure 9-24, step A.
 - c. Rotate the lead and eyelet 90 degrees and crimp eyelet (Figure 2) (12) a second time as shown in Figure 9-24, step B. Trim excess conductor flush.
 - d. Crimp must have no breaks, cracks, voids, or areas of distortion. The crimped eyelet must withstand 15 lb. pull test. If these conditions are not met, remove and discard eyelet (12).
8. Pull conductor from spark plug terminal end to seat the grommet (11) flush against cover (16). Milk outer braid for proper length. Dress lead to harness and engine as necessary with clamps and cable ties (22).
 9. Clean the sleeve (4) and grommet (11) according to the instructions in Section 5-3.
 10. Test lead according to instructions in Section 3-3.



9-3.3. 3/4-20 Straight Spark Plug Terminal Assembly

1. Insert 11-9596 nylon tube between the shielding and insulation to approximately 1.5 inch depth (Figure 9-21).
2. With 11-9596 nylon tube acting as a protective sleeve, cut off 7/8 in. of shielding, and scrape off 1/4 to 3/8 in. of gold silicone covering from the remaining shielding.
3. Remove 11-9596 nylon tube.
4. Cut and remove 1/2 in. insulation from conductor to allow crimping of terminal (Figure 2) (3).
5. Assemble the nut (9) and ferrule (8) on the cable (10).
6. Place ferrule (7 or 7a) over insulation and slide the tapered end under the braid to cover approximately 3/4 of the ferrule.
7. Position outer ferrule (8) snug against the inner ferrule (7 or 7a). Seat parts together using arbor press and Eyelet Pressing Tool(Figure 10-1). Remove excess jacket material.

NOTE: NOTE: Crimp terminal only once to provide joint capable of withstanding 15 lb. pull test. Avoid damage to the threaded portion of the terminal.

8. Crimp terminal (Figure 2) (3) onto conductor using modified WT-111M Crimping Tool.
9. Assemble spring (6), eyelet (5), and sleeve (4) onto lead. The tapered side of eyelet (5) must rest against the taper on the sleeve (31) using the assembly tool shown in Figure 9-25. Assemble spring (Figure 2) (2) and terminal (3) with a clockwise twisting motion.
10. Clean the spark plug terminal according to the instructions in Section 5-3.
11. Test the ignition lead according to instructions in Section 3-3.

9-3.4. 5/8-24 Straight Spark Plug Terminal Assembly

1. Complete step 1 through step 8 of Section 9-3.3.
2. Assemble sleeve (Figure 2) (4) and terminal with a clockwise twisting motion using the Harness Assembly Tool (Figure 9-25). Assemble spring (Figure 2) (2) and terminal (3) with a clockwise twisting motion.
3. Clean the spark plug terminal according to the instructions in Section 5-3.
4. Test the ignition lead according to instructions in Section 3-3.

9-3.5. 3/4-20 Elbow Spark Plug Terminal Assembly

1. Insert 11-9596 nylon tube between shielding and insulation to approximately 4 inch depth (Figure 9-21).
2. With 11-9596 nylon tube acting as a protective sleeve, cut off 4 inches of shielding, and scrape off 3/8 in. of gold silicone covering from remaining shielding.

3. Remove 11-9596 nylon tube.
4. Cut and remove 3/8 in. insulation from the conductor to facilitate crimping the terminal (Figure 2) (3).

NOTE: Crimp terminal only once to produce a joint capable of withstanding 15 lb. pull test. Avoid damage to the threaded portion of the terminal.
5. Crimp the terminal (3) on the conductor using the modified WT-111M Crimping Tool.
6. Place outer ferrule (13) over terminal (3), past insulation and onto shielding of cable.
7. Place inner ferrule (14) over terminal (3), past the insulation and under the cable shielding.
8. Feed terminal (3) through elbow (15).
9. Tighten the elbow nut (15) on the outer ferrule (13) to seat ferrule (14). Remove excess jacket material and loosen the nut until the harness is installed on engine.
10. Slide sleeve (4) over insertion tool as shown in Figure 9-25. Slide the eyelet (Figure 2) (5) and spring (6) over sleeve (4). The tapered side of eyelet (5) must rest against the taper on the sleeve (4).

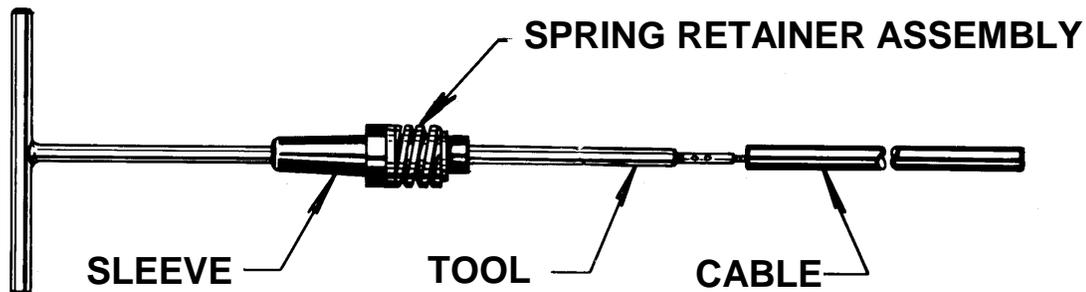


Figure 9-25. Ignition Harness Assembly Tool

11. Assemble spring (Figure 2) (2) and terminal (3) with a clockwise twisting motion.
12. Clean the spark plug terminal according to the instructions in Section 5-3.
13. Test the ignition lead according to instructions in Section 3-3.



9-4. Harness to Magneto Installation

1. Install capacitors in housing:
 - a. Ensure capacitor mounting area in cover (Figure 1) (16) is clean and free of corrosion. Brighten inside and outside of capacitor mounting area with a clean, fresh nylon scouring pad only.
 - b. Using a different clean, fresh nylon scouring pad, remove contamination and corrosion from mounting area on capacitors (Figure 1) (6). A good electrical connection between the capacitor housing and ground is essential for proper magneto operation.
2. Form capacitor leads as shown in Figure 9-26.

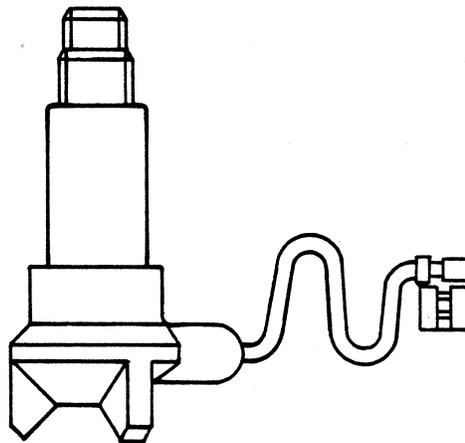


Figure 9-26. Formed Capacitor Leads

3. Install the two capacitors (Figure 1) (6), in their respective places in the harness cover (Figure 2) (16). Secure each capacitor with lock washer (Figure 1) (5) and nut (4), centering the wire nipple between the silicone grommets (Figure 2) (11). Torque each nut (Figure 1)(4) to 60-70 in.-lbs.

NOTE: Spray grommets with a film of MS-122AD dry lubricant. Do not spray the distributor block.

Harness is secured to both D-2000 and D-3000 magnetos with four screws and four washers. Original D-2000 harness covers with eight screw holes which have not been previously modified to fill in four center holes must be replaced with a new cover.

1. Ensure the Harness Cover and housing mating surface are free of corrosion, paint, and sealing materials. Use only a clean fresh nylon scouring pad to brighten these surfaces. Ensure threads in housing are free of corrosion and thread locking compounds. Use a 10-32 tapered tap, followed by a clean fresh nylon brush and air blast to clean the threads.



2. If used, position gasket (Figure 1)(8) on the magneto mating surface. Position harness cover (Figure 2) (16) so that witness marks align with witness marks on magneto housing (Figure 1) (66).
3. Install capacitor lead flag terminal onto the inside spade terminal of the corresponding contact assembly: LEFT capacitor lead to contacts farthest from witness marks and data plate, RIGHT capacitor lead to contacts nearest to witness marks and data plate. Fully seat flag terminals straight onto spade terminals.
4. Position cover onto magneto, ensuring each grommet slides into its corresponding distributor block outlet tower.
5. Install screws (Figure 1) (1) with new lock washer (2) (for un-pressurized magnetos), or crush washer (3) (for pressurized magnetos) at the four corners of the cover. Tighten screws evenly, ensuring gasket is positioned properly, if applicable. Do not use any thread locking compound on these screws, as the capacitor ground return path requires a tight electrical connection between the cover (Figure 2) (16) and the housing (Figure 1) (66). For un-pressurized magnetos, torque the screws to 30-35 in.-lbs. For pressurized magnetos, torque the screws to 40-45 in.-lbs.

9-5. Magneto Installation on Engine

NOTE: Comply with all engine manufacturer's installation instructions and parts lists regarding drive adapters, spacers, gaskets, mounting hardware, torque values and related specifications.

WARNING

When the P-lead terminal is removed from the magneto, the spring inside the capacitor DOES NOT ground the magneto. Should the propeller be moved by hand during maintenance procedures and a functional (“hot”) magneto condition exists, the engine may fire and cause injury to personnel!

1. Remove plugs (Figure 1) (59, 61, 63 or 60) necessary to gain visual access to the distributor gear (21) and rotor (48). Turn rotating magnet to the No. 1 neutral position. For D4LN-2200 and D4LN-3200 magnetos, this position is with the “C” mark of the rotor centered in the timing window and the red gear teeth on the edges of the windows on the ends of the magneto. For all other magnetos, position “K” mark of the rotor in the center of the timing window and the red gear teeth on the edges of the windows on the ends of the magneto. Turn the rotor slightly in reverse direction of normal rotation and allow rotor to rest in magnetic neutral position. The red tooth will appear off center in window.
2. Using 11-9110-1 Timing Light and adapters made from P/N 10-382698 terminal kits, install and adjust magneto on engine according to the engine manufacturer's instructions.

WARNING

Do not use any gear holding tool while performing magneto inspections, maintenance, adjustments or assembly. Such tools are unnecessary and using them may cause hidden damage to



the distributor gear, resulting in magneto failure and subsequent engine failure, personal injury or death.

3. As required, assemble Terminal Kits for each magneto as shown in Figure 9-28. Install switch and applicable retard and/or tachometer wiring by securing terminal nut(s) onto magneto. Tighten terminals finger tight.
4. Dress spark plug leads to the engine in accordance with engine manufacturer's instructions. Dress leads away from sharp edges and hot spots. When clamps are tightened, ensure leads will not be crushed. Leads must be supported at short intervals to prevent chafing damage, and not drawn so taut as to produce strain on the parts.
5. Apply MS-122AD dry lubricant spray to the terminal insulating sleeves (Figure 2) (4) in the location shown in Figure 9-27 to prevent heat from causing sleeve to stick to spark plug barrel.

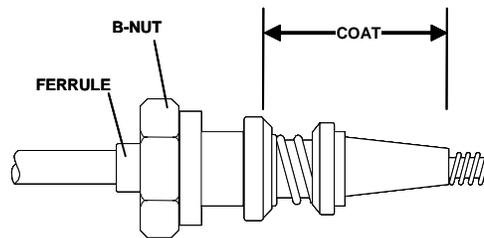


Figure 9-27. Lubricate Insulating Sleeve

6. After harness is dressed to the engine, recheck clamp securing screws for tightness. For 3/4-20 B-nuts, apply 110-120 in.-lbs. torque. For 5/8-24 B-nuts, apply 90-95 in.-lbs. torque. Do not allow the ferrule (Figure 1) (8) to twist while tightening nut.

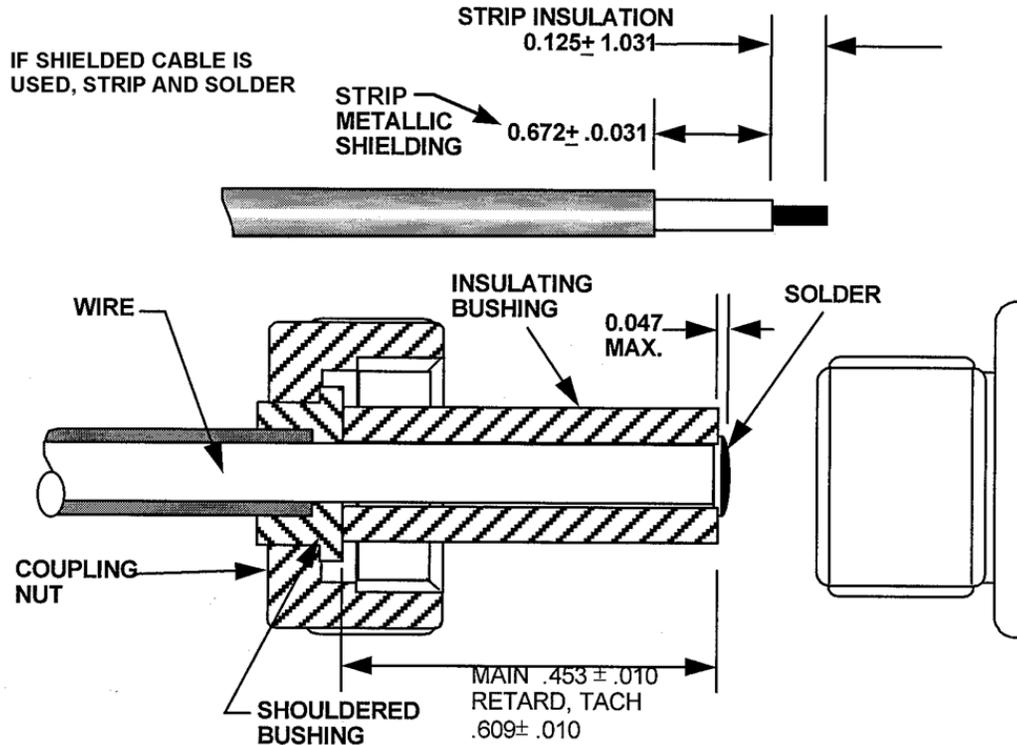


Figure 9-28. Terminal Kit Assembly

7. If used, secure elbow nuts (Figure 2) (15) to ferrule (13) in final position, or assemble elbow clamps (17) as shown in Figure 9-29.
8. For pressurized ignition systems only, following ignition system installation, or anytime magneto or magneto harness is removed or replaced, check the integrity of the magneto pressurization system according to instructions in Textron Lycoming Service Instruction 1308D or later revision.

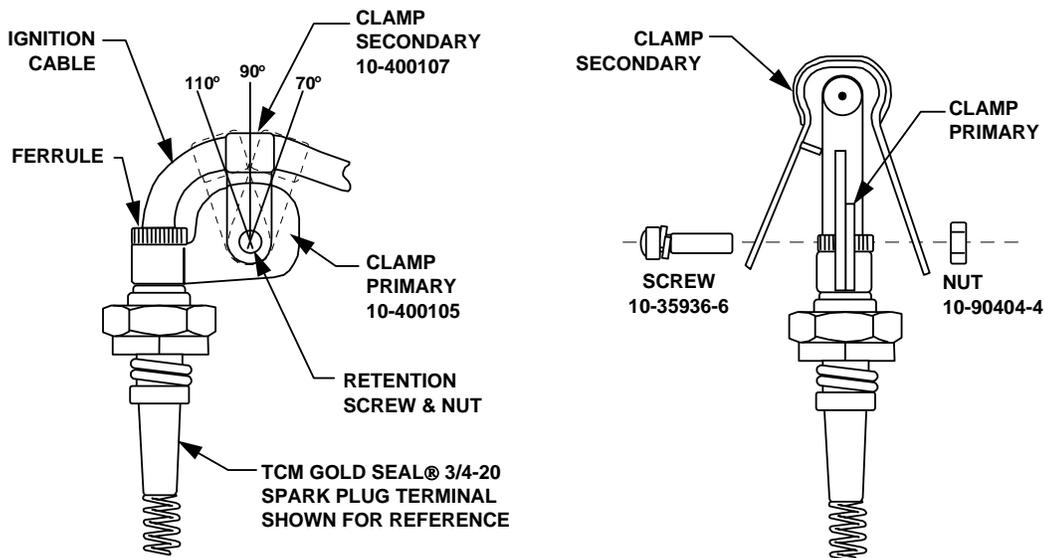


Figure 9-29. Elbow Kit Assembly



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Section 10. Special Tools, Equipment and Supplies

Refer to Figure 10-1 for a list of special tools, fixtures, equipment and consumable supplies. Figure 10-3 through Figure 10-9 illustrate fabrication of special tools required for disassembly, assembly, and adjustment. All linear dimensions are in inches, unless specified otherwise.

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

10-1. Special Tool and Consumable Supply List

Table 10-1. Special Tools and Consumable Supplies

Part Number and Description	Application	Source
Special Tools		
Ignition Harness Assembly Tool	Assemble Ignition Harness	Fabricate according to Figure 10-2
Eyelet Pressing Tool	Press Eyelet in to Cable Outlet Plate (Figure 2)(16)	Fabricate according to Figure 10-1
11-1471 Drift	Seat bearing (Figure 1)(50) in flange	Fabricate according to Figure 10-3
11-8150-1 Timing Kit	Check magneto internal timing	Kell-Strom
11-8465 Rotor Holding Tool	Hold rotor to check magneto internal timing	Kell-Strom
11-8627 Spring Seating Kit	Seat spring in distributor block	Kell-Strom
11-8822 Lock-Ring Installation Drift	Install retaining ring	Kell-Strom
11-8950-2, High Tension Lead Tester	Test high tension lead insulation strength and continuity	Kell-Strom
11-9998 Bearing Pressing Tool	Remove bearing	Kell-Strom
11-9999 Bearing Pressing Support	Remove bearing	Kell-Strom
11-10500, Magneto Test Stand, or equivalent	For off-engine magneto testing	Kell-Strom
11-10600, Magnet Charger	Magnetize rotor	Kell-Strom
11-10900 Air Flow Tester	Test magneto pressurization system	Kell-Strom
30-501 Crimping Tool	Crimp lead splice eyelet; strip wires	Ideal Industries
8840A Digital Multimeter (or equivalent)	Test coil	Fluke; Commercial, off the shelf
CG240 Puller	Remove drive plate or cam	Snap-On
E-50 Timing Light (or equivalent)	Check magneto-to-engine timing	Eastern Technology Corp.
LC-103 Capacitor Tester	Test capacitor	Sencore
No. 2 Retaining ring pliers	Remove retaining ring	Waldes Tru-Arc
WT-111M Crimping Tool (Modified: See Figure 9-24)	Crimps eyelets and terminals onto cable.	Thomas & Betts
Consumable Supplies		
646943, Anti-seize Lubricant	Prevent drive members from locking on rotating magnet shaft taper	Continental Motors



Special Tools, Equipment and Supplies

Table 10-1. Special Tools and Consumable Supplies

Part Number and Description	Application	Source
10-400419-3	Coil Lead and Repair Kit	Continental Motors
10-86527 High Temperature Lubricant	Contact assemblies, cam follower felt	Continental Motors
10-70506-10S Protective Caps (4 required)	Protect bushing during coating of block	Continental Motors
10-391200 Distributor Block Lubricant	Distributor block bushings	Continental Motors
10-391400 Distributor Block Coating	Apply to "Black" distributor blocks to inhibit moisture sheeting on dielectric	Continental Motors
Loctite 8531 Grade B Compound	Seal between bearing and housing and bearing and shaft	Loctite
Dykem Stain Red DNC	Mark distributor gears	Dykem
MS-122AD Teflon Dry Lubricant	Distributor Gear Teeth	Miller-Stephenson
Permabond 910 Industrial Grade Adhesive	Bond Data Plate to Housing	Permabond

Table 10-2. Supplier Contact Information

Company	Address	Telephone	Internet site
Dykem	ITW Dykem 805 E. Old 56 Highway Olathe, KS 66061	800-443-9536	buydykem.com
Eastern Technology Corporation	42 Nelson St. East Hartford, CT	860-528-9821	easterntech.com
Emhart Fastening Teknologies	Industrial Division 50 Shelton Technology Center P.O. Box 859 Shelton, CT 06484	203-924-9341	emhart.com/ products
Ideal Industries	Becker Pl. Sycamore, IL 60178	800-435-0705	idealindustries.com
Kell Strom Tool Company	214 Church Street Wethersfield, CT 06109	800-851-6851 860-529-6851	kell-strom.com
Loctite	1201 Trout Brook Crossing Rocky Hill, CT 06067	800-567-8483	henkelna.com
Miller-Stephenson Chemical Company	6348 Oakton St. Morton Grove, IL 60053	847-966-2022 800-992-2424	miller- stephenson.com
Permabond International	Englewood, NJ 07631		732-868-1372 800-714-0170
Sencore	3200 Sencore Drive Sioux Falls, SD 57107	800-736-2673	sencore.com
Snap-On Tools	2611 Commerce Blvd. Birmingham, AL	877-762-7664(US) 888-451-8665 (CAN) 01536 413877 (UK) 1800 811 480 (AU)	snap.com
Thomas & Betts	8155 T&B Boulevard Memphis, TN 38125	901-252-8000 800-816-7809	tnb.com



Table 10-2. Supplier Contact Information

Company	Address	Telephone	Internet site
Waldes Tru-Arc Division	Waldes-Kohinoor, Inc Long Island City, NY 11101	908-859-4266 800-526-7055	truarc.com

10-2. Illustrated Special Tools and Fixtures

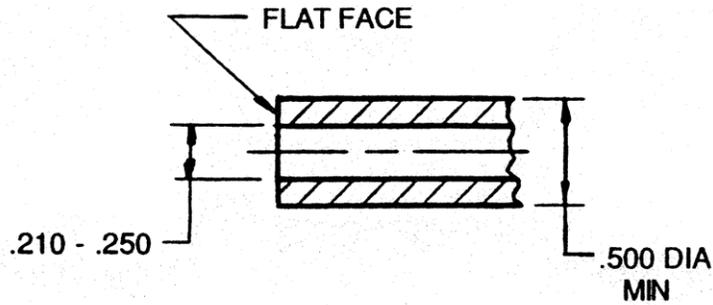


Figure 10-1. Eyelet Pressing Tool

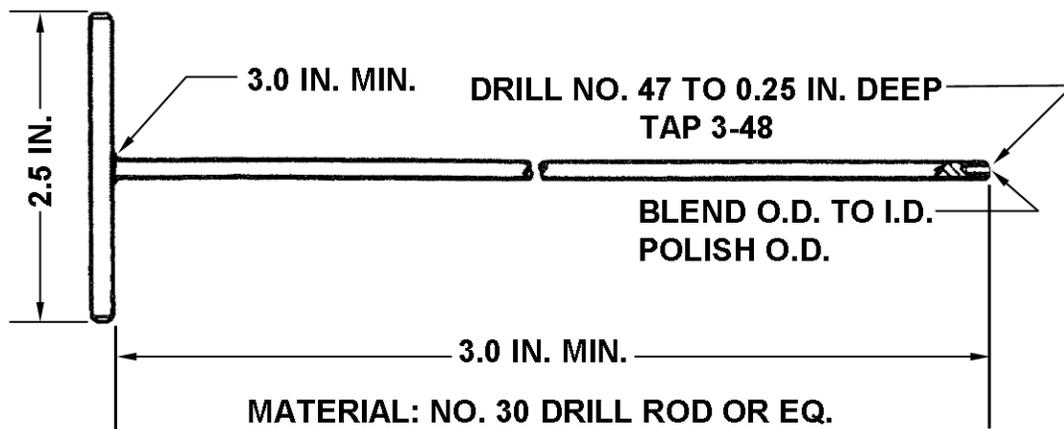


Figure 10-2. Harness Assembly Tool

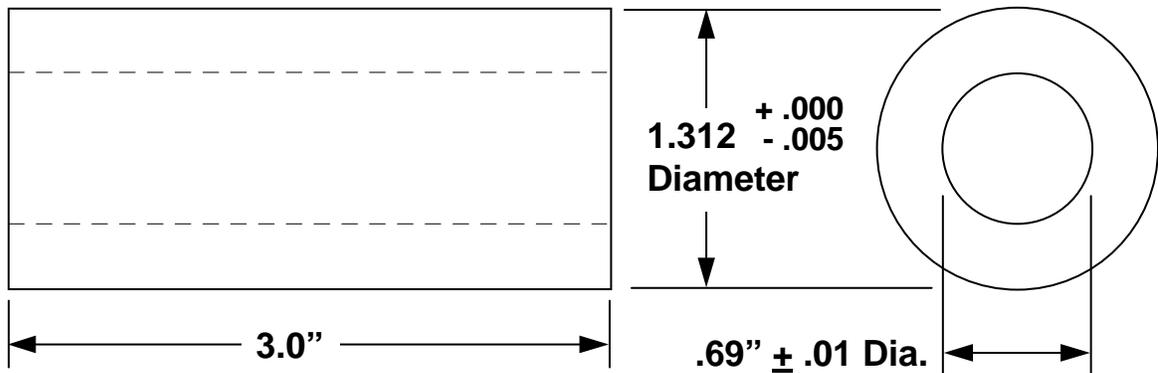


Figure 10-3. 11-1471 Drift

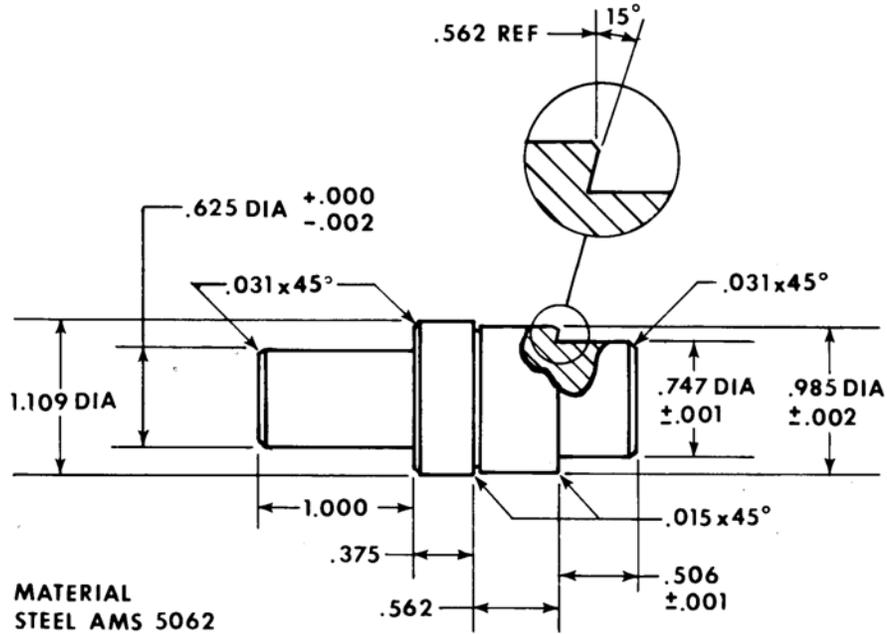


Figure 10-4. 11-9998 Bearing Pressing Tool

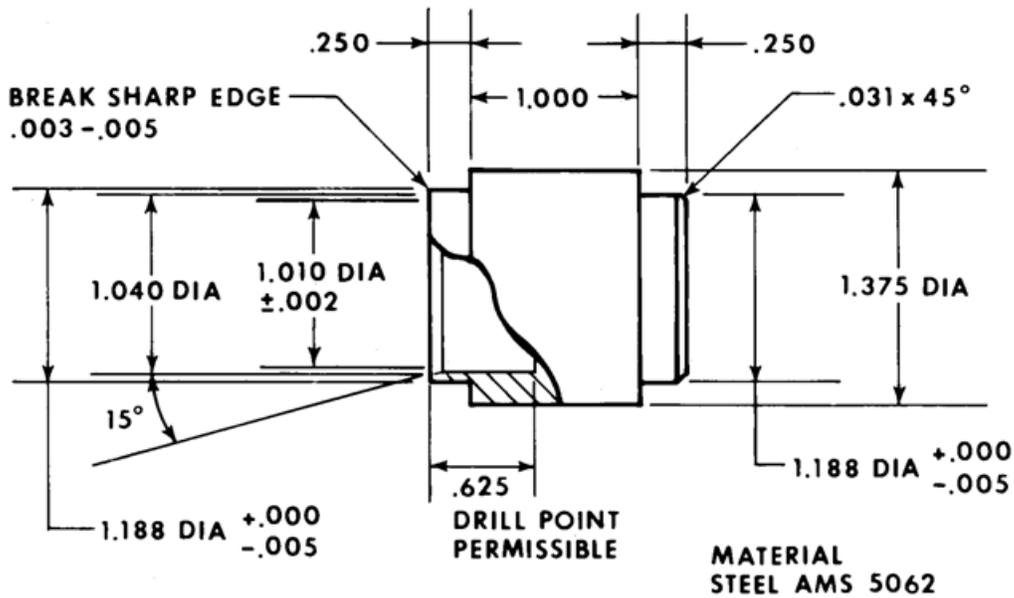


Figure 10-5. 11-9999 Bearing Pressing Support

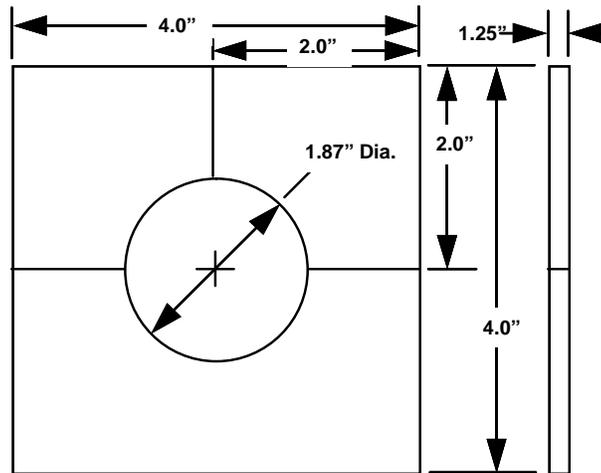


Figure 10-6. Support Bar Dimensions

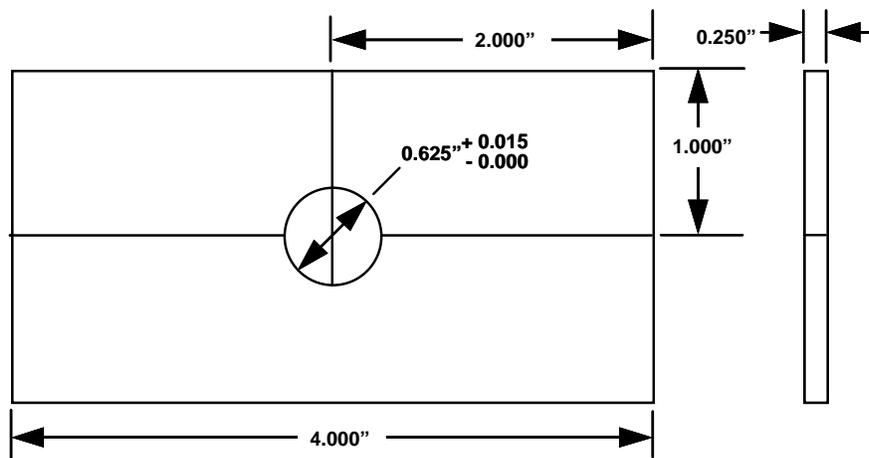


Figure 10-7. Small Gear Support Bar Dimensions

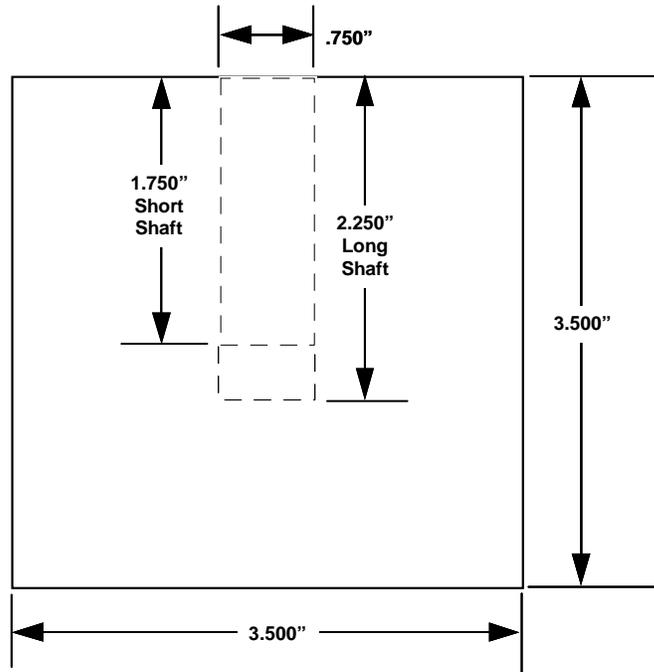


Figure 10-8. Wood Support Block Dimensions

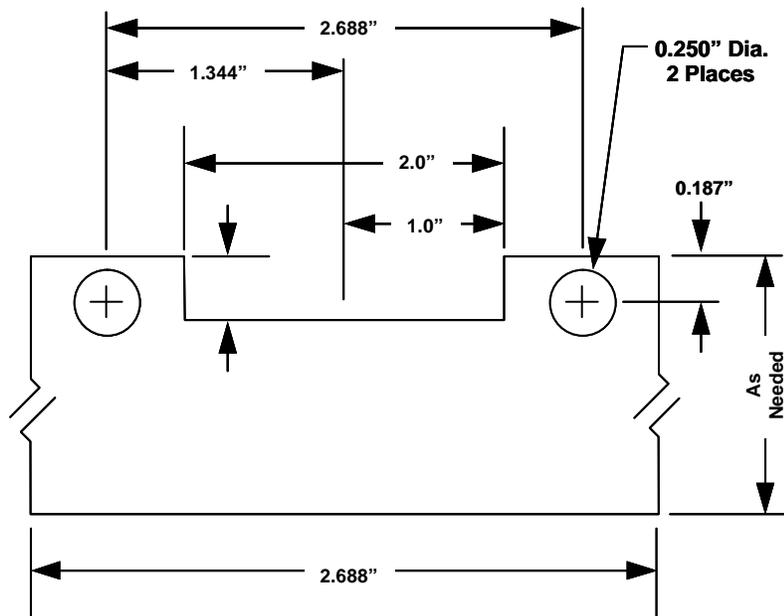


Figure 10-9. Dial Indicator Mounting Plate



Section 11. Illustrated Parts List

11-1. Equipment Covered

Table 11-1. Equipment Covered

System Part Number	Magneto Type Number	Includes Magneto Part No. (See Table 11-6)	Supersedes Magneto Type Number	Supersedes Magneto Part Number See Table 11-5	Degrees Lag/Retard	Includes Harness Part No. See (Table 11-7 and Table 11-8)
10-720633-49 ¹	Spare elbow style lead to maintain Dura-Blue Harnesses ONLY (See Table 11-7)					
10-720633-78 ¹	Spare elbow style lead to maintain Dura-Blue Harnesses ONLY (See Table 11-7)					
10-785046-109	D6LN-3200	10-682910-13	D6LN-2230	10-382910-13	11	10-821625-4
10-785046-110	D6RN-3200	10-682910-18	D6RN-2230	10-382910-18	11	10-821625-4
10-785046-118	D6LN-3200	10-682910-13	D6LN-2230	10-382910-13	11	10-821625-34
10-785046-119	D6RN-3200	10-682910-18	D6RN-2230	10-382910-18	11	10-821625-34
10-785048-101	D8LN-3200	10-682920-11	D8LN-2200	10-382920-11	15	10-821825-2
10-785124-106	D4LN-3000	10-682555-11	D4LN-2021	10-382555-11	25	10-821414-6
10-785124-110	D4LN-3000	10-682555-11	D4LN-2021	10-382555-11	25	10-821414-8
10-785124-111	D4LN-3000	10-682555-13	D4LN-2021	10-382555-13	15	10-821414-6
10-785124-112	D4RN-3000	10-682555-14	D4RN-2021	10-382555-14	20	10-821414-6
10-785124-113	D4LN-3000	10-682555-15	D4LN-2021	10-382555-15	20	10-821414-6
10-785124-115	D4RN-3000	10-682555-14	D4RN-2021	10-382555-14	20	10-821414-4
10-785124-116	D4LN-3000	10-682555-13	D4LN-2021	10-382555-13	15	10-821414-8
10-785124-118	D4LN-3000	10-682555-13	D4LN-2021	10-382555-13	15	10-821414-10
10-785124-121	D4LN-3000	10-682555-15	D4LN-2021	10-382555-15	20	10-821414-4
10-785124-123	D4LN-3000	10-682555-11	D4LN-2021	10-382555-11	25	10-821414-18
10-785124-124	D4LN-3000	10-682555-13	D4LN-2021	10-382555-13	15	10-821415-12
10-785124-129	D4RN-3000	10-682555-16	-	-	15	10-821414-14
10-785124-130	D4LN-3000	10-682555-13	D4LN-2021	10-382555-13	15	10-821414-14
10-785124-704	D4RN-3000	10-682555-12	D4RN-2021	10-382555-12	25	10-821412-93
10-785126-105	D6LN-3000	10-682560-11	D6LN-2031	10-382560-11	15	10-821614-6
10-785126-107	D6LN-3000	10-682560-13	D6LN-2031	10-382560-13	10	10-821614-6
10-785126-109	D6LN-3000	10-682560-13	D6LN-2031	10-382560-13	10	10-821615-4
10-785126-111	D6LN-3000	10-682560-13	D6LN-2031	10-382560-13	10	10-821615-20
10-785126-112	D6LN-3000	10-682560-11	D6LN-2031	10-382560-11	15	10-821614-36
10-785144-114	D4LN-3200	10-682605-13	D4LN-2200	10-382605-13	20	10-821425-12
10-785146-106	D6LN-3200	10-682610-11	D6LN-2230	10-382610-11	15	10-821624-6
10-785146-111	D6LN-3200	10-682610-13	D6LN-2230	10-382610-13	11	10-821624-6
10-785148-102	D8LN-3200	10-682620-11	D8LN-2200	10-382620-11	15	10-821825-2
10-785164-112	D4RN-3000	10-682555-141	D4RN-2021	10-382555-141	20	10-821444-6
10-785164-113	D4LN-3000	10-682555-151	D4LN-2021	10-382555-151	20	10-821444-6
10-785166-107	D6LN-3000	10-682560-131	-	-	10	10-821644-6
10-785186-109	D6LN-3200	10-682610-131	D6LN-2230	10-382610-131	11	10-821635-4
10-785286-402	D6RN-3200	10-682610-221	D6RN-2230	10-382610-221	19	10-821635-11

1. Available only until current supply is exhausted



11-2. Superseded, Discontinued & Interchangeable Items

Table 11-2. Superseded, Discontinued & Interchangeable Items

Old Part No.	Superseded By	Old Part No.	Superseded By	Old Part No.	Superseded By
10-382555-10	Discontinued	10-382910-10	Discontinued	10-384601-126	Discontinued
10-382555-11	10-682555-11	10-382910-11	Discontinued	10-384601-128	Discontinued
10-382555-12	10-682555-12	10-382910-12	10-682910-18	10-384602-302	Discontinued
10-382555-13	10-682555-13	10-382910-13	10-682910-13	10-384602-303	10-821614-6
10-382555-14	10-682555-14	10-382910-14	Discontinued	10-384602-306	Discontinued
10-382555-15	10-682555-15	10-382910-15	Discontinued	10-384602-307	10-821624-6
10-382555-16	10-682555-16	10-382910-16	Discontinued	10-384602-323	Discontinued
10-382555-131	Discontinued	10-382910-17	10-682910-13	10-384602-327	Discontinued
10-382555-141	10-682555-141	10-382910-18	10-682910-18	10-384602-502	Discontinued
10-382555-151	10-682555-151	10-382910-53	10-682910-13	10-384603-302	Discontinued
10-382555-161	Discontinued	10-382910-58	Discontinued	10-384603-502	Discontinued
10-382560-10	Discontinued	10-382910-101	Discontinued	10-384604-103	10-821615-4
10-382560-11	10-682560-11	10-382910-161	Discontinued	10-384604-106	Discontinued
10-382560-12	Discontinued	10-382910-531	Discontinued	10-384604-109	10-821635-4
10-382560-13	10-682560-13	10-382920-11	10-682920-11	10-384604-126	10-821625-4
10-382560-53	10-682560-13	10-382920-12	Discontinued	10-384605-106	Discontinued
10-382560-111	Discontinued	10-382920-51	10-682920-11	10-384605-126	Discontinued
10-382560-131	10-682560-131	10-382940-131	Discontinued	10-384606-303	10-821614-6
10-382590-11	Discontinued	10-382940-161	Discontinued	10-384606-307	Discontinued
10-382605-10	Discontinued	10-382960-13	Discontinued	10-384670-102	Discontinued
10-382605-11	Discontinued	10-384241-106	Discontinued	10-384670-106	Discontinued
10-382605-12	Discontinued	10-384242-106	Discontinued	10-384670-108	Discontinued
10-382605-13	10-682605-13	10-384400-302	Discontinued	10-384671-106	Discontinued
10-382605-14	Discontinued	10-384400-303	10-821414-6	10-384671-108	Discontinued
10-382605-17	10-682605-13	10-384400-306	Discontinued	10-384700-607	Discontinued
10-382605-18	Discontinued	10-384400-307	Discontinued	10-384800-107	10-821825-4
10-382605-151	Discontinued	10-384400-502	Discontinued	10-385026-107	Discontinued
10-382610-10	Discontinued	10-384401-502	Discontinued	10-385046-102	Discontinued
10-382610-11	10-682610-11	10-384402-102	Discontinued	10-385046-103	Discontinued
10-382610-12	Discontinued	10-384402-106	Discontinued	10-385046-104	Discontinued
10-382610-13	10-682610-13	10-384402-306	Discontinued	10-385046-107	Discontinued
10-382610-14	Discontinued	10-384403-302	Discontinued	10-385046-108	Discontinued
10-382610-15	Discontinued	10-384403-303	Discontinued	10-385046-109	10-785046-109
10-382610-16	Discontinued	10-384403-306	Discontinued	10-385046-110	10-785046-110
10-382610-18	Discontinued	10-384403-307	Discontinued	10-385046-111	Discontinued
10-382610-20	Discontinued	10-384405-303	10-821414-8	10-385046-112	Discontinued
10-382610-22	Discontinued	10-384405-307	Discontinued	10-385046-113	Discontinued
10-382610-101	Discontinued	10-384406-103	10-821414-4	10-385046-114	10-785046-110
10-382610-121	Discontinued	10-384406-303	10-821414-4	10-385046-115	10-785046-109
10-382610-131	10-682610-131	10-384406-307	Discontinued	10-385046-116	Discontinued
10-382610-161	Discontinued	10-384407-303	10-821414-10	10-385046-117	Discontinued



Table 11-2. Superseded, Discontinued & Interchangeable Items

Old Part No.	Superseded By	Old Part No.	Superseded By	Old Part No.	Superseded By
10-382610-221	10-682610-221	10-384408-302	10-821414-18	10-385046-209	10-785046-109
10-382620-10	Discontinued	10-384409-102	10-821415-12	10-385046-216	Discontinued
10-382610-11	10-682610-11	10-384441-603	Discontinued	10-385046-217	Discontinued
10-382610-51	10-682610-11	10-384442-603	Discontinued	10-385048-101	10-785048-101
10-382650-11	Discontinued	10-384443-603	Discontinued	10-385048-201	10-785048-101
10-382650-111	Discontinued	10-384444-602	10-821412-93	10-385048-701	Discontinued
10-382650-121	Discontinued	10-384600-106	Discontinued	10-385064-114	Discontinued
10-382650-141	Discontinued	10-384601-106	Discontinued	10-385064-115	Discontinued
10-382725-10	Discontinued	10-384601-108	Discontinued	10-385086-102	Discontinued
10-385086-103	Discontinued	10-385144-104	Discontinued	10-385246-402	Discontinued
10-385086-108	Discontinued	10-385144-105	Discontinued	10-385256-401	Discontinued
10-385086-209	Discontinued	10-385144-106	Discontinued	10-385286-401	Discontinued
10-385124-101	Discontinued	10-385144-107	Discontinued	10-385286-402	10-785286-402
10-385124-102	Discontinued	10-385144-108	Discontinued	10-385296-401	Discontinued
10-385124-103	Discontinued	10-385144-109	Discontinued	10-385296-402	Discontinued
10-385124-104	Discontinued	10-385144-110	Discontinued	10-385296-403	Discontinued
10-385124-105	Discontinued	10-385144-111	Discontinued	10-682555-10	Discontinued
10-385124-106	10-785124-106	10-385144-112	10-785144-114	10-682555-111	Discontinued
10-385124-107	Discontinued	10-385144-113	Discontinued	10-682555-131	Discontinued
10-385124-108	Discontinued	10-385146-101	Discontinued	10-682555-161	Discontinued
10-385124-109	Discontinued	10-385146-102	Discontinued	10-682560-10	Discontinued
10-385124-110	10-785124-110	10-385146-103	Discontinued	10-682560-12	Discontinued
10-385124-111	10-785124-111	10-385146-104	Discontinued	10-682560-111	Discontinued
10-385124-112	10-785124-112	10-385146-105	Discontinued	10-682590-11	Discontinued
10-385124-113	10-785124-113	10-385146-106	10-785146-106	10-682605-10	Discontinued
10-385124-114	Discontinued	10-385146-107	Discontinued	10-682605-11	Discontinued
10-385124-115	10-785124-115	10-385146-108	Discontinued	10-682605-12	Discontinued
10-385124-116	10-785124-116	10-385146-109	Discontinued	10-682605-14	Discontinued
10-385124-117	Discontinued	10-385146-110	Discontinued	10-682605-18	Discontinued
10-385124-118	10-785124-118	10-385146-111	10-785146-111	10-682605-151	Discontinued
10-385124-119	Discontinued	10-385146-112	Discontinued	10-682610-10	Discontinued
10-385124-120	Discontinued	10-385146-113	Discontinued	10-682610-12	Discontinued
10-385124-121	10-785124-121	10-385146-114	Discontinued	10-682610-14	Discontinued
10-385124-122	10-785124-115	10-385146-115	Discontinued	10-682610-15	Discontinued
10-385124-123	10-785124-123	10-385146-116	Discontinued	10-682610-16	Discontinued
10-385124-124	10-785124-124	10-385146-117	Discontinued	10-682610-18	Discontinued
10-385124-126	Discontinued	10-385147-701	Discontinued	10-682610-20	Discontinued
10-385124-127	Discontinued	10-385148-101	10-785148-102	10-682610-101	Discontinued
10-385124-128	Discontinued	10-385148-102	10-785148-102	10-682610-161	Discontinued
10-385124-701	Discontinued	10-385148-201	10-785148-102	10-682620-10	Discontinued
10-385124-702	Discontinued	10-385148-202	10-785148-102	10-682650-11	Discontinued
10-385124-703	Discontinued	10-385164-112	10-785148-102	10-682650-111	Discontinued
10-385124-704	10-785124-704	10-385164-113	10-785148-102	10-682650-121	Discontinued



Illustrated Parts List

Table 11-2. Superseded, Discontinued & Interchangeable Items

Old Part No.	Superseded By	Old Part No.	Superseded By	Old Part No.	Superseded By
10-385124-705	Discontinued	10-385164-114	Discontinued	10-682650-141	Discontinued
10-385126-101	Discontinued	10-385164-115	Discontinued	10-682725-10	Discontinued
10-385126-102	Discontinued	10-385166-101	Discontinued	10-682910-10	Discontinued
10-385126-103	Discontinued	10-385166-102	Discontinued	10-682910-11	Discontinued
10-385126-104	Discontinued	10-385166-103	Discontinued	10-682910-12	10-682910-18
10-385126-105	10-785126-105	10-385184-101	Discontinued	10-682910-14	Discontinued
10-385126-106	Discontinued	10-385186-102	Discontinued	10-682910-17	10-682910-13
10-385126-107	10-785126-107	10-385186-103	Discontinued	10-682910-18	Discontinued
10-385126-108	10-785126-107	10-385186-108	Discontinued	10-682910-101	Discontinued
10-385126-109	10-785126-109	10-385186-109	10-785186-109	10-682910-131	Discontinued
10-385126-110	Discontinued	10-385186-111	Discontinued	10-682910-181	Discontinued
10-385126-111	10-785126-111	10-385226-401	Discontinued	10-682960-13	Discontinued
10-385126-112	10-785126-112	10-385236-401	Discontinued	10-684241-106	Discontinued
10-385144-101	Discontinued	10-385242-701	Discontinued	10-684242-106	Discontinued
10-385144-102	Discontinued	10-385242-702	Discontinued	10-684400-303	10-821414-6
10-385144-103	Discontinued	10-385246-401	Discontinued	10-684400-305	Discontinued
10-684400-306	Discontinued	10-684606-307	Discontinued	10-685124-105	Discontinued
10-684400-307	Discontinued	10-684607-102	10-821615-20	10-685124-106	10-785124-106
10-684400-309	Discontinued	10-684607-104	Discontinued	10-685124-107	Discontinued
10-684402-106	Discontinued	10-684608-126	Discontinued	10-685124-108	Discontinued
10-684402-306	Discontinued	10-684609-302	10-821614-36	10-685124-109	Discontinued
10-684402-307	Discontinued	10-684609-304	Discontinued	10-685124-110	10-785124-110
10-684403-303	Discontinued	10-684610-126	10-821625-34	10-685124-111	10-785124-111
10-684403-306	Discontinued	10-684611-303	Discontinued	10-685124-112	10-785124-112
10-684403-307	Discontinued	10-684612-103	Discontinued	10-685124-113	10-785124-113
10-684404-303	Discontinued	10-684670-102	Discontinued	10-685124-114	Discontinued
10-684405-303	10-821414-8	10-684670-106	Discontinued	10-685124-115	10-785124-115
10-684405-305	Discontinued	10-684670-108	Discontinued	10-685124-116	10-785124-116
10-684405-307	Discontinued	10-684671-102	Discontinued	10-685124-117	Discontinued
10-684406-103	10-821414-4	10-684671-106	Discontinued	10-685124-118	10-785124-118
10-684406-303	10-821414-4	10-684671-108	Discontinued	10-685124-120	Discontinued
10-684407-303	10-821414-10	10-684700-607	Discontinued	10-685124-122	10-785124-115
10-684408-302	10-821414-18	10-684800-107	10-821825-2	10-685124-123	10-785124-123
10-684409-102	10-821415-12	10-684800-127	10-821825-2	10-685124-124	10-785124-124
10-684409-106	10-821425-12	10-684801-107	10-821825-2	10-685124-126	Discontinued
10-684410-104	Discontinued	10-684841-127	Discontinued	10-685124-129	10-785124-129
10-684410-124	Discontinued	10-685026-107	Discontinued	10-685124-130	10-785124-130
10-684411-402	10-821414-14	10-685046-102	Discontinued	10-685124-701	Discontinued
10-684412-106	10-821425-12	10-685046-103	Discontinued	10-685124-702	Discontinued
10-684441-603	Discontinued	10-685046-104	Discontinued	10-685124-703	Discontinued
10-684442-603	Discontinued	10-685046-105	Discontinued	10-685124-704	10-785124-704
10-684443-603	Discontinued	10-685046-106	Discontinued	10-685124-705	Discontinued
10-684444-602	10-821412-93	10-685046-107	Discontinued	10-685126-101	Discontinued



Table 11-2. Superseded, Discontinued & Interchangeable Items

Old Part No.	Superseded By	Old Part No.	Superseded By	Old Part No.	Superseded By
10-684445-602	Discontinued	10-685046-108	Discontinued	10-685126-102	Discontinued
10-684600-106	Discontinued	10-685046-109	10-785046-109	10-685126-103	Discontinued
10-684601-106	Discontinued	10-685046-110	10-785046-110	10-685126-104	Discontinued
10-684601-108	Discontinued	10-685046-111	Discontinued	10-685126-105	10-785126-105
10-684601-126	Discontinued	10-685046-112	Discontinued	10-685126-106	Discontinued
10-684601-128	Discontinued	10-685046-113	Discontinued	10-685126-107	10-785126-107
10-684602-302	Discontinued	10-685046-114	10-785046-110	10-685126-108	10-785126-107
10-684602-303	10-821614-6	10-685046-115	10-785046-109	10-685126-109	10-785126-109
10-684602-304	Discontinued	10-685046-116	Discontinued	10-685126-111	10-785126-111
10-684602-305	10-821644-6	10-685046-117	Discontinued	10-685126-112	10-785126-112
10-684602-306	Discontinued	10-685046-118	10-785046-118	10-685126-113	Discontinued
10-684602-307	10-821624-6	10-685046-119	10-785046-119	10-685126-114	Discontinued
10-684602-323	Discontinued	10-685048-101	10-785048-101	10-685144-101	Discontinued
10-684602-327	Discontinued	10-685086-102	Discontinued	10-685144-102	Discontinued
10-684603-502	Discontinued	10-685086-103	Discontinued	10-685144-103	Discontinued
10-684604-103	10-821615-4	10-685086-108	Discontinued	10-685144-104	Discontinued
10-684604-106	Discontinued	10-685086-109	Discontinued	10-685144-105	Discontinued
10-684604-109	10-821635-4	10-685086-110	Discontinued	10-685144-106	Discontinued
10-684604-126	10-821625-4	10-685124-101	Discontinued	10-685144-107	Discontinued
10-684605-106	Discontinued	10-685124-102	Discontinued	10-685144-108	Discontinued
10-684605-126	Discontinued	10-685124-103	Discontinued	10-685144-109	Discontinued
10-684606-106	Discontinued	10-685124-104	Discontinued	10-685144-110	Discontinued
10-685144-111	Discontinued	10-685146-113	Discontinued	10-685186-108	Discontinued
10-685144-112	10-785144-114	10-685146-114	Discontinued	10-685186-109	10-785186-109
10-685144-113	Discontinued	10-685146-115	Discontinued	10-685224-701	Discontinued
10-685144-114	10-785144-114	10-685147-701	Discontinued	10-685226-401	Discontinued
10-685146-101	Discontinued	10-685148-101	10-785148-102	10-685236-401	Discontinued
10-685146-102	Discontinued	10-685148-102	10-785148-102	10-685242-701	Discontinued
10-685146-103	Discontinued	10-685164-110	Discontinued	10-685246-401	Discontinued
10-685146-104	Discontinued	10-685164-112	10-785164-112	10-685256-401	Discontinued
10-685146-105	Discontinued	10-685164-113	10-785164-113	10-685286-402	10-785286-402
10-685146-106	10-785146-106	10-685164-114	Discontinued	10-685296-401	Discontinued
10-685146-107	Discontinued	10-685164-115	Discontinued	10-685296-402	Discontinued
10-685146-108	Discontinued	10-685166-102	Discontinued	10-685296-403	Discontinued
10-685146-109	Discontinued	10-685166-104	Discontinued	10-785124-131	10-785124-106
10-685146-110	Discontinued	10-685166-107	10-785166-107	10-820414-6	10-821414-6
10-685146-111	10-785146-111	10-685184-101	Discontinued		
10-685146-112	Discontinued	10-685186-102	Discontinued		



11-3. Switch Terminal Kits

Table 11-3. Switch Terminal ("P-Lead") Kits

Kit Number	Description	Application	Code
10-382698	Kit, Magneto Ground Terminal	Two each for all magnetos	A
10-157208	Kit, Magneto Retard Terminal	One each for unpressurized magnetos with retard contacts	B
10-157209	Kit, Magneto Tachometer Terminal	One each for magnetos with tachometer contacts	C
10-382813	Kit, Pressurized Retard Terminal	One each for pressurized magnetos with retard contacts	D

Table 11-4. Terminal Kit Spares

Figure 11-1 Index	Part Number	Description	Use Code	Quantity Required
1	10-77092	Washer, Flat	A	1
2	10-157212	Bushing, Insulated	B, C	1
	10-382697	Insulator, 0.406 X 0.245 OD X 0.125 ID	A	1
3	10-157213	Bushing, Shouldered	All	1
4	10-157210	Nut, Coupling 0.3750-32	B, D	1
	10-157211	Nut, Coupling 0.4375-28	A, C	1
5	10-382812	Insulator	D	1

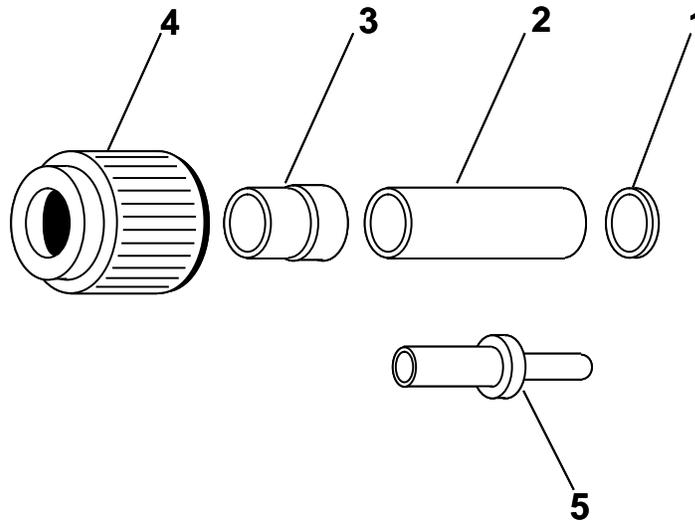


Figure 11-1. Terminal Kit Spares



11-4. Illustrated Parts by Magneto Series

Table 11-5. D-2000 Series Magnetos

Index	Figure 1 Description	Part No.	10-382555-11	10-382555-12	10-382555-13	10-382555-14	10-382555-15	10-382555-141	10-382555-151	10-382560-11	10-382560-13	10-382605-13	10-382610-11	10-382610-13	10-382610-131	10-382610-221	10-382620-11	10-382910-13	10-382910-18	10-382920-11	
1	Screw, Socket	NAS1351-3-32P	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
		NAS1351-3LB32P																	4	4	4
2	Washer, Spring Lock	MS35338-43	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4				
3	Washer, Plain	10-55501																4	4	4	
4	Nut, Hex	10-382618	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
5	Washer, Lock	10-17050	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
6	Capacitor, 6 CYL	10-400576								2	2		2	2	2	2		2	2		
	Capacitor, 8 CYL	10-400578															2				2
	Capacitor, 4 CYL	10-400574	2	2	2	2	2	2	2			2									
7	Pin, Cotter	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	Gasket, Cover	10-382811																1	1	1	
9	Screw, w/ Lock washer	10-35936-7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
10	Washer, Plain	10-14268	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
11	Contact Assembly	10-382585	2	2	2	2	2	1	1	2	2	1	1	1			1	1	1	1	1
12	Contact Assembly, Main & Tach	10-400183						1	1						1	1					
13	Contact Assembly, Main & Retard	10-400184										1	1	1	1	1	1	1	1	1	1
14	Screw, w/ Lock washer	10-382959						1	1			1	1	1	1	1	1	1	1	1	1
		10-391213	1	1	1	1	1			1	1										
15	Washer, Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16	Cam, Breaker, 2 lobe	10-382544	1	1	1	1	1	1	1		1										
	Cam, Breaker, 4 lobe	10-382543								1	1		1	1	1	1	1	1	1	1	1
17	Cam, Retard, 4 lobe	10-382739										1	1	1	1	1	1	1	1	1	1
	Cam, Retard, 2 lobe	10-382741						1	1			1									
18	Screw, w/ Lock washer	10-35937-20	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
19	DELETED																				
20	Connector, Strip	10-382785	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
21	Gear Kit, 4 & 8 CYL	10-682014	2	2	2	2	2	2	2			2				2					2
	Gear Kit, 6 CYL	10-682016								2	2		2	2	2	2		2	2		
22	Ring, Retaining	MS16624-2037	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
23	Washer, Flat	10-349511	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
24	Brush, Carbon	10-160844	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
25	Washer, Nylon	10-391309	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
26	Washer, Felt	10-50752	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
27	Block & Bearing Kit, 4 CYL	10-682054	1	1	1	1	1	1	1			1									
	Block & Bearing Kit, 6 CYL	10-682056								1	1		1	1	1	1		1	1		
	Block & Bearing Kit, 8 CYL	10-682058															1				1
28	Strip, Felt	10-163374	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
29	Spring, Helical	10-50737	8	8	8	8	8	8	8	12	12	8	12	12	12	12	16	12	12	16	16
30	Bearing, Roller	10-400553	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
31	Washer, Plain	10-685548	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2



Illustrated Parts List

Table 11-5. D-2000 Series Magnetos

Index	Figure 1 Description	Part No.																			
			10-382555-11	10-382555-12	10-382555-13	10-382555-14	10-382555-15	10-382555-141	10-382555-151	10-382560-11	10-382560-13	10-382605-13	10-382610-11	10-382610-13	10-382610-131	10-382610-221	10-382620-11	10-382910-13	10-382910-18	10-382920-11	
32	Nut, Castellated	10-51643		1												1					
		10-163178	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
33	Washer, Lock	10-3793		1												1					
34	Bushing, Drive	10-163048	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
35	Key, Woodruff	10-90788-5	2	1	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2
36	Washer, Plain	10-4093														1					
		10-52307		1																	
		10-116860	1		1	1	1	1	1	1	1										
37	Driveplate	10-349932-2											1	1	1	1	1	1		1	
		10-349932-3																		1	
38	Driveplate	10-349933-9														1					
39	Coupling, Impulse, CCW, 25°	10-400323	1																		
	Coupling, Impulse, CW, 20°	10-400311		1		1		1													
	Coupling, Impulse, CCW, 15°	10-400322			1																
	Coupling, Impulse, CCW, 20°	10-400324					1		1												
	Coupling, Impulse, CCW, 15°	10-400325								1											
	Coupling, Impulse, CCW, 10°	10-400326									1										
40	Body, Impulse Coupling	10-382747	1																		
		10-382768		1		1		1													
		10-382748			1																
		10-382767					1		1												
		10-382952								1											
		10-382961									1										
41	Spring, Flat, Spiral	10-51324	1	1	1	1	1	1	1												
		10-400042								1	1										
42	Cam Assembly, Impulse	10-400167-9	1																		
		10-400166-7		1		1		1													
		10-400167-7			1																
		10-400167-8					1		1												
		10-400167-13								1											
		10-400167-12									1										
43	Ring, Retaining	MS16624-2062	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
44	Washer, Plain	10-349328	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
45	Washer, Bowed	10-349249	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
46	Screw, Socket Head, Locking	10-382789	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
47	Washer, Plain	10-382788	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
48	Magnet, Rotating	10-382799-1	1		1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	
		10-382799-2		1											1						
49	Slinger, Oil	10-349248	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
50	Bearing, Ball	10-400567	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
51	Plate, Bearing Retainer	10-382787	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
52	Gear, Spur, 4 & 8 CYL	10-382573	1	1	1	1	1	1	1			1				1				1	
		10-382575								1	1		1	1	1	1		1	1		



Table 11-5. D-2000 Series Magnetos

Index	Figure 1 Description	Part No.	10-382555-11	10-382555-12	10-382555-13	10-382555-14	10-382555-15	10-382555-141	10-382555-151	10-382560-11	10-382560-13	10-382605-13	10-382610-11	10-382610-13	10-382610-131	10-382610-221	10-382620-11	10-382910-13	10-382910-18	10-382920-11
			53	Bushing , Roller Bearing	10-382969	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Kit , Coil Securing	10-382939	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
54a	Screw , Cap	NAS1352-08-24P	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
54b	Washer	10-382788	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
54c	Nut , Self-Locking	10-382936	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
55	Plate , Coil Retaining	10-382935	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
56	Spring	10-382931	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
57	Strip , Paper	10-382568	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	Coil , 6 & 8 CYL.	10-382588-1								2	2		2	2	2	2	2	2	2	2
	Coil , 6 & 8 CYL.	10-382790-1	2	2	2	2	2	2	2			2								
59	Plug , Ventilator	10-157134	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
60	Plug , Solid Nylon	10-157135	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
61	Bushing , Threaded	10-382815																1	1	1
62	Orifice , Threaded	10-382861																1	1	1
63	Plug , Solid Aluminum	10-51391																2	2	2
64	Plate , Identification	10-400006	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	Housing , Magneto	NP ¹	2	2	2	2	2	2	2	2	2	2	2	2	2	2				

1. No Parts Available- For housing replacement, convert magneto to D-3000 configuration



Illustrated Parts List

Table 11-6. D-3000 Series Magnetos

Index	Figure 1 Description	Part No.	10-682555-11	10-682555-12	10-682555-13	10-682555-14	10-682555-15	10-682555-16	10-682555-141	10-682555-151	10-682560-11	10-682560-13	10-682560-131	10-682605-13	10-682610-11	10-682610-13	10-682610-131	10-682610-221	10-682620-11	10-682910-13	10-682910-18	10-682920-11		
1	Screw, Socket	NAS1351-3-32P	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					
		NAS1351-3LB32P																			4	4	4	
2	Washer, Spring Lock	MS35338-43	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4					4	
3	Washer, Plain	10-55501																			4	4	4	
4	Nut, Hex	10-382618	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
5	Washer, Lock	10-17050	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
6	Capacitor, 6 CYL	10-400576									2	2	2											
		10-400578																		2				2
		10-400574	2	2	2	2	2	2	2	2					2									
7	Pin, Cotter	10-90751-18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
8	Gasket, Cover	10-382811																			1	1	1	
9	Screw, w/ Lock washer	10-35936-7	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
10	Washer, Plain	10-14268	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
11	Contact Assembly	10-382585	2	2	2	2	2	2	1	1	2	2	1	1	1	1				1	1	1	1	
12	Contact Assembly, Main & Tach	10-400183							1	1			1					1	1					
13	Contact Assembly, Main & Retard	10-400184												1	1	1	1	1	1	1	1	1	1	
14	Screw, w/ Lock washer	10-382959							1	1			1	1	1	1	1	1	1	1	1	1	1	
		10-391213	1	1	1	1	1	1			1	1												
15	Washer, Plain	10-51354	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
16	Cam, Breaker, 2 lobe	10-382544	1	1	1	1	1	1	1	1				1										
		10-382543										1	1	1		1	1	1	1	1	1	1	1	1
17	Cam, Retard/Tach., 4 lobe	10-382739											1		1	1	1	1	1	1	1	1	1	
		10-382741							1	1				1	1	1	1	1	1	1	1	1	1	1
18	Screw, w/ Lock washer	10-35937-20	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
19	DELETED																							
20	Connector, Strip	10-382785	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
21	Gear Kit, 4 & 8 CYL	10-682014	2	2	2	2	2	2	2	2				2						2			2	
		10-682016										2	2	2		2	2	2	2			2	2	
22	Ring, Retaining	MS16624-2037	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
23	Washer, Flat	10-349511	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
24	Brush, Carbon	10-160844	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
25	Washer, Nylon	10-391309	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
26	Washer, Felt	10-50752	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
27	Block & Bearing Kit, 4 CYL	10-682054	1	1	1	1	1	1	1	1				1										
		10-682056										1	1	1		1	1	1	1			1	1	
		10-682058																		1				1
28	Strip, Felt	10-163374	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
29	Spring, Helical	10-50737	8	8	8	8	8	8	8	8	12	12	12	8	12	12	12	12	16	12	12	12	16	
30	Bearing, Roller	10-400553	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
31	Washer, Plain	10-685548	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
32	Nut, Castellated	10-51643		1															1					
		10-163178	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1
33	Washer, Lock	10-3793		1														1						



Table 11-6. D-3000 Series Magnetos

Index	Figure 1 Description	Part No.																					
			10-682555-11	10-682555-12	10-682555-13	10-682555-14	10-682555-15	10-682555-16	10-682555-141	10-682555-151	10-682560-11	10-682560-13	10-682560-131	10-682605-13	10-682610-11	10-682610-13	10-682610-131	10-682610-221	10-682620-11	10-682910-13	10-682910-18	10-682920-11	
34	Bushing, Drive	10-163048	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
35	Key, Woodruff	10-90788-5	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2
36	Washer, Plain	10-4093																1					
		10-52307		1																			
		10-116860	1		1	1	1	1	1	1	1	1	1										
37	Driveplate	10-349932-2												1	1	1	1		1	1		1	
		10-349932-3																			1		
38	Driveplate	10-349933-9																1					
39	Coupling, Impulse, CCW, 25°	10-400323	1																				
	Coupling, Impulse, CW, 20°	10-400311		1		1				1													
	Coupling, Impulse, CCW, 15°	10-400322			1																		
	Coupling, Impulse, CCW, 20°	10-400324					1			1													
	Coupling, Impulse, CCW, 15°	10-400325									1												
	Coupling, Impulse, CCW, 10°	10-400326										1	1										
	Coupling, Impulse, CW, 15°	10-400310						1															
40	Body, Impulse Coupling	10-382747	1																				
		10-382768		1		1				1													
		10-382748			1																		
		10-382767					1				1												
		10-382952										1											
		10-382961											1	1									
		10-382749							1														
41	Spring, Flat, Spiral	10-51324	1	1	1	1	1	1	1	1	1												
		10-400042										1	1	1									
42	Cam Assembly, Impulse	10-400167-9	1																				
		10-400166-7		1		1				1													
		10-400167-7			1																		
		10-400167-8					1				1												
		10-400167-12											1	1									
		10-400167-13											1										
	10-400166-5							1															
43	Ring, Retaining	MS16624-2062	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
44	Washer, Plain	10-349328	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
45	Washer, Bowed	10-349249	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
46	Screw, Socket Head, Locking	10-382789	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
47	Washer, Plain	10-382788	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
48	Magnet, Rotating	10-382799-1	1		1	1	1	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1
		10-382799-2		1														1					
49	Slinger, Oil	10-349248	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
50	Bearing, Ball	10-400567	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
51	Plate, Bearing Retainer	10-382787	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
52	Gear, Spur, 4 & 8 CYL	10-382573	1	1	1	1	1	1	1	1			1					1				1	
	Gear, Spur, 6 CYL	10-382575									1	1	1		1	1	1	1		1	1		



Illustrated Parts List

Table 11-6. D-3000 Series Magnetos

Index	Figure 1 Description	Part No.	10-682555-11	10-682555-12	10-682555-13	10-682555-14	10-682555-15	10-682555-16	10-682555-141	10-682555-151	10-682560-11	10-682560-13	10-682560-131	10-682605-13	10-682610-11	10-682610-13	10-682610-131	10-682610-221	10-682620-11	10-682910-13	10-682910-18	10-682920-11	
53	Bushing, Roller Bearing	10-382969	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
54	Screw, W/ Lock washer	10-682024	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
55	Plate, Coil Retaining	10-382935	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
56	Spring	10-382931	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
57	Strip, Paper	10-382568	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
58	Coil, 6 & 8 CYL	10-382588-1									2	2	2		2	2	2	2	2	2	2	2	
	Coil, 4 CYL	10-382790-1	2	2	2	2	2	2	2	2				2									
59	Plug, Ventilator	10-157134	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
60	Plug, Solid Nylon	10-157135	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2				
61	Bushing, Threaded	10-382815																			1	1	1
62	Orifice, Threaded	10-382861																			1	1	1
63	Plug, Solid Aluminum	10-51391																			2	2	2
64	Plate, Identification	10-400006	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
65	Housing, Magneto	10-682000-1												1	1	1	1	1	1	1	1	1	1
	Housing, Magneto	10-682000-2	1	1	1	1	1	1	1	1													
	Housing, Magneto	10-682000-4									1	1	1										



Table 11-7. Spare Elbow Leads and 4 Cylinder D-2000 and D-3000 Gold Seal® Harnesses

Index	Figure 2 Description	Part No.	10-720633-48	10-720633-78	10-821412-93	10-821414-4	10-821414-6	10-821414-8	10-821414-10	10-821414-14	10-821414-18	10-821415-12	10-821425-12	10-821444-6
1	Lead Kit, 3/4-20, 48 in.	10-400401-48				8	4	4	6	3	5	6	6	4
	Lead Kit, 3/4-20, 78 in.	10-400401-78					4	4	2	5	3	2	2	4
	Lead Kit, 5/8-24, 48 in.	10-400402-48			8									
2	Spring	10-32326	X	X	8	8	8	8	8	8	8	8	8	8
3	Terminal, Wire	10-320467	1	1		8	8	8	8	8	8	8	8	8
		10-320468			8									
4	Sleeve, Insulating	10-400099				8	8	8	8	8	8	8	8	8
		10-320473			8									
		110-400101	X	X										
5	Eyelet, Compression	10-400097				8	8	8	8	8	8	8	8	8
6	Spring, Compression	10-400195				8	8	8	8	8	8	8	8	8
7	Eyelet, Retention	10-400093			16	16	16	16	16	16	16	16	16	16
7A	Ferrule, Inner	10-620109	1	1										
8	Ferrule	10-400137				8	8	8	8	8	8	8	8	8
		10-400081			8									
9	Nut, Hex, Coupling	10-400187			8									
		10-400186			8									
10	Cable, 5mm, 100 ft.	10-400062-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
11	Grommet	10-320777	X	X	8	8	8	8	8	8	8	8	8	8
12	Eyelet	10-163012	1	1	8	8	8	8	8	8	8	8	8	8
13	Ferrule, Outer ¹	10-620024	1	1										
14	Ferrule, Inner ¹	10-620011	1	1										
15	Elbow, 110°	NP ²	X	X										
16	Cover, 4 CYL, Plain	10-400124-1			1	1	1	1	1	1	1	1		
	Cover, 4 CYL, Retard	10-400124-2											1	1
	Cover, 4 CYL, Tach	10-400124-4												1
17	Kit, Elbow Clamp, 4 CYL	10-400112-8			1							1	1	
18	Clamp, Primary	10-400105			8							8	8	
19	Clamp, Secondary	10-400107			8							8	8	
20	Screw, w/ Lock washer	10-35936-6			8							8	8	
21	Nut	MS35649-282			8							8	8	
22	Tie, Cable	10-620013			10	25	16	22	25	28	19	18	18	16
23	Clamp, 1 wire	MS21333-98				2	5	2	2	2	2	1	1	5
24	Clamp, 2 - 3 wire	MS21333-102			6	2	3	3	2	2	3	3	3	3
25	Clamp, 4 wire	MS21919WCG10			2	2	2	3	2	1	2	2	2	2
26	Clamp, 6 wire	MS21919WCG12					1	1						1
27	Bracket, Twist	10-400060-2								1				
		10-400060-3			2							2	2	
28	Screw	10-35937-10			2					1		2	2	
29	Lock nut	MS21044N3			2					1		2	2	
30	Plate, Cable Support	10-620039-2							4					
		10-620039-3								2				
		10-620039-4					2							2
		10-620039-5					2					4	4	2
31	Grommet	10-320163							2					
		MS35489-9								4				

1. Elbow leads available only until supply on hand is exhausted
2. No Parts Available



Illustrated Parts List

Table 11-8. 6 & 8 Cylinder D-2000 and D-3000 Gold Seal® Harnesses

Index	Figure 2 Description	Part No.	10-821614-6	10-821614-36	10-821615-4	10-821615-20	10-821624-6	10-821625-4	10-821625-34	10-821635-4	10-821635-11	10-821644-6	10-821825-2
1	Lead Kit, 3/4-20, 48 in.	10-400401-48	4	8	5	2	4	5	6	5	9	4	79
	Lead Kit, 3/4-20, 78 in.	10-400401-78	8	4	7	10	8	7	6	7	3	8	9
2	Spring	10-32326	12	12	12	12	12	12	12	12	12	12	16
3	Terminal, Wire	10-320467	12	12	12	12	12	12	12	12	12	12	16
4	Sleeve, Insulating	10-400099	12	12	12	12	12	12	12	12	12	12	16
5	Eyelet, Compression	10-400097	12	12	12	12	12	12	12	12	12	12	16
6	Spring, Compression	10-400195	12	12	12	12	12	12	12	12	12	12	16
7	Eyelet, Retention	10-400093	24	24	24	24	24	24	24	24	24	24	32
8	Ferrule	10-400137	12	12	12	12	12	12	12	12	12	12	16
9	Nut, Hex, Coupling	10-400187	12	12	12	12	12	12	12	12	12	12	16
10	Clamp, 5mm, 100 ft.	10-400062-1	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR	AR
11	Grommet	10-320777	12	12	12	12	12	12	12	12	12	12	16
12	Eyelet	10-163012	12	12	12	12	12	12	12	12	12	12	16
16	Cover, 6 CYL, Plain	10-400126-1	1	1	1	1							
	Cover, 6 CYL, Retard	10-400126-2					1	1	1				
	Cover, 6 CYL, Tach/Ret	10-400126-3								1	1		
	Cover, 6 CYL, Tach	10-400126-4										1	
	Cover, 8 CYL, Retard	10-400128-2											1
17	Kit, Elbow Clamp, 4 CYL	10-400112-8											2
	Kit, Elbow Clamp, 6 CYL	10-400112-12			1	1		1	1	1	1		
18	Clamp, Primary	10-400105			12	12		12	12	12	12		16
19	Clamp, Secondary	10-400107			12	12		12	12	12	12		16
20	Screw, w/ Lock washer	10-35936-6			12	12		12	12	12	12		16
21	Nut	MS35649-282			12	12		12	12	12	12		16
22	Tie, Cable	10-620013	26	31	31	18	26	31	28	31	20	26	29
23	Clamp, 1 wire	MS21333-98	6	4	6	3	6	6	4	6		6	2
24	Clamp, 2 - 3 wire	MS21333-102	5	7	6	5	5	6	10	6	3	5	10
25	Clamp, 4 wire	MS21919WCG10									3		
26	Clamp, 6 wire	MS21919WCG12	3	4	1	4	3	1	1	1	2	3	
27	Bracket, Twist	10-400060-2		2					1				2
		10-400060-3				1					2		
		10-400060-7				1							2
28	Screw	10-35937-10		3		2			1		2		2
29	Lock nut	MS21044N3		3		2			1		2		2
30	Plate, Cable Support	10-620039-1	2	4			2		4			2	
		10-620039-2											4
		10-620039-3	2				2					2	
		10-620039-4				4							
31	Bracket	10-78916		1									
32	Clamp, 8 wire	MS21919WCG14											4



11-5. Numerical Parts List

Table 11-9. Numerical Parts List

Part No.	Description	Fig	Ind
10-3793	Washer, Lock	1	33
10-4093	Washer, Plain	1	36
10-13799	Nut (Elastic Stop Nut)	2	29
10-14268	Washer, Plain	1	10
10-17050	Washer, Lock	1	5
10-32326	Spring	2	2
10-35936-6	Screw, w/lock washer	2	20
10-35936-7	Screw, w/lock washer	1	9
		2	19
10-35937-10	Screw, w/lock washer	2	28
10-35937-20	Screw, w/lock washer	1	18
10-50737	Spring, Helical	1	29
10-50752	Washer, Felt	1	26
10-51324	Spring, Impulse Coupling	1	41
10-51354	Washer, Plain	1	15
10-51391	Plug, Ventilator	1	63
10-51643	Nut, Drive Shaft	1	32
10-52307	Washer, Plain	1	36
10-55501	Washer, Plain	1	3
10-78916	Bracket	2	32
10-90404-4	Nut	2	20
10-90751-18	Pin, Cotter	1	7
10-90788-5	Key, Woodruff	1	35
10-91431-8	Screw	2	28
10-92815-37	Ring, Retaining	1	22
10-92815-62	Ring, Retaining	1	43
10-92879-43	Washer, Lock	1	2
10-116860	Washer, Plain	1	36
10-157134	Plug, Ventilator	1	59
10-157135	Plug, Solid	1	60
10-160844	Brush, Carbon	1	24
10-163012	Eyelet	2	12
10-163048	Bushing, Drive	1	34
10-163178	Nut, Cap	1	32
10-163194	Paper, Retard	1	24
10-163374	Strip, Felt	1	28

Table 11-9. Numerical Parts List

Part No.	Description	Fig	Ind
10-320163	Grommet	2	31
10-320467	Terminal	2	3
10-320468	Terminal	2	3
10-320473	Sleeve	2	4
10-320573-3	Elbow Assembly, 110°	2	15
10-320777	Grommet	2	11
10-349248	Slinger, Oil	1	49
10-349249	Washer, Bowed	1	45
10-349328	Washer, Plain	1	44
10-349932-3	Driveplate	1	37
10-349932-4	Driveplate	1	37
10-349932-9	Driveplate	1	38
10-382543	Cam, Breaker, 4 lobe	1	16
10-382544	Cam, Breaker, 2 lobe	1	16
10-382568	Strip	1	57
10-382573	Gear, Spur	1	52
10-382575	Gear, Spur	1	52
10-382585	Contact Assembly	1	11
10-382588-1	Coil, Magneto	1	58
10-382618	Nut	1	4
10-382739	Cam, 4 Lobe, Retard	1	17
10-382741	Cam, 2 Lobe, Retard	1	17
10-382747	Body, Impulse Coupling	1	40
10-382748	Body, Impulse Coupling	1	40
10-382749	Body, Impulse Coupling	1	40
10-382767	Body, Impulse Coupling	1	40
10-382768	Body, Impulse Coupling	1	40
10-382785	Strip, Connector	1	20
10-382787	Plate, Bearing Retainer	1	51
10-382788	Washer, Plain	1	47
		1	54b
10-382789	Screw, Socket Head	1	46
10-382790-1	Coil, Magneto	1	58
10-382799-1	Magnet, Rotating	1	48
10-382799-2	Magnet, Rotating	1	48
10-382811	Gasket	1	8



Illustrated Parts List

Table 11-9. Numerical Parts List

Part No.	Description	Fig	Ind
10-382815	Bushing , Threaded	1	61
10-382861	Orifice , Threaded	1	62
10-382871	Screw	1	1
10-382881	Screw	1	1
10-382931	Spring , Contoured	1	56
10-382935	Plate , Coil Retaining	1	55
10-382936	Nut	1	54c
10-382937	Screw	1	54a
10-382938	Spring , Helical	1	7
10-382939	Kit, Coil Securing	1	--
10-382952	Body, Impulse Coupling	1	40
10-382969	Bushing	1	53
10-391213	Screw , w/lock washer	1	14
10-391309	Washer , Nylon	1	25
10-400006	Plate , Data	1	65
10-400042	Spring , Flat Spiral	1	41
10-400051-2	Clamp , 1 wire	2	23
10-400053-2	Clamp , 2-3 wire	2	24
10-400054-1	Clamp , 4 wire	2	25
10-400056-1	Clamp , 6 wire	2	26
10-400058-1	Clamp , 8 wire	2	33
10-400060-2	Bracket	2	27
10-400060-3	Bracket	2	27
10-400060-7	Bracket	2	27

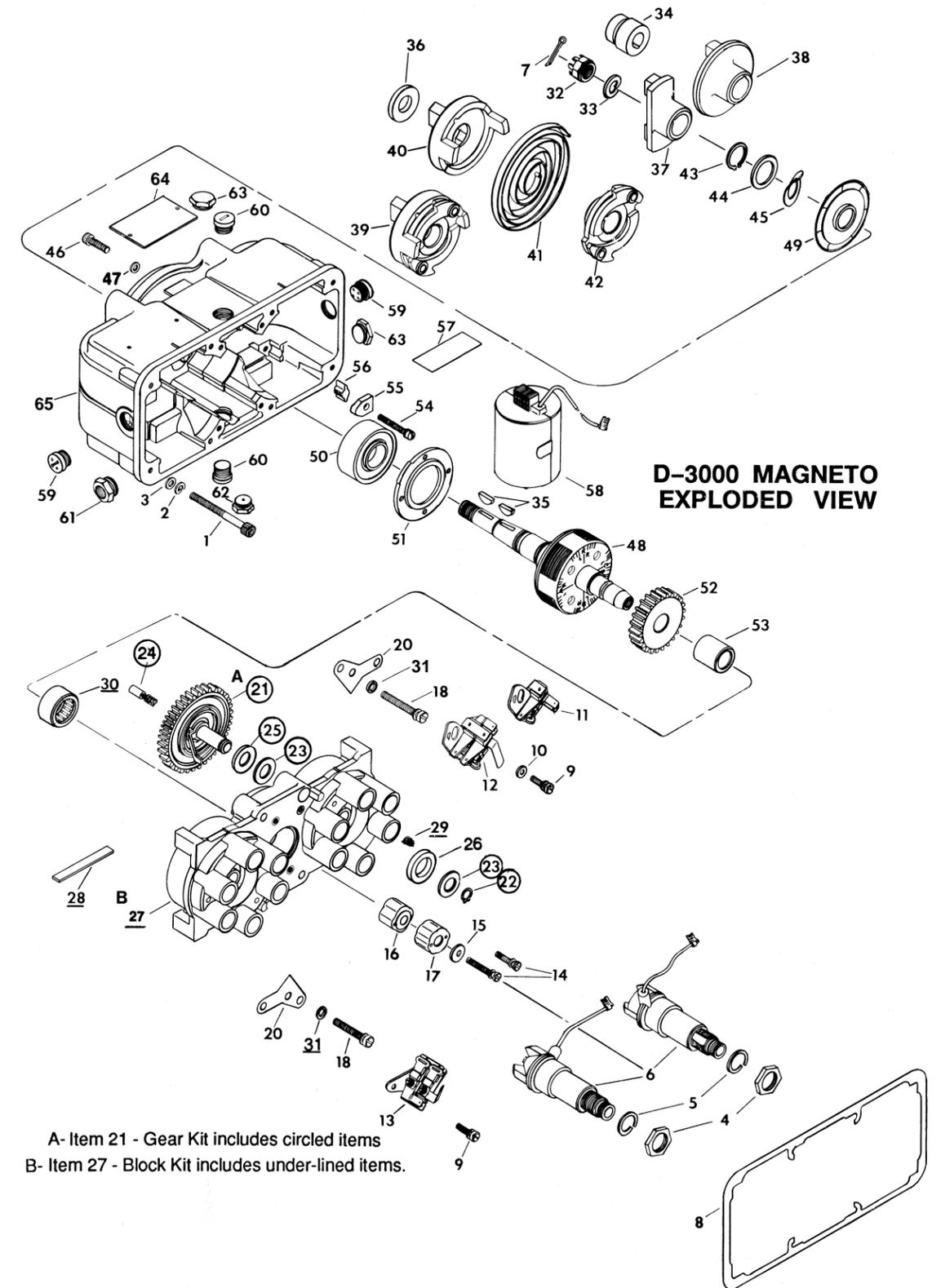


Figure 1. D-3000 Series Magneto - Exploded View

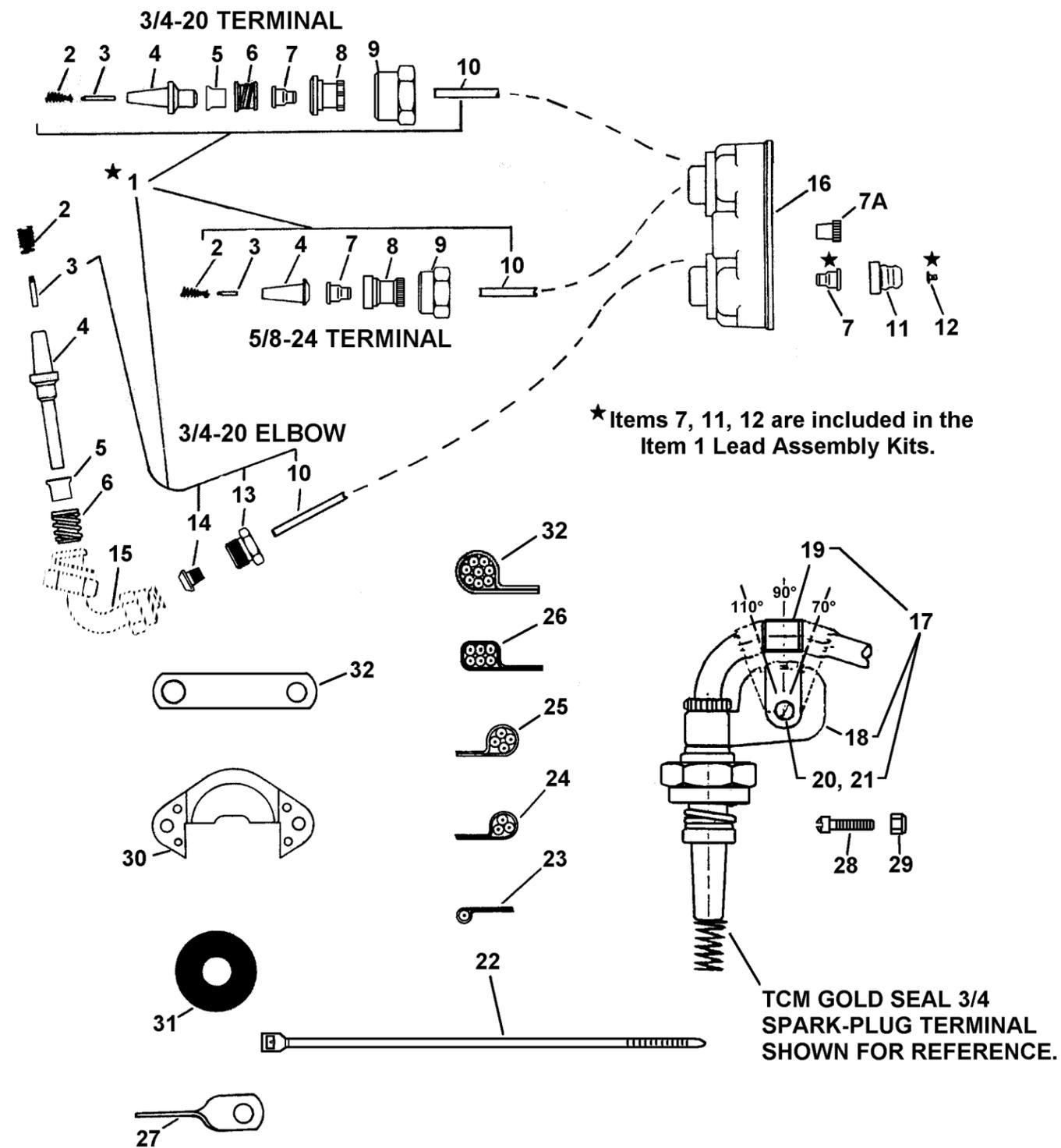


Figure 2. D-3000 Series Magneto Harness Assembly- Exploded View



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