L-1363J

4300/6300 Series Magneto Maintenance and Overhaul Manual

Technical Aspects

FAA Approved

SCOPE

This maintenance and overhaul manual gives detailed maintenance, assembly, disassembly and troubleshooting instructions and technical information about the design and operation of Slick magnetos.

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MO	DAY	YR	MO	DAY	YR	Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	Cover	J
05	01	91	04	20	21			

TO: Holders of 4300/6300 Series Magneto Maintenance and Overhaul Manual.

HIGHLIGHTS

REVISION J, DATED Apr 20/21

Pages that were added or revised are outlined in the table with a description of the change. All manuals dated October 30, 2017, Rev H or earlier, shall be discarded and replaced with this revision.

REVISION J CHANGES

Page Number	Description of Change
Cover Page	Changed footer date and revision status to current release.
Page 9-1	Added sections 3.2.5, 3.2.6, and 3.3.11 to the 9.0 maintenance checklist.

PREVIOUS REVISION I CHANGES

Page Number	Description of Change
Cover Page	Changed footer date and revision status to current release.
Page 3-3	Added the word Pressurization to section 3.3 title.
Page 3-4	Changed last sentence of para 3.3.4.B.6 to bold.
Page 3-5	Added Caution before para 3.3.4.C.1.
	Added new para 3.3.4.D.3.
Page 3-6	Added new para 3.3.7.A.3.
Page 3-7	Added new para 3.3.7.B.3.
	Added new para 3.3.7.C.3.
	Added new sentence to end of para 3.3.8.B.2.
Page 3-8	Added Note before para 3.3.9.C.1.
Page 7-3	Added Caution before para 7.6.A.
Page 7-8	Added Note after step 7.17 title.
Page 11-3 and 11-4	Revised 11.2 parts list. Change NP notation to Champion part number, where applicable.
Page 11-5	Revised 11.3 parts list. Change NP notation to Champion part number, where applicable.
Page 11-9 and 11-10	Revised 11.6 parts list. Change NP notation to Champion part number, where applicable.
Page 11-11	Revised 11.7 parts list. Change NP notation to Champion part number, where applicable.
Page A1 through A4	Appendix added for magneto frame cutaways.

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0.0 INTRODUCTION

0.1 COPYRIGHT STATEMENT

All rights reserved. This manual is produced exclusively for use with Champion Aerospace Magnetos and/or Ignition Harnesses. It may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any electronic medium or machine readable form without prior consent, in writing, from Champion Aerospace LLC.

Champion understands a competitive, FAA/DER approved maintenance and overhaul manual is currently in use for repairs and overhauls of Slick by Champion magnetos. Several companies are using this FAA/DER manual to overhaul Slick magnetos. This manual does not require replacement of all of the parts called out in the Slick by Champion L-1363 Magneto Maintenance and Overhaul Manual. The FAA/DER manual specifically approves reuse of the coil, impulse coupling, and distributor block assembly. It also approves replacement of many OEM parts with PMA'd aftermarket parts at TBO. These aftermarket parts may not be designed, manufactured or procured to stringent aerospace requirements like Slick by Champion's

Salvaged magneto parts, reworked parts obtained from Champion Aerospace approved sources, or parts the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render service work with this part, even though originally manufactured by Champion Aerospace, unsuitable or unsafe for use in a Slick magneto.

WARNING: CHAMPION AEROSPACE LLC EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR MALFUNCTIONS, FAILURES, DAMAGE OR INJURY CAUSED BY USE OF NON-CHAMPION AEROSPACE APPROVED PARTS OR FAILURES TO FOLLOW PROCEDURES HEREIN.

The Slick magnetos are engineered so that mechanical parts wear at a balanced rate. Consistent and complimentary wear patterns establish the recommended maintenance intervals defined in Champion Aerospace service literature, therefore used, service worn parts are not to be used to troubleshoot or repair a magneto. In, addition, no original parts are to be replaced by used service worn parts on magnetos being returned to service.

WARNING: NON-CHAMPION AEROSPACE MANUFACTURED PARTS MAY WEAR AT UNEVEN AND DIFFERENT RATES THAN ORIGINAL CHAMPION AEROSPACE MANUFACTURED PARTS, MAKING CHAMPION AEROSPACE SERVICE LITERATURE AN INAPPROPRIATE GUIDE TO PROPER MAINTENANCE.

Parts not manufactured by Champion Aerospace, even if FAA/PMA Approved, may not fit or operate like original Champion Aerospace manufactured parts. FAA testing of PMA parts does not require operation on an engine or flight tests and does not require the test duration to exceed the maintenance intervals called out in Champion Aerospace literature. For these reasons, used service worn parts or parts not manufactured by Champion Aerospace may adversely affect magneto reliability in ways not anticipated by Champion Aerospace and its service literature.
The information in this manual is divided into 12 sections. Section One provides basic technical reference on the design and operation of Slick Magnetos. Section Two illustrates tools needed to correctly perform inspection and maintenance.

Detailed instructions for removing the magnetos from the engine, magneto disassembly and magneto reassembly are contained in Sections Five, Six and Seven, respectively.

Maintenance and Overhaul schedules and procedures are detailed in Sections Three and Four, respectively. The instructions in Sections Three and Four refer to procedures outlined in the Magneto Disassembly (Section Six) and Magneto Assembly (Section Seven) portions of this manual. It is recommended that this entire manual be thoroughly read before beginning any inspection or maintenance procedure.

After any inspection or maintenance on a Slick Magnetos, the testing procedures in Section Eight must be performed completely.

The Maintenance Checklist located in Section Nine provides a summarized schedule for 100 and 500-hour inspections. This checklist is to be copied and attached to the engine log book at the 100 and 500-hour inspections.

Section 10, Troubleshooting, is provided as a reference guide for diagnosing ignition problems.

Section 11, Provides 4300 and 6300 Series Magneto Overhaul Parts Replacement List, Maintenance Kits and Inspection Kits.

Section 12, Service Limits, is provided as a reference guide for torque specifications, lubrication, consumables and tolerances.

Appendix, Figures 1 through 6, is provided to show recess/projection dimensions for the stop pin on each magneto model listed.

0.3 RELEVANT PUBLICATIONS

Champion Aerospace L-1499 Ignition Lead Assembly & Maintenance Manual.

Champion Aerospace L-1318 Consolidated Application Data

0.4 SYSTEM OVERVIEW

Champion Aerospace has been an innovative leader in the design and manufacture of aircraft ignition systems for over 25 years. Champion Aerospace, not merely assembles a superior product consistently specified by quality conscious OEM's.

VERTICALLY INTEGRATED MANUFACTURING

Champion Aerospace manufactures nearly every component in its magnetos and harnesses. This in-house manufacturing process allows Champion Aerospace to control quality to precise tolerances from raw material to finished product, setting industry standards.

DESIGN FEATURES

- Smaller and Lighter
  Champion Aerospace's unique design allows for a dimensionally smaller magneto, resulting in easier installation and lighter weight-as much as one pound lighter than competitive units.

- Radio Noise Suppression
  Slick Magnetos feature superior noise suppression, eliminating the need for magneto filters.

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- Easy to Maintain
  Slick Magnetos use up to 50% fewer parts than competitive units. In addition, almost 70% of the parts in any Slick Magneto are interchangeable with the comparable parts in other current production Slick Magnetos.

- High-Altitude Performance
  Slick Pressurized Magnetos maintain low altitude ambient pressure inside the magneto to reduce the likelihood of high altitude misfire.

RELIABILITY

Champion Aerospace selects materials that are known for their reliability and durability with proper installation and compliance with maintenance procedures. Properly maintained Slick Magnetos will last until the next engine TBO or replacement is required.

A COMPLETE OFFERING

Champion Aerospace Magnetos have applications on nearly all

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1.0 TECHNICAL REFERENCE

1.1 GENERAL

Slick 4300/6300 Series Aircraft Magnetos are manufactured by Champion Aerospace for use on four and six cylinder aircraft engines. Slick Magnetos are specified as OEM equipment by aircraft engine manufacturers. Each magneto is identified with a data plate affixed to the side of the magneto frame. The data plate contains serial number and model number information, lag angle of the impulse coupling, shaft rotation direction (L indicates counterclockwise shaft rotation; R indicates clockwise shaft rotation). Customer part numbers are also provided on the data plate.

All current production Slick Magnetos are provided as new units, identified by a red data plate.

1.2 THEORY OF OPERATION

The magneto is a completely self-contained ignition generating device. Typically, two magnetos are installed on each aircraft engine for redundancy. When the aircraft engine crankshaft rotates, gears located in the engine accessory case turn the magneto rotor shaft containing permanent magnets. With the rotating shaft, a magnetic field is produced that is transformed into high tension current through primary and secondary coil windings. The high tension current is distributed to the appropriate cylinder through a distributor block assembly and ignition cables.

A two-lobe cam and two-pole rotating magnet assembly are used to generate magnetic flux and trigger the high tension spark energy. Four-cylinder magnetos are driven at engine speed and produce four sparks through 720 degrees of crankshaft rotation. Six-cylinder magnetos are driven at one and one half times engine speed and produce six sparks through 720 degrees of engine crankshaft rotation. Slick Magnetos are constant timing ignition devices once the engine has started. The magneto is typically timed to fire at an advance timing position for maximum power of the aircraft engine.

A typical Slick Magneto will produce in excess of 20,000V at normal speed and although simple in outward appearance and construction, the magneto is a complicated electromechanical device. The size and shape of the rotating magnet head assembly, magnet material selection, pole lamination design, ignition coil design and capacitor design are all equally important in determining the efficiency of the device. Electrically, the magneto is a balanced LRC circuit which is not to be altered from its original condition. Champion Aerospace goes to great lengths to ensure that the product and the design improvements are retrofitable to prior magneto models.

1.2.1 LAG ANGLE - IMPULSE COUPLED MAGNETOS

The impulse coupling is a mechanical device to assist in engine starting. At low cranking speed, the magneto impulse coupling retards the magneto ignition timing until the engine crankshaft is at its proper position for starting. The lag angle, noted on the magneto dataplate, is the impulse coupling's retard angle measured in degrees. After engine start, the impulse coupling disengages and returns the magneto to normal engine timing.

1.2.2 LAG ANGLE - RETARD BREAKER MAGNETOS

The retard breaker assembly is an electrical device powered by the aircraft battery, used to aid in starting the engine. At low cranking speed, the retard breaker retards the magneto ignition timing until the engine crankshaft is at its proper position for starting. The lag angle, noted on the magneto dataplate, is the retard breaker's retard angle measured in degrees. When the engine starter disengages, the retard breaker assembly is also disengaged and the magneto returns to normal engine timing.

1.2.3 ROTATION

Rotation specifies the direction that the magneto rotor shaft turns when viewed from the mounting end of the magneto. **Left-Hand Rotation** is counterclockwise when viewed from the magneto mounting end; **Right-Hand Rotation** is clockwise when viewed from the magneto mounting end. Important. Check the dataplate on the magneto being replaced for the shaft rotation. Replace with a magneto with the same rotation.

1.3 MAGNETO PART NUMBERING

Current production magnetos have four digits in the part number. The first two digits indicate the Series:

43xx - 4300 Series for four-cylinder engines
63xx - 6300 Series for six-cylinder engines

The last two numbers indicate the model number.

Example: 4371 - 4300 Series four-cylinder, model number 71
6310 - 6300 Series six-cylinder, model number 10

1.4 MAGNETO SERIAL NUMBERS

Slick Magnetos have an eight-digit serial number. Serial numbers indicate date of manufacture as follows:

Eight-Digit Serial Numbers Slick Magnetos manufactured on or after January 1, 1988 have an eight digit serial number. The first two digits indicate the year of manufacture, the following two digits indicate the month and the remaining digits are the sequence number

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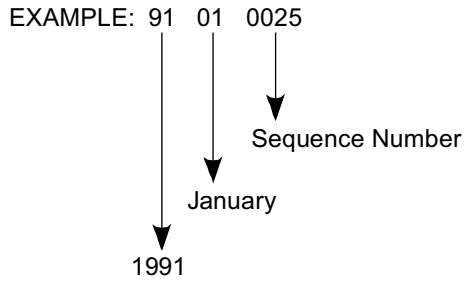

CAUTION: SUBSTITUTION OF NON-CHAMPION AEROSPACE PARTS MAY ADVERSELY AFFECT THE PERFORMANCE AND RELIABILITY.

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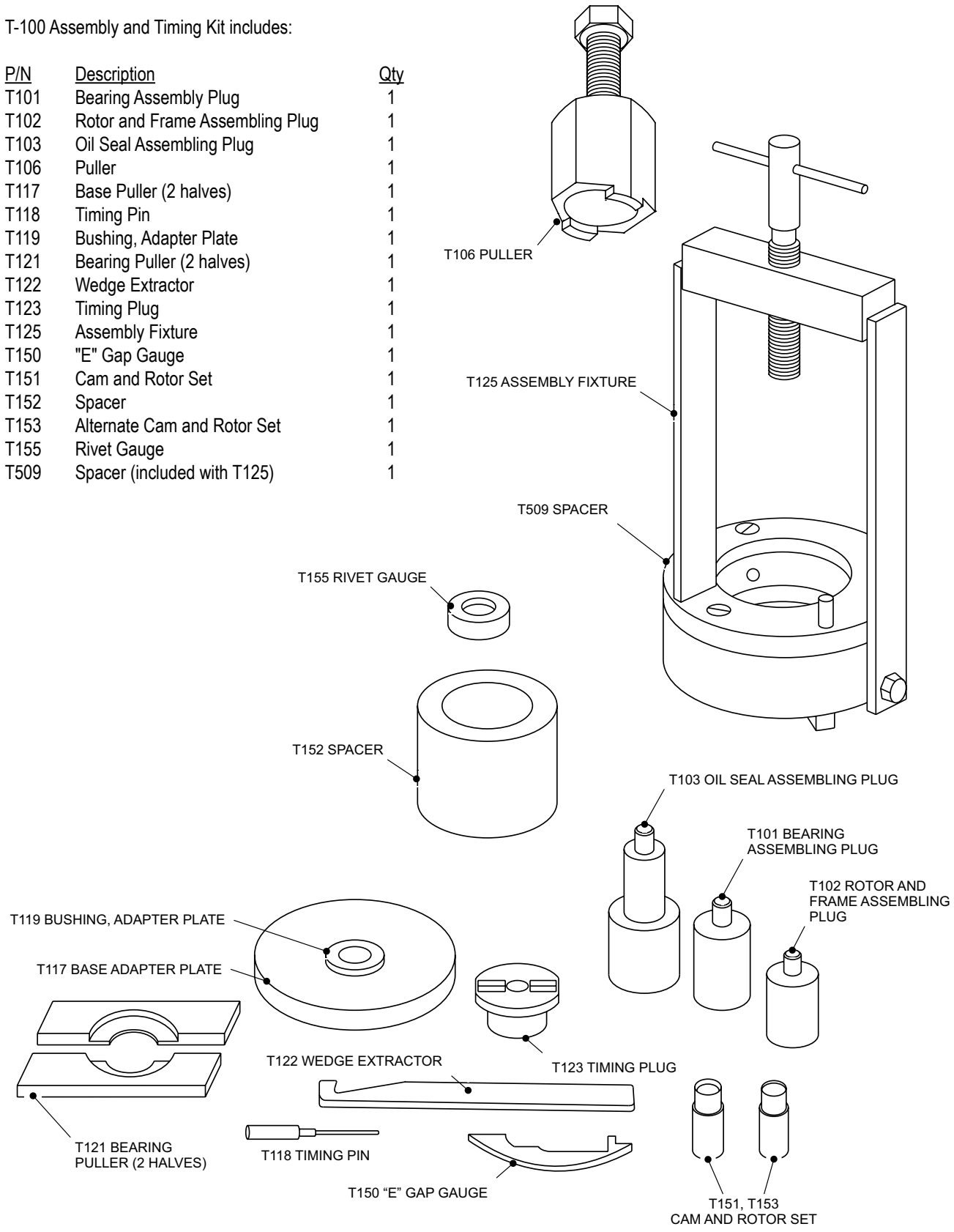
2.0 REQUIRED TOOLS

T-100 Assembly and Timing Kit includes:

P/N	Description	Qty
T101	Bearing Assembly Plug	1
T102	Rotor and Frame Assembling Plug	1
T103	Oil Seal Assembling Plug	1
T106	Puller	1
T117	Base Puller (2 halves)	1
T118	Timing Pin	1
T119	Bushing, Adapter Plate	1
T121	Bearing Puller (2 halves)	1
T122	Wedge Extractor	1
T123	Timing Plug	1
T125	Assembly Fixture	1
T150	"E" Gap Gauge	1
T151	Cam and Rotor Set	1
T152	Spacer	1
T153	Alternate Cam and Rotor Set	1
T155	Rivet Gauge	1
T509	Spacer (included with T125)	1



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3.0 MAINTENANCE

3.1 MAINTENANCE SCHEDULE

3.1.1 100-HOUR INSPECTION

A. Adjust timing to engine
B. Inspections
   1. Wiring connections and conditions
   2. Vent holes (non-pressurized magnetos)
   3. P-lead attachment
   4. Retard breaker switch wire (retard breaker magnetos)
   5. Inspect tachometer drive wire (tachometer drive magnetos
   6. Turbo filter used with pressurized magnetos
   7. Inlet nozzle (pressurized magnetos)
   8. Orifice vent (pressurized magnetos)
   9. Pressure check (pressurized magnetos, if required)

3.1.2 250-HOUR PRESSURIZED MAGNETO (ALL) 500-HOUR INSPECTION - DIRECT DRIVE MAGNETOS

A. Cleaning
B. Driver assembly
C. Ball bearing assembly
D. Rotor
E. Coil
F. Contact points
G. Condenser
H. Distributor block
I. Carbon brush
J. Lubrication

3.1.3 500-HOUR INSPECTION - IMPULSE COUPLED MAGNETOS

A. Cleaning
B. Ball bearing assembly
C. Rotor
D. Impulse coupling
E. Coil
F. Contact points
G. Condenser
H. Distributor block
I. Carbon Brush
J. Lubrication

3.1.4 500-HOUR INSPECTION - RETARD BREAKER MAGNETOS

A. Cleaning
B. Ball bearing assembly
C. Rotor
D. Driver assembly
E. Coil
F. Primary contact points
G. Retard breaker contact points
H. Condenser
I. Distributor block
J. Carbon brush
K. Lubrication

3.1.5 ADDITIONAL 500-HOUR INSPECTION PROCEDURES FOR PRESSURIZED MAGNETOS

A. Inlet nozzle, orifice vent and turbo filter
B. Inspect inside of magneto for turbocharger contaminants
C. Frame gasket and screw gasket
D. Harness cap O-Ring
E. Pressure testing

3.1.6 500-HOUR INSPECTION - TACHOMETER DRIVE MAGNETOS ONLY

A. Cleaning
B. Ball bearing assembly
C. Rotor
D. Impulse coupling
E. Coil
F. Primary contact points
G. Tachometer drive points
H. Condenser
I. Distributor block
J. Carbon brush
K Lubrication

3.1.7 OPERATIONAL CHECK - ALL MAGNETOS

A. Before flight or after routine maintenance, observe engine operation while running on both magnetos and left or right magneto individually. Both magnetos must operate normally and the engine must operate within the parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT FLY AIRCRAFT IF MAGNETOS ARE NOT FUNCTIONING NORMALLY.

B. Post-flight magneto operational check must be performed after each flight. Observe engine operation while running on both magnetos and left or right magneto individually. Both magnetos must operate normally and the engine must operate within the parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT FLY AIRCRAFT IF MAGNETOS ARE NOT FUNCTIONING NORMALLY.

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3.2 100-HOUR INSPECTION

The following maintenance procedures must be followed every 100 hours of service or at annual inspection, whichever comes first. Do maintenance on each magneto.

3.2.1 ADJUST TIMING TO ENGINE

WARNING: MAKE SURE IGNITION SWITCH IS IN THE "OFF" POSITION AND THE CONDENSER LEAD IS GROUNDED PRIOR TO ADJUSTING THE TIMING.

A. Turn the engine crankshaft in the normal direction of rotation until the No. 1 cylinder is in the full-advance firing position, following engine manufacturer's procedure for timing of magnetos.

3.2.2 INSPECT WIRING CONNECTIONS AND CONDITIONS

Refer to Harness Maintenance Manual L-1499 for complete wiring inspection instructions.

3.2.3 INSPECT VENT HOLES - NON-PRESSURIZED MAGNETOS

Vent holes must be clean and clear of any obstruction. Correct as necessary.

3.2.4 INSPECT P-LEAD ATTACHMENT

The P-lead connects the magneto primary circuit to the airframe ignition switch. If the P-lead is disconnected, the magneto will be "ON" and will fire the spark plug if the propeller is rotated. Possible fatal injury can result Confirm that the P-lead is securely attached to the condenser stud. Torque P-lead nut to 13-15 in-lbs.

CAUTION: IF THE 13-15 IN-LBS TORQUE LIMIT IS EXCEEDED, CONDENSER PERFORMANCE MAY BECOME INTERMITTENT OR TOTALLY INOPERATIVE. REPLACE THE CONDENSER IF THE TORQUE LIMIT IS EXCEEDED, FOLLOWING THE INSTRUCTIONS IN SECTION 6.5 AND 7.12 OF THIS MANUAL.

Follow the airframe manufacturer's recommendations to make sure the ignition switch and P-lead are operating properly.

3.2.5 INSPECT SWITCH WIRE - RETARD BREAKER MAGNETOS ONLY

The retard breaker lead connects the retard contact points to the ignition vibrator. If this lead is disconnected the starting circuit will become inoperative.

CAUTION: IF THE 13-15 IN-LBS TORQUE LIMIT IS EXCEEDED, THE STARTING CIRCUIT MAY BECOME INOPERATIVE.

Follow the airframe manufacturer's recommendations to make sure that the ignition switch and the retard breaker lead are operating properly.

3.2.6 INSPECT TACHOMETER DRIVE CONTACT WIRE - TACHOMETER DRIVE MAGNETOS ONLY

The tachometer lead connects the tachometer drive contact points to the tachometer. If this lead is disconnected, the tachometer will become inoperative. Follow the airframe manufacturer's recommendations to make sure that the tachometer drive lead is attached properly.

3.2.7 INSPECT TURBO FILTER - PRESSURIZED MAGNETO ONLY

Inspect for yellow or red color, condensation or free standing water or foreign matter in the filter element. (See Figure 3.2.7). If the filter is contaminated, reference the engine and/or airframe manufacturer's literature for pressurization system corrective action. Replace the turbo filter. If the filter shows contamination, the magneto must be removed and inspected for contaminant damage. Follow the procedures in Section 3.3 of this manual.

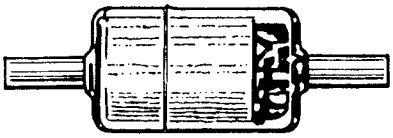

Figure 3.2.7

3.2.8 INSPECT INLET NOZZLE - PRESSURIZED MAGNETOS ONLY

Inspect and clean the inlet nozzle to make sure it is clean and free of obstruction. (See Figure 3.2.8). Yellow or white particles or any oily film in the inlet nozzle indicates moisture contamination and possible lack of pressurization. Reference the engine and/or airframe manufacturer's literature for pressurization system corrective action and do the internal magneto inspection if contamination exists.

Figure 3.2.8

3.2.9 INSPECT ORIFICE VENT - PRESSURIZED MAGNETOS ONLY

Inspect and clean the orifice vent to make sure it is clean and free of obstruction. The orifice diameter is .025 ± .005 in. (See Figure 3.2.9).

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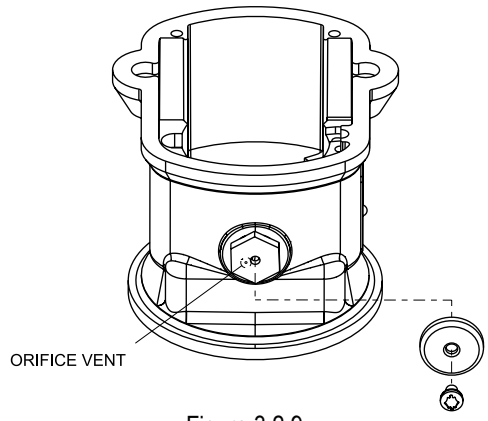


Figure 3.2.9

NOTE: ANY INDICATION OF CONTAMINATION OR MOISTURE CONTAMINATION DURING INSPECTION STEPS 3.2.7, 3.2.8. OR 3.2.9 REQUIRES INTERNAL MAGNETO INSPECTION.

3.3 250 AND 500-HOUR INSPECTION (PRESSURIZATION KIT K3307)

Follow the instructions in Section 5.0, Removing Magneto from Engine. All of the procedures needed to do the 250 and 500-hour inspections are detailed in Section 6.0, Magneto Disassembly and Section 7.0, Magneto Assembly.

3.3.1 DISASSEMBLY AND CLEANING

NOTE: DISASSEMBLE THE MAGNETO ONLY TO THE EXTENT REQUIRED TO SUPPORT THIS INSPECTION.

Proceed with the magneto disassembly, following instructions in Section 6.0, Magneto Disassembly. When disassembled, return to Section 3.3.2.

3.3.2 INSPECT BALL BEARING ASSEMBLY

A. Inspect the ball bearing assembly by rotating the rotor shaft. Check for free movement. If the rotor shaft binds, sticks or feels loose in the bearing cap, replace the ball bearing assembly following the instructions in Section 7.0, Magneto Assembly.

NOTE: IF THE BEARINGS ARE REMOVED FROM THE SHAFT, THE BEARINGS MUST BE DISCARDED AND REPLACED.

3.3.3 INSPECT ROTOR

Inspect the rotor for damaged or worn key way. Check the rotor bearing surfaces for wear.

A. Inspect the Oil Seal
Inspect the oil seal location on the shaft.

B. Assemble the Bearings and Rotor
Assemble the bearings and the rotor following the instructions in Sections 7.1 and 7.2, Magneto Assembly.

C. Inspect the Magneto Rotor Shaft

Inspect the magneto rotor shaft at the impulse coupling location. If the heel of the pawl has struck the shaft and caused the shaft to dimple in excess of .006 inch per side, the rotor shaft must be replaced. (See Figure 3.3.3).

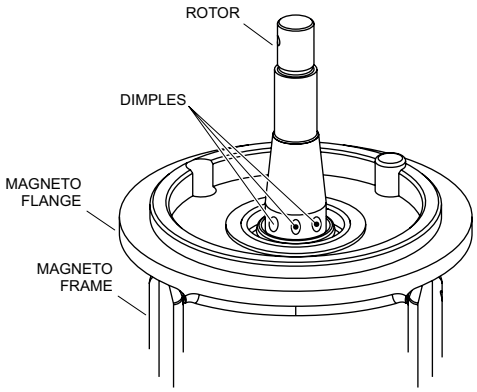
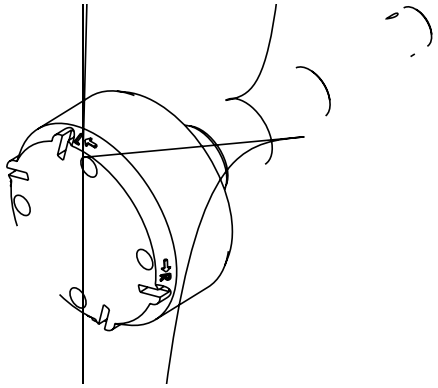


Figure 3.3.3

Use a 10X lighted magnification instrument to inspect the rotor shaft at the cam slot for cracking (See Figure 3.3.3A).The application of a suitable dye penetrant to the area prior to inspection is recommended. No cracking is allowed.



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2. Use a suitable grease dissolving solvent to remove all oil or sludge buildups on the impulse coupling.

B. Inspect Coupling

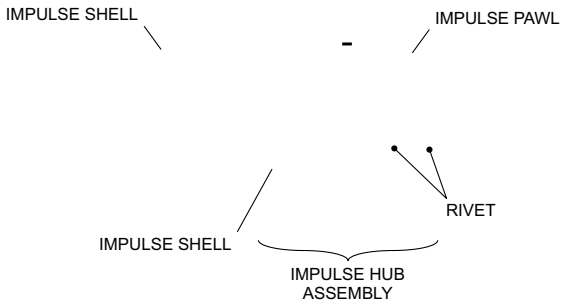

Figure 3.3.4

NOTE: IN MANY CASES, STRINGERS, INCLUSIONS, AND HEAT CHECKS MAY APPEAR AS SURFACE DISCONTINUITIES ON THE IMPULSE COUPLING COMPONENTS. THESE CONDITIONS ARE NORMAL AND GENERALLY DO NOT, BY THEMSELVES, REQUIRE IMPULSE COUPLING REPLACEMENT.

1. Use acceptable procedures to inspect the impulse coupling shell for cracks, rust or signs of corrosion. None of these conditions are acceptable. Minor cleaning to remove surface rust is acceptable. Replace the impulse coupling as necessary.

2. Inspect the impulse coupling spring for breaks, cracks, or rust pitting. None of these conditions are acceptable. Replace the impulse coupling spring or impulse coupling as necessary.

3. Inspect the impulse coupling hub for cracks, rust or signs of corrosion. None of these conditions are acceptable. Minor cleaning to remove surface rust is acceptable. Replace the impulse coupling as necessary.

4. Inspect the hub shaft and keyway for deformation or damage. Replace the impulse coupling as necessary.

5. Inspect the impulse coupling pawls. If the latching end that makes contacts with the stop pin in the magneto frame is rounded, peened, or excessively worn, replace the impulse coupling.

6. Inspect the pawl retaining rivets. **If the rivets are loose or show indications of movement,replace the impulse coupling.**

7. Install the T-155 Rivet Gauge over the rivet head. (See Figure 3.3.4A.)

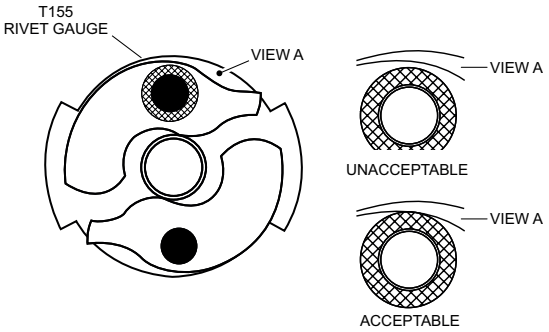

Figure 3.3.4A

8. Align the outer edge of the pawl with the outer edge of the impulse coupling plate. Lift the inner edge of the pawl upward and push the pawl outward. If the inner edge of the pawl is not lifted when the pawl is pushed outward, the gaging will not be accurate. (See Figure 3.3.4B).

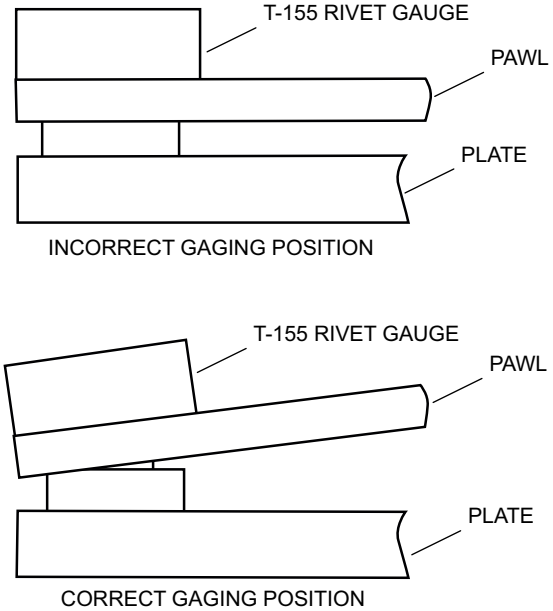

Figure 3.3.4B

9. Rotate the pawl in an arc while pushing upward and outward on the pawl.

10. If the edge of the pawl is visible beyond or can be felt to extend beyond the edge of the T-155 Rivet Gage, replace the coupling. (See Figure 3.3.4A)

11. Measure the clearance between the boss on the underside of each (2) impulse pawl and the pawl plate using a feeler gage. Position the latching end of the impulse pawl over the pawl plate as shown in Figure 3.3.4C.

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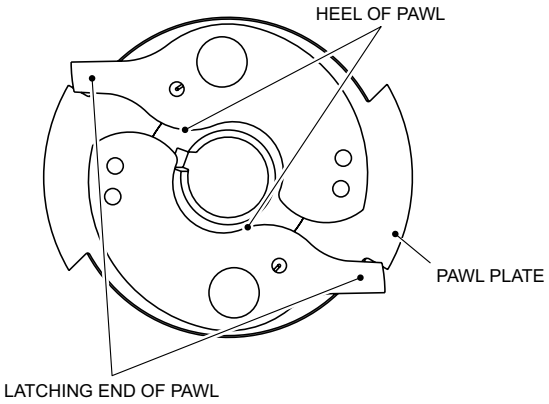

Figure 3.3.4C

12. The maximum clearance for pawls with one boss is 0.150 in. The maximum clearance for pawls with two bosses is 0.150 in. for left-hand rotation couplings and 0.140 in. for right-hand rotation impulse couplings. If the feeler gauge can pass between the full width of the boss and the pawl plate, replace the impulse coupling. (See Figure 3.3.4D). For coupling rotation, see magneto data plate.

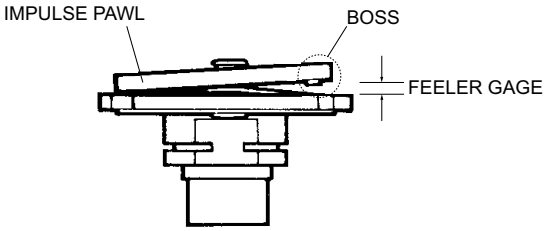

Figure 3.3.4D

C. Reassemble Impulse Coupling

CAUTION: FAILURE TO LIBERALLY OIL THE I/C DURING ASSEMBLY OR PRIOR TO INSTALLATION, MAY CAUSE THE I/C TO FUNCTION INCORRECTLY DURING START, POTENTIALLY CAUSING ENGINE DAMAGE.

1. Lubricate the pawl assembly with aircraft engine oil. Make sure that the pawls move freely.

2. Lubricate the hub and spring with aircraft engine oil.

3. Follow the reassembly instructions, Section 7.5 of this manual.

D. Inspect Stop Pin

1. Inspect the stop pin for looseness, cracks or corrosion. None of these conditions are acceptable. Replace the magneto frame as necessary. (See Figure 3.3.4E).

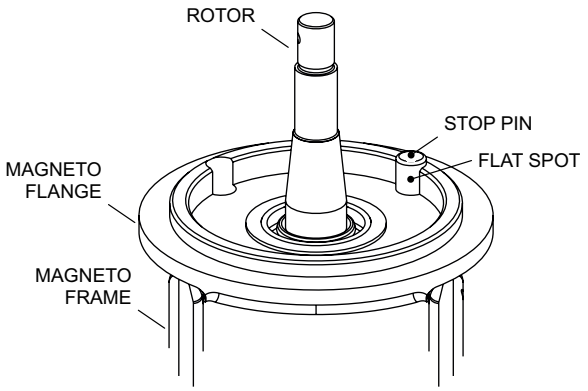

Figure 3.3.4E

2. Inspect the stop pin for flat spots. Flat spots must be measured using a dial caliper or similar measuring device. If the stop pin is worn, with a flat spot larger than 0.050 in. across, the magneto frame must be replaced.

3. Inspect the stop pin height. If the height exceeds the amount allowed, the magneto frame must be replaced. Refer to APPENDIX, Figures 1 through 6 for stop pin inspections.

E. Install Impulse Coupling.

Follow the instructions in Section 7.6 of this manual to install impulse coupling in magneto.

3.3.5 INSPECT DRIVER ASSEMBLY

A. Clean Driver Assembly

1. All portions of the driver assembly must be cleaned, exposing bare metal, to make sure of a reliable inspection.

2. Use a suitable grease dissolving solvent to remove all oil or sludge buildups on the driver assembly.

B. Inspect Driver Assembly

1. Inspect the driver assembly for cracks, rust or signs of corrosion. None of these conditions are acceptable. Minor cleaning to remove surface rust is acceptable. Replace the driver assembly as necessary.

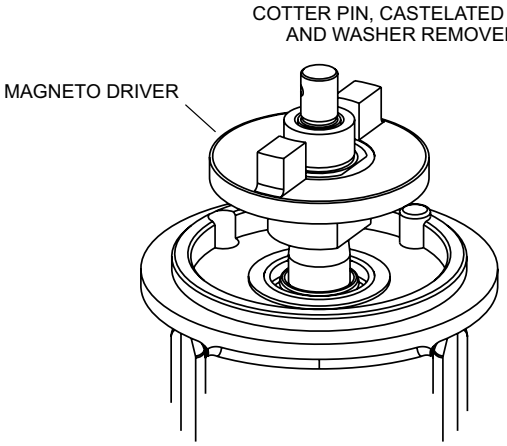

Figure 3.3.5

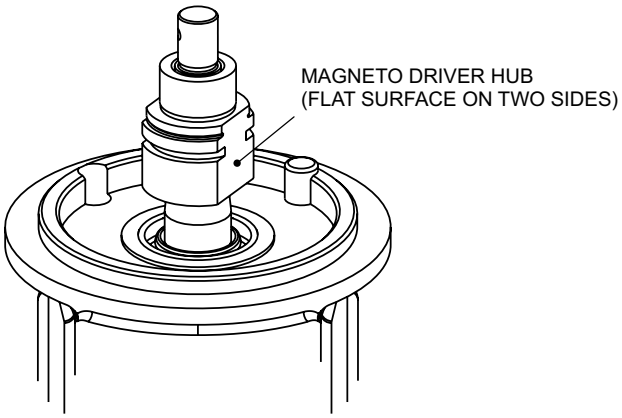

Figure 3.3.5A

C. Install Driver Assembly

Follow the instructions in Section 7.6 of this manual to the install driver assembly in magneto.

3.3.6 INSPECT COIL

A. Inspect coil for visible radial cracks. If any cracks are evident, replace the coil. (See Figure 3.3.6).

B. Inspect the coil for primary and secondary circuit resistance and continuity. The coil must be replaced if resistance is outside of tolerances or an open exists. Refer to Section 12.0 for tolerances.

C. Coil Tab Allowable Wear.

The coil tab is 0.018 ± 0.0005 inch nominal. The allowable wear is 0.001 inch per 100 hours time in service to a maximum of 0.01 inch wear with at least 0.008 inch remaining. If tab is worn beyond limits, replace the coil.

Example: The magneto has 200 hours time in service. The coil tab measures 0.0181 inch on either side of the wear area. The deepest wear point measures 0.0165 inch giving a wear of 0.0016 inch (i.e., 0.0181 inch - 0.0165 inch = 0.0016 inch), which is acceptable and allows the coil to be returned to service for another 500-hour interval.

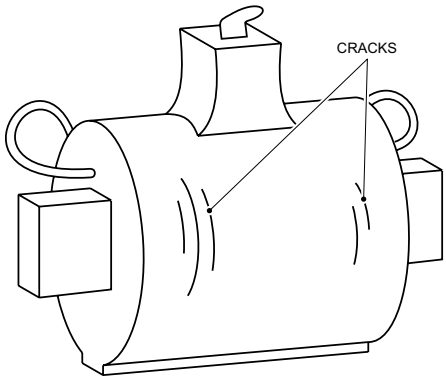

Figure 3.3.6

3.3.7 INSPECT CONTACT POINTS

A. Primary Contact Points (All Magnetos)

NOTE: DO NOT MANUALLY MANIPULATE THE POINT SPRING. THIS WILL CHANGE THE SPRING TENSION AND AFFECT THE LIFE OF THE PARTS AND INDIRECTLY AFFECT THE TIMING.

NOTE: IN A RETARD BREAKER MAGNETO, THE PRIMARY CONTACT POINTS ARE SECURED BY A **BLACK** ANODIZED SCREW.

1. Inspect the primary contact points for signs of pitting and discoloration. If the points are not discolored and have a white, frosty surface around the edges, points are functioning properly and can be reused.

2. If the points are blue (indicating excessive arcing) or pitted, the points must be discarded. Replace the primary contact point assembly, condenser and cam.

3. Inspect all point faces. No looseness or rotational movement is allowed. Reject and replace any point assemblies where the point face exhibits looseness.

B. Retard Breaker Contact Points (Retard Breaker Magnetos Only)

NOTE: IN A RETARD BREAKER MAGNETO, THE RETARD BREAKER CONTACT POINTS ARE SECURED BY A **SILVER** SCREW.

1. Inspect the retard breaker contact points for signs of pitting and discoloration. If the points are not discolored and have a white, frosty surface around

the edges, the points are functioning properly and can be reused.

2. If the points are blue (indicating excessive arcing) or pitted, the points must be discarded. Replace the retard breaker contact point assembly and cam.

3. Inspect all point faces. No looseness or rotational movement is allowed. Reject and replace any point assemblies where the point face exhibits looseness.

C. Tachometer Drive Contact Points (Tachometer Drive Magnetos Only)

1. Inspect the tachometer drive contact points for signs of pitting and discoloration. If the points are not discolored and have a white, frosty surface around the edges, the points are functioning properly and can be reused.

2. If the points are blue (indicating excessive arcing) or pitted, the points must be discarded. Replace the tachometer drive contact point assembly and cam.

3. Inspect all point faces. No looseness or rotational movement is allowed. Reject and replace any point assemblies where the point face exhibits looseness.

3.3.8 INSPECT CONDENSER

A. Clean Condenser

1. If the external surfaces of the condenser are dirty, clean with light soapy water.

2. Rinse the soapy water and dirt from condenser surfaces with clear water and pat dry before re-installation into the magneto housing.

B. Condenser Inspection

1. Inspect the condenser for signs of corrosion. This condition is cause for component rejection. (See Figure 3.3.8).

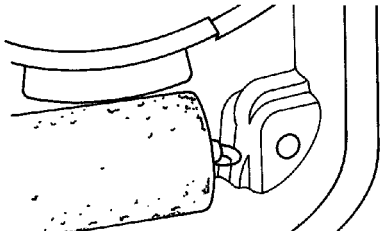

Figure 3.3.8

2. Inspect the condenser wire for chafing, frayed insulation, or exposed wires that could contact frame. Inspect condenser connectors for cracking or damage. Replace as necessary.

3. Inspect the condenser P-lead stud for twisting or "pulled" condition. Use a magnifying lens to examine the glass bead end seals of the capacitor for broken glass or for glass separation from the retaining steel rings. Either of these conditions is cause for component rejection. (See Figure 3.3.8A).

NOTE: THE CURRENT CONDENSER DESIGN UTILIZES A "D" SHAPED INSULATOR TO PREVENT DAMAGE FROM OVER-TORQUING OF THE P-LEAD STUD.

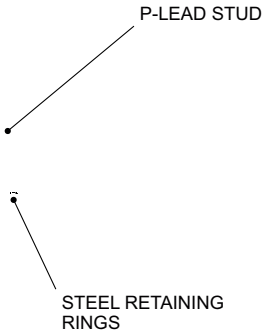

Figure 3.3.8A

WARNING: THE CAPACITOR MAY RETAIN A RESIDUAL CHARGE THAT COULD CAUSE A MINOR SHOCK TO THE INDIVIDUAL. DISCHARGE THE CAPACITOR PRIOR TO TESTING AND HANDLING.

C. Test Capacitor

Test the electrical properties of the capacitor using the equipment listed below, or equivalent test equipment.

1. The capacitance value must be measured at room temperature using a Fluke 87V. The service limit of the capacitor is .315 to .385 micro farad.

2. Test the insulation resistance of the capacitor using a MIT410-EN megger. The resistance measured between the capacitor stud and shell must be 10 Megohms minimum at 135 ± 5 VDC or 20 Megaohms minimum at 250 ± 5 VDC.

NOTE: NO FIELD REPAIRS OF THE CONDENSER ARE APPROVED. UNDER NO CIRCUMSTANCES IS THE CONDENSER LEAD TO BE RESOLDERED TO THE CONDENSER STUD IF IT BECOMES DETACHED. SOLDERING THIS LEAD CAN RESULT IN ELECTRICAL BREAKDOWN INSIDE THE CAPACITOR AND/OR LOSS OF HERMETIC SEAL INTEGRITY.

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D. Install Condenser

Install the condenser following the instructions in Section 7.12 of this manual.

3.3.9 INSPECT DISTRIBUTOR BLOCK ASSEMBLY

A. Clean the block assembly

1. Disassemble and clean the distributor block bearing bar using a standard non-filming, non conductive cleaner. Clean the distributor gear with soapy water and rinse with clear water.

CAUTION: DO NOT PUT CLEANER IN EITHER BRONZE OILITE BUSHING. THESE BUSHINGS ARE IMPREGNATED AT THE FACTORY AND CLEANER WILL DRAW THE LUBRICANT OUT OF THE BUSHING.

2. Use a cotton swab to clean all surfaces free of dirt oil, carbon dust and other contaminants.

B. Inspect the Distributor Block

1. Inspect the block for cracks or other physical damage. Replace the block assembly as necessary.

2. Inspect the brass electrode posts for signs of physical wear. Replace the block assembly as necessary. During normal operation, the post will experience an electrical-metal transfer with the distributor gear electrode. This condition is normal and not cause for rejection. (See Figure 3.3.9).

3. Inspect the bearing inside diameter. The bearing ID must be 0.246 + 0.002/-0.001 inch.

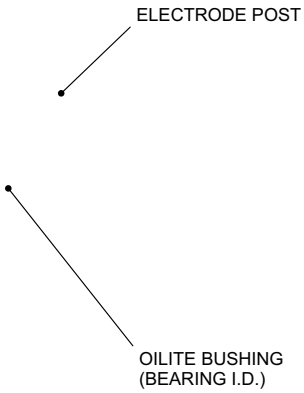

Figure 3.3.9

4. Inspect the oilite bushing for gumming oil condition. The bushing must be free of contamination and the gear must turn freely in the distributor block with no appreciable drag. If the bushing is gummed, replace the distributor block.

5. Make sure the distributor block surfaces are free of all oil and carbon dust prior to reassembly.

C. Inspect the Distributor Gear

NOTE: CHAMPION INTRODUCED THE MONEL (SILVER) 4-CYLINDER K3008 DISTRIBUTOR GEAR IN JULY OF 2016 WITH AN UP S/N OF 16071072. AFTER MARKET KITS SOLD AFTER SEPTEMBER 1, 2016, HAVE A SILVER FINGER. CHAMPION STRONGLY RECOMMENDS REPLACEMENT OF ANY 4-CYLINDER GEARS WITH A COPPER FINGER DURING THE NEXT MAINTENANCE INTERVAL.

1. Inspect the gear teeth for wear and general integrity. Replace the block assembly as necessary.

2. Inspect the electrode finger for looseness. The electrode must be held securely to the shaft when tested with light finger pressure. A loose condition requires gear replacement. (See Figure 3.3.9A).

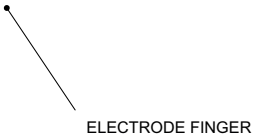

Figure 3.3.9A

3. Clean the end of the electrode to remove any electrical deposits.

4. Inspect the rotor shaft outside diameter. the shaft OD must be 0.2420 + 0.0003/-0.0001 inch.

D. Inspect the Bearing Bar

1. The bearing bar ID must be 0.246 + 0.002/ -0.001 inch.

2. Inspect for cracks or other physical damage. Replace the assembly as necessary.

3. Make sure the bearing bar is free of all oil (other than that described in paragraph 3 below) and carbon dust prior to reassembly.

E. Lubrication

1. Re-oil the bearing bar and the distributor block bearing as follows:

   a. Wipe the bearing ID clean of any gummy residue.

   b. For bearing bars, install the rubber cork in the open-end of the bearing on the side opposite the coil tab dielectric skirt. The cork is to be shaped to cover no more than 1/16 in. depth of the bearing ID. (Not required for closed end Distributor Block bearing).

   c. Fill the open end of the bearing with lube oil Slick P/N R5008, 32 oz.

   d. Bake the oil filled part in oven for 2-3 hours at 200° F + 20° F/-10°F.

   e. Remove from oven and allow to cool to room temperature before removing cork and decanting the remaining lubricant from ID of bearing.

   f. Clean any excess oil from the dielectric surfaces of the block or bar.

   g. Store the oiled parts in clean containers with non-absorbent packing.

3.3.10 INSPECT CARBON BRUSH

A. Inspect the carbon brush. The overall length of the carbon brush must be greater than 19/64 in. and the OD of the brush diameter must be uniform. (See Figure 3.3.10). Carbon brushes that do not meet these limits must be replaced. Reference Section 7.13 of this manual.

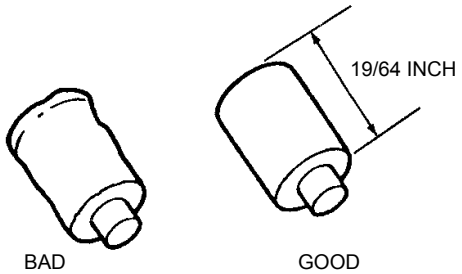

Figure 3.3.10

B Inspect the loading spring. The overall free standing length must be greater than 19/32 in. (See Figure 3.3.10A). Look for flat spots on the spring windings. The springs that appear worn or do not meet the overall length requirements must be replaced. Reference Section 7.13 of this manual.

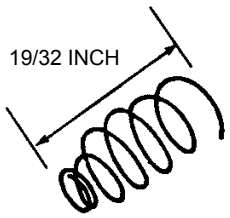

Figure 3.3.10A

C. Reinstall spring following Section 7.13B.

3.3.11 INSPECT FOR STRUCTURAL DAMAGE

Check the magneto frame and distributor housing for cracks or other damage. Inspect the threaded areas to make sure threads are intact and are not damaged. Replace as necessary, following the instructions in the Assembly Section of this manual. Complete the magneto reassembly, Section 7.

3.4 ADDITIONAL 250 & 500-HOUR INSPECTION PROCEDURES FOR PRESSURIZED MAGNETOS

3.4.1 INLET NOZZLE

Inspect and clean the inlet nozzle to make sure it is clean and free of obstruction. (See Figure 3.4.1). Yellow or white particles or an oily film in the inlet nozzle indicates moisture contamination and possible lack of pressurization. Reference the engine and/ or airframe manufacturer's literature for pressurization system corrective action.

Figure 3.4.1

3.4.2 ORIFICE VENT

Inspect and clean the orifice vent to make sure it is clean and free of obstruction. The orifice diameter is .025 ± .005 inch. (See Figure 3.4.2).

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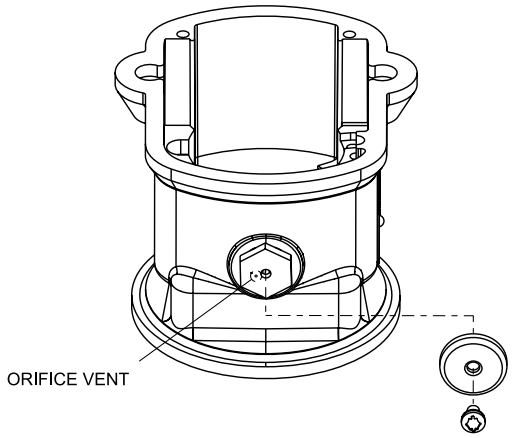

Figure 3.4.2

3.4.3 TURBO FILTER

Inspect for yellow or red color, condensation or free standing water or foreign matter in the filter element. (See Figure 3.4.3). If the filter is contaminated, reference the engine and/or airframe manufacturer's literature for pressurization system corrective action. Replace the turbo filter. If the filter shows contamination, the magneto must be removed and inspected for contaminant damage. Follow the procedures in Section 3.3 of this manual.

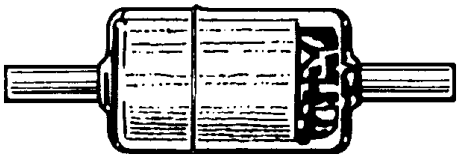

Figure 3.4.3

3.4.4 GASKETS (K3307)

Inspect the frame gasket for wear and replace as necessary. Replace ONLY with Champion Aerospace Replacement Gaskets. Inspect the screw gaskets for wear and replace as necessary. Replace ONLY with Champion Aerospace Replacement Gaskets and Champion Aerospace Mounting Screws. For the latest configuration of housing gasket, screws, and O-ring, consult Table Five.

3.4.5 O-RING (M3184)

Inspect the harness cap O-ring for wear and replace as necessary.

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4.0 OVERHAUL

The Slick 4300/6300 Series magnetos are to be completely overhauled when conditions indicate. The magnetos must be overhauled at every engine overhaul. The magneto Time in Service (TIS) allowance is the Time Before Overhaul (TBO) or 12 years when maintained in accordance with this manual. In no case are the magnetos to have in-service times greater than the TBO hour limit for the engine on which it is installed. In addition, the magnetos must be overhauled after a lightning strike on the aircraft, a sudden engine stoppage, prop strike, or immersion.

The following parts must be replaced at overhaul. Additional parts may require replacement depending on the conditions as determined during the magneto inspection. Install only Champion Aerospace Replacement Parts.

CAUTION: NON-CHAMPION FAA/PMA OR USED PARTS ARE NOT ACCEPTABLE DUE TO LIFE LIMITS AND INTERCHANGEABILITY CONCERNS.

ALL MAGNETOS:

- Condenser
- Double Sealed Bearing
- Bearing Cap Assembly
- Coil
- Oil Seal
- Impulse Coupling
- Drive Assembly
- Contact Point Kit(s)
- Rotor Gear
- Distributor Block and Gear
- Woodruff Key(s)

PRESSURIZED MAGNETOS:
In addition to the above parts, the following components must be replaced at every overhaul.

- Frame Gasket
- Housing Screw
- Harness Cap 'O' Ring

Refer to Section 11.0 for a complete list of parts that must be replaced at overhaul for your Slick Magneto.

Use only genuine Champion Aerospace manufactured parts obtained from Champion Aerospace or its authorized distributors. Genuine Champion Aerospace parts are produced and inspected under rigorous procedures to insure airworthiness and suitability in Slick magnetos. Parts purchased from sources other than Champion Aerospace or its authorized distributors, even though outwardly identical in appearance may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in a Slick magneto. Salvaged magneto parts, reworked parts obtained from non-Champion Aerospace approved sources, or parts the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render service work with this part, even though originally manufactured by Champion Aerospace, unsuitable or unsafe for use in a Slick magneto.

WARNING: CHAMPION AEROSPACE LLC EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR MALFUNCTIONS, FAILURES, DAMAGE OR INJURY CAUSED BY USE OF NON-CHAMPION AEROSPACE APPROVED PARTS OR FAILURES TO FOLLOW PROCEDURES HEREIN.

The Slick magnetos are engineered so that the mechanical parts wear at a balanced rate. Consistent and complimentary wear patterns establish the recommended maintenance intervals defined in the Champion Aerospace service literature, therefore used, service worn parts must never be used to troubleshoot or repair a magneto. The original parts are not to be replaced by used service worn parts on magnetos being returned to service.

WARNING: NON-CHAMPION AEROSPACE MANUFACTURED PARTS MAY WEAR AT UNEVEN AND DIFFERENT RATES THAN ORIGINAL CHAMPION AEROSPACE MANUFACTURED PARTS, MAKING CHAMPION AEROSPACE SERVICE LITERATURE AN INAPPROPRIATE GUIDE TO PROPER MAINTENANCE.

Parts not manufactured by Champion Aerospace, even if FAA/PMA Approved, may not fit or operate like original Champion Aerospace manufactured parts. FAA testing of PMA parts does not require operation on an engine or flight tests and does not require the test duration to exceed the maintenance intervals called out in the Champion Aerospace literature. For these reasons, used service worn parts or parts not manufactured by Champion Aerospace may adversely affect magneto reliability in ways not anticipated by Champion Aerospace and its service literature.

NOTE: AN ALTERNATIVE TO OVERHAUL IS COMPLETE MAGNETO REPLACEMENT WITH A NEW SLICK MAGNETO. NEW SLICK MAGNETOS INCORPORATE ALL OF THE LATEST DESIGN FEATURES AND ARE A COST EFFECTIVE ALTERNATIVE TO OVERHAUL.

4.1 OVERHAUL PROCEDURE - ALL MODEL MAGNETOS

4.1.1 REMOVE MAGNETO FROM ENGINE

Follow the procedures in Section 5.0, Removing Magneto from Engine.

4.1.2 DISASSEMBLE MAGNETO

Proceed with magneto disassembly, following the instructions in Sections 6.0.

4.1.3 DISCARD PARTS TO BE REPLACED

Reference Section 11.0 for 4300 and 6300 Series Overhaul Parts Replacement List. Discard all parts removed for overhaul replacement and replace with new Champion Aerospace Parts.

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CAUTION: CHAMPION AEROSPACE LLC DOES NOT AUTHORIZE THE USE OF "USED" PARTS AS REPLACEMENT PARTS FOR OTHER MAGNETOS. IN MANY CASES, SUBCOMPONENT PARTS ARE MATCHED AT THE FACTORY AND WILL FUNCTION IMPROPERLY IF USED IN CONJUNCTION WITH OTHER SIMILAR PARTS.

CAUTION: CHAMPION AEROSPACE LLC ONLY AUTHORIZES THE USE OF CHAMPION AEROSPACE REPLACEMENT PARTS IN THE MAINTENANCE AND/OR OVERHAUL OF CHAMPION AEROSPACE EQUIPMENT. USE OF PARTS OR FASTENERS NOT MANUFACTURED OR APPROVED BY CHAMPION AEROSPACE VOIDS ANY AND ALL WARRANTIES AND MAY ADVERSELY AFFECT THE PERFORMANCE AND JEOPARDIZE THE AIRWORTHINESS OF THE MAGNETO.

4.1.4 MAGNETO REASSEMBLY

Proceed with magneto reassembly, following the instructions in Section 7.0 of this manual.

4.2 ADDITIONAL PROCEDURES - PRESSURIZED MAGNETOS

In addition to the overhaul procedures outlined above, the following must be performed.

4.2.1 DISCARD PARTS TO BE REPLACED

Discard parts as listed in Section 11.0 to prevent inadvertent reuse of OEM used parts.

4.2.2 INLET NOZZLE

Inspect and clean the inlet nozzle to make sure it is clean and free of obstruction. Presence of dirt or other contaminants indicates that the magneto pressurization system is not functioning properly. Consult the engine manufacturer's manuals for corrective action.

4.2.3 ORIFICE VENT

Inspect and clean the orifice vent to make sure it is clean and free of obstruction. The orifice diameter is .025 ± .005 inch.

4.2.4 INSPECT INTERIOR OF MAGNETO

Inspect the inside of the magneto for corrosion, oil and other turbocharger contaminants. Clean if necessary and inspect the aircraft pressurization system according to the engine and/or airframe manufacturer's recommended procedures.

4.2.5 HARNESS CAP O-RING

Inspect the O-ring in the harness cap for cuts or other conditions that would inhibit a proper seal. Replace the O-ring as necessary.

4.2.6 PRESSURE TEST MAGNETO

Pressure test the magneto using the instructions in Section 8.0 of this manual.

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5.0 REMOVE MAGNETO FROM ENGINE

A. To remove the magneto, proceed as if you were timing the magneto to the engine. Follow the engine manufacturer's procedure to set the engine to fire cylinder number one, at the timing setting shown on the engine data plate.

B. Remove the harness cap from the magneto by removing the three screws that secure the cap to the magneto. When removing the cap, place a visible mark on the harness cap and an adjacent mark on the distributor housing. Use this mark to make sure that the cap is properly oriented upon reassembly.

C. To remove the magneto from the engine, proceed as follows:

1. Remove the P-lead wire that connects the ignition switch to the magneto condenser.

   Retard breaker magnetos only - Remove the lead that connects the retard contact points to the starting circuit.

   Pressurized magnetos only - Disconnect the pressurization tube from the magneto.

   Tachometer drive magnetos only - Disconnect the tachometer lead or pickup device.

2. Remove the two nuts, washers and clamps that secure the magneto to the engine.

NOTE: THE MAGNETO MUST BE REMOVED FROM THE ENGINE FOR DISASSEMBLY AND INSPECTION.

D. To prevent any contaminant from entering the magneto accessory hole, cover the hole with a suitable material while the magneto is removed from the engine.

CAUTION: EXTRA CARE MUST BE TAKEN TO PREVENT ANY FOREIGN OBJECT FROM PASSING INTO THE ENGINE THROUGH THE MAGNETO ACCESSORY HOLE ON THE ENGINE WHEN THE MAGNETO IS REMOVED.

E. Remove the Drive Gear/Lug.

In certain applications, it will be necessary to remove the drive gear/lug from the magneto. If applicable, re move drive gear/lug and save for re-installation. Inspect the drive gear/lug according to the engine manufacturer's recommended procedures.

CAUTION: DO NOT STRIKE OR EXERT CRUSHING FORCE AGAINST THE END OF ROTOR SHAFT TO REMOVE THE DRIVE GEAR.

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6.0 MAGNETO DISASSEMBLY

Following are the disassembly instructions for the Slick 4300/6300 Series magnetos. The directions are generalized and refer to both the 4300/6300 Series magnetos unless specifically noted. Refer to Section 11.0 for specific part numbers and Exploded Assembly Diagram.

The following parts must be replaced at overhaul. Additional parts may require replacement depending on the conditions as determined during the magneto inspection. Install only Champion Aerospace Replacement Parts.

CAUTION: NON-CHAMPION FAA/PMA OR USED PARTS ARE NOT ACCEPTABLE DUE TO LIFE LIMITS AND INTERCHANGEABILITY CONCERNS.

ALL MAGNETOS:

- Condenser
- Double Sealed Bearing
- Bearing Cap Assembly Coil
- Impulse Coupling (where applicable)
- Driver Assembly (where applicable)
- Oil Seal
- Contact Point Kit(s)
- Rotor Gear
- Distributor Block and Gear
- Woodruff Key(s)

PRESSURIZED MAGNETOS:
In addition to the above parts, the following components must be replaced at every overhaul.

- Frame Gasket
- Housing Screw
- Harness Cap "O" Ring

Refer to Section 11.0 for a complete list of parts that must be replaced at overhaul for your Slick Magneto.

Use only genuine Champion Aerospace manufactured parts obtained from Champion Aerospace approved sources. Genuine Champion Aerospace parts are produced and inspected under rigorous procedures to insure airworthiness and suitability in Slick magnetos. Parts purchased from sources other than Champion Aerospace or its authorized distributors, even though outwardly identical in appearance may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in a Slick magneto. Salvaged magneto parts, reworked parts obtained from non-Champion Aerospace sources, or parts the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render service work with this part, even though originally manufactured by Champion Aerospace, unsuitable or unsafe for use in a Slick magneto.

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6.0.1 GENERAL ORDER OF DISASSEMBLY

Remove:
- Impulse Coupling
- Driver Assembly
- Woodruff Key(s)
- Distributor Housing Assembly
- Condenser
- Rotor Gear
- Contact Breaker Assembly(s)
- Rotor Assembly
- Bearings from Shaft
- Coil
- Oil Seal

6.1 REMOVE IMPULSE COUPLING OR DRIVER ASSEMBLY (AS APPLICABLE)

A. Remove the cotter pin, nut, washer, bushing and drive gear where applicable. (Section 5.0E.)

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B. Grasp the shell of the impulse coupling assembly and gently pull the assembly outward to clear the latching ears of the impulse hub assembly. (See Figure 6.1.)

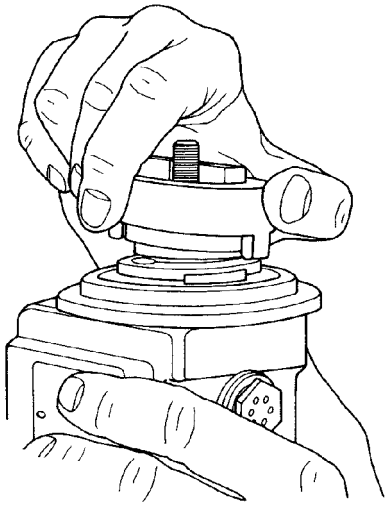

Figure 6.1

CAUTION: STRONG SPRING TENSION COULD CREATE AN IMPACT OR \ PROJECTILE HAZARD. USE GLOVES AND EYE PROTECTION DURING THIS OPERATION.

C. Turn the shell to release the spring tension.

D. Remove the impulse shell and the attached impulse spring.

E. Engage the Slick T-106 hub puller into the grooves in the hub assembly. Tighten the T-106 puller bolt and remove the impulse coupling hub assembly. (See Figure 6.lA.)

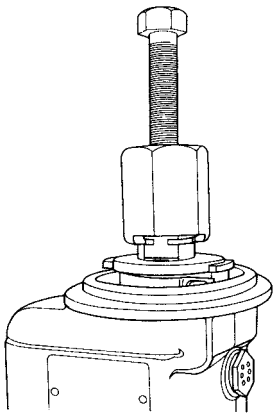

Figure 6.1A.

6.2 REMOVE WOODRUFF KEY(S)

Pry the woodruff key(s) from the rotor shaft using pliers. (See Figure 6.2).

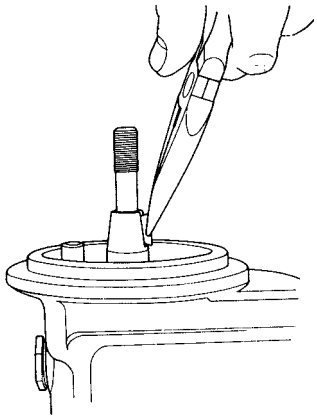

Figure 6.2

6.3 REMOVE DISTRIBUTOR HOUSING ASSEMBLY

A. Remove the three long screws and single short screw from the distributor housing.

B. Separate the distributor housing from the magneto frame.

C. Disconnect the condenser lead from the contact breaker assembly.

D. Retard breaker magnetos only - Disconnect the retard breaker switch lead from the contact breaker assembly.

E. Tachometer drive magnetos only - Disconnect the lead wire from contact points.

6.4 REMOVE DISTRIBUTOR BLOCK ASSEMBLY

Remove the two screws and remove the distributor bearing bar, distributor gear, distributor block, and spacers from the frame.

6.5 REMOVE CONDENSER

When removing the condenser from the distributor housing, carefully rotate the condenser wire counterclockwise in the same direction as the condenser to eliminate twisting the condenser lead. (See Figure 6.5.)

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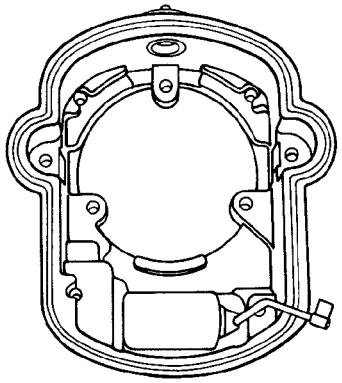

Figure 6.5.

6.6 REMOVE ROTOR GEAR

Pry the rotor gear out of the end of the rotor assembly using two flat-blade screwdrivers.

6.7 REMOVE CONTACT BREAKER ASSEMBLY(S)

6.7.1 IMPULSE COUPLED AND DIRECT DRIVE MAGNETOS

A. Disconnect the coil lead wire from the contact breaker assembly.

B. Remove the screws and washers from the breaker assembly.

C. Remove the contact breaker assembly from the bearing cap.

D. Remove the cam by prying straight up with a screwdriver blade. (See Figure 6.7.1.)

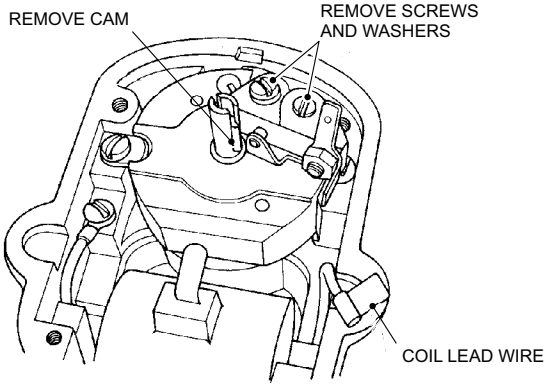

Figure 6.7.1

6.7.2 RETARD BREAKER MAGNETOS

NOTE: IN A RETARD BREAKER MAGNETO, THE PRIMARY CONTACT POINTS ARE SECURED BY A **BLACK** ANODIZED SCREW. THE RETARD BREAKER CONTACT POINTS ARE SECURED BY A **SILVER** SCREW. (See Figure 6.7.2.)

A. Disconnect the coil lead wire from the primary contact breaker assembly.

B. Remove the cam by prying straight up with a screwdriver blade.

C. Remove the screws and washers from the primary contact breaker assembly.

D. Remove the primary contact breaker assembly.

E. Remove the screws and washers from the retard breaker contact breaker assembly.

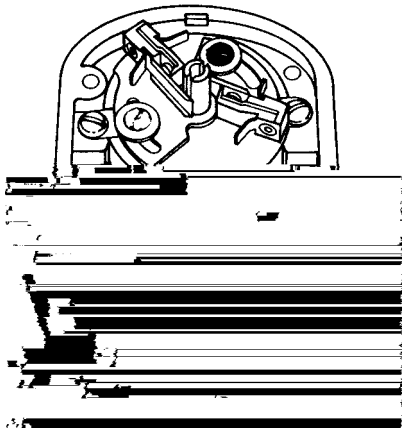

Figure 6.7.2

F. Remove the retard breaker contact breaker assembly and spacer.

6.7.3 TACHOMETER DRIVE MAGNETOS

A. Disconnect the tachometer lead wires from the tachometer contact point assembly.

B. Remove the cam by prying straight up with a screwdriver blade.

C. Remove the screws and washers from the tachometer contact point assembly.

D. Remove the tachometer contact point assembly and spacers.

6.8 REMOVE ROTOR ASSEMBLY

A. Remove two screws and two bearing plate clamps.

B. Press against the drive end of the rotor shaft and withdraw the rotor and bearing cap assembly from the drive frame.(See Figure 6.8.)

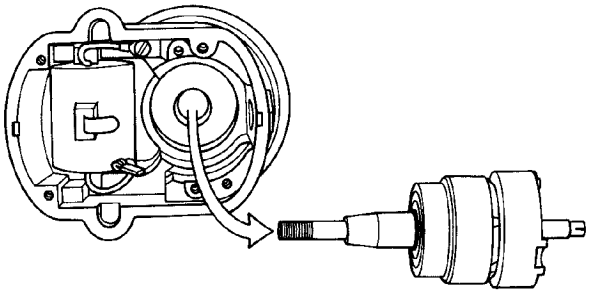

Figure 6.8

6.9 REMOVE BEARINGS FROM SHAFT

A. Place the rotor on T-152 spacer. (See Figure 6.9.)

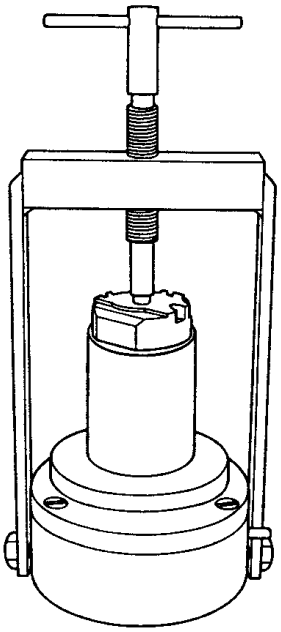

Figure 6.9

CAUTION: THE BEARING CAP ASSEMBLY HOLDS A DOUBLE-SEALED BEARING CAPTIVE IN THE BEARING CAP. THIS ASSEMBLY IS PRE-LUBRICATED AT THE FACTORY WITH SPECIAL GREASE THAT TOLERATES THE OZONE RICH ENVIRONMENT WITHIN THE MAGNETO. THE BEARING CAP AND BEARING ASSEMBLY MUST NEVER BE DISASSEMBLED.

B. Press the rotor shaft and remove the bearing cap assembly. (See Figure 6.9A.)

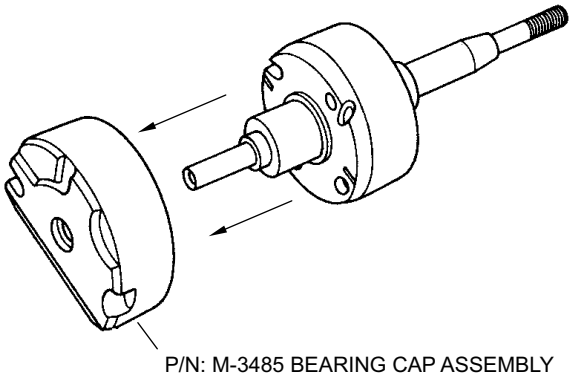

Figure 6.9A

CAUTION: THE ROTOR IS MAGNETIZED. DO NOT ALLOW THE ROTOR TO COME INTO CONTACT WITH METAL.

C. Insert the Slick T-121 bearing puller (both halves) between the drive end bearing and the rotor magnet head.

D. Put the rotor and the T-121 bearing puller on the T-152 spacer.

E. Press the rotor shaft and remove the drive end bearing.

6.10 REMOVE COIL

A. Inspect the coil per Section 3, paragraph 3.3.5. Remove only as required.

B. Remove the coil primary ground screw.

C. Use the coil wedge extractor T-122 to remove coil wedges and lift out coil. (See Figure 6.10.)

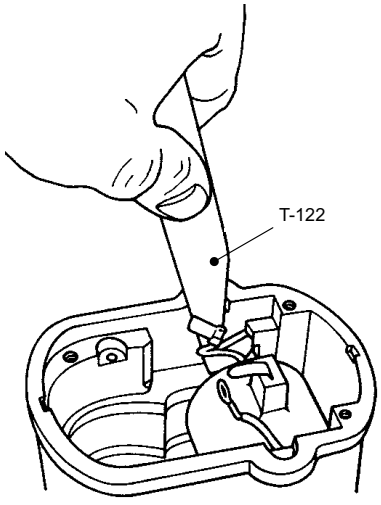

Figure 6.10

6.11 REMOVE AIR VENTS

Remove the air vents from the magneto.

6.12 REMOVE OIL SEAL

Remove the oil seal from the magneto.

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7.0 MAGNETO ASSEMBLY

7.0.1 GENERAL ORDER OF ASSEMBLY

Assemble Bearings onto Shaft
Install Rotor Shaft Assembly
Install Oil Seal
Install Woodruff Key(s)
Assemble Impulse Coupling
Install Impulse Coupling
Install Coil
Install Contact Point Assembly(s)
Install Driver Assembly
Install Rotor Cam
Install Rotor Gear
Timing the Magneto
Install Retard Breaker Lead Wire
(Retard Breaker Magnetos Only)
Install Condenser
Install Distributor Gear Assembly
Install Distributor Block
Connect Condenser Wire
Align Rotor Gear
Align Distributor Gear
Attach and Secure the Distributor Housing

7.1 ASSEMBLE BEARINGS ONTO SHAFT

A. Insert the base plate (T-117) and the adapter plate bushing (T-119) into the T-100 tool kit base.

B. Place one ball bearing and bearing cap assembly onto the rotor shaft.

C. Insert the rotor shaft into the adapter plate bushing (threaded end down).

D. Place the bearing assembly plug (T-101) onto the exposed end of the rotor shaft. (See Figure 7.1).

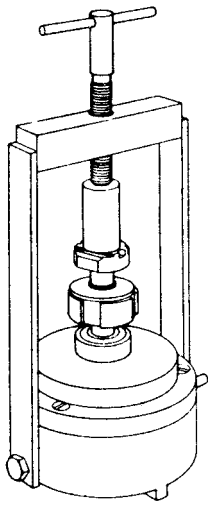

Figure 7.1

E. Turn the T-handle screw to seat the bearings against the bearing shoulders on the rotor shaft.

F. Remove the rotor shaft, adapter bushing, adapter plate and bearing assembly plug from the T-100 tool base.

7.2 INSTALL ROTOR SHAFT ASSEMBLY

A. Put the magneto frame in the T-100 base (flange down).

B. Position the rotor shaft assembly in the magneto frame.

C. Insert the rotor and frame assembly plug (T-102) into the T-100 fixture T-handle. (See Figure 7.2.)

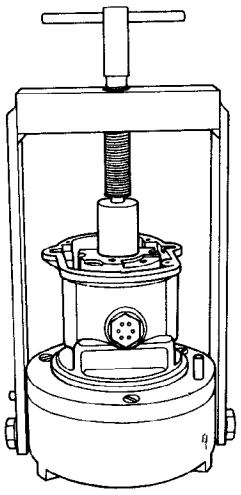

Figure 7.2

D. Turn the T-handle until the bearing cap bottoms in the frame.

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E. Put the T-151 cam and rotor set, or T-102 as applicable, onto the end of the rotor shaft and turn T-handle until the shaft bottoms in magneto frame. (See Figure 7.2.1.)

NOTE: TO PREVENT DAMAGE TO THE ROTOR SHAFT, SELECT THE APPROPRIATE TOOL WHICH ALLOWS FORCE TO BE APPLIED TO THE BEARING CAP SURFACE, WITHOUT PRESSURE IMPACTING THE TOP OF THE ROTOR SHAFT DURING INITIAL SEATING OF THE BEARING CAP.

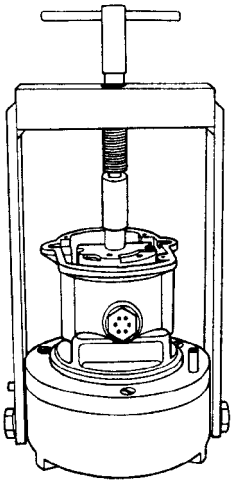

Figure 7.2.1

F. Install the bearing clamps and the hold-down screws using Loctite 242 thread locker.

G. Torque the screws to 20 - 24 in-lbs.

7.3 INSTALL OIL SEAL

A. Lubricate the oil seal with engine oil.

B. Reverse the magneto on the T-100 base so the flange is facing up.

C. Insert the oil seal over the rotor shaft. The convex center of the seal must face outward from the magneto.

CAUTION: MAKE SURE THAT THE OIL SEAL IS NOT NICKED OR DAMAGED BY THE EDGES OF THE WOODRUFF KEY SLOT.

D. Press the oil seal flush into the frame using the oil seal assembly plug (T-103) and the T-handle screw. (See Figure 7.3.)

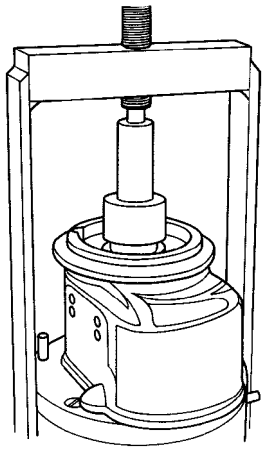

Figure 7.3

7.4 INSTALL WOODRUFF KEY(S)

Press the woodruff key(s) into the key slot of the rotor shaft.

7.5 ASSEMBLE IMPULSE COUPLING

Retard Breaker Magnetos-Proceed to 7.6.

A. Install the new impulse coupling spring, as needed, into the impulse coupling shell.

CAUTION: STRONG SPRING TENSION COULD CREATE AN IMPACT OR PROJECTILE HAZARD. USE GLOVES AND EYE PROTECTION DURING THIS OPERATION.

B. Assemble the inner eye of the impulse spring into the grooves in the impulse hub.

C. Set the impulse shell on the hub. There is no tension in the coupling in this position.

D. Hold the shell in one hand and the pawls using the thumb and forefinger of the other hand.

E. Pull the hub straight back slowly far enough to clear the projections on the shell.

CAUTION: DO NOT WIND THE COUPLING MORE THAN 1/4 TURN.

F. Hold the shell stationary and rotate the hub to wind the spring until the projections on the other section of the pawl plate pass the projections on the shell. (Approximately one-quarter revolution; 90 degrees.)

G. Make sure the shell is seated squarely on the hub and turns freely.

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7.6 INSTALL IMPULSE COUPLING (If Equipped)

CAUTION: FAILURE TO LIBERALLY OIL THE I/C DURING ASSEMBLY OR PRIOR TO INSTALLATION, MAY CAUSE THE I/C TO FUNCTION INCORRECTLY DURING START, POTENTIALLY CAUSING ENGINE DAMAGE.

A. Install the impulse coupling assembly on to the rotor shaft.

B. Install the impulse washer.

C. Install the coupling nut and torque to 120-320 in-lbs to seat the coupling onto the rotor shaft. Install the cotter pin through the hole in the rotor shaft. If the cotter pin will not align with the pin hole within the specified torque range, remove the nut, lightly lap the bottom of the nut with emery cloth, and re-torque the drive nut to the specified torque range.

NOTE: ON SOME MAGNETOS, IT WILL BE NECESSARY TO REMOVE THE IMPULSE COUPLING NUT AND WASHER DURING THE DRIVE GEAR INSTALLATION. LEAVE THE NUT AND WASHER INSTALLED AS IN STEP C, UNTIL AFTER THE POST INSPECTION TESTING.

D. Check to see that the coupling is free by snapping it through three or four times.

7.7 INSTALL DRIVER ASSEMBLY (If Equipped)

A. Install the driver assembly onto the rotor shaft.

B. Install the washer.

C. Install the coupling nut and torque to 120-320 in-lbs to seat the coupling onto the rotor shaft. Install the cotter pin through the hole in the rotor shaft. If the cotter pin will not align with the pin hole within the specified torque range, remove the nut, lightly lap the bottom of the nut with emery cloth, and re-torque the drive nut to the specified torque range.

7.8 INSTALL COIL

A. Place the frame on the T-100 assembly and timing tool. Insert the coil into the frame, making sure that it is back against the stops. Insert the coil wedges between the bridge and the frame.

B. Drive the two wedges tight, using a hammer and flat punch. Attach the ground wire of the coil to the frame, using screw. Torque to 20 in-lbs.

C. Position the coil high tension lead flush to 1/32 inch below and parallel to the parting surface of the magneto frame. (See Figure 7.8.)

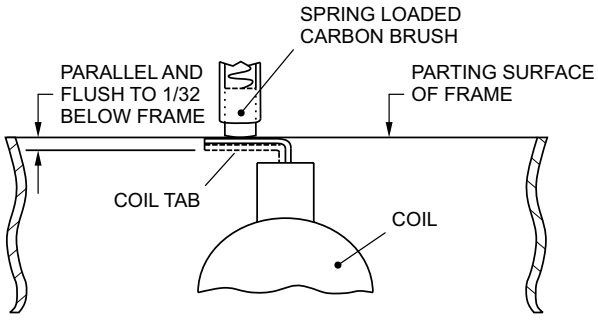

Figure 7.8

CAUTION: IF THE HIGH TENSION LEAD PROTRUDES ABOVE THE MAGNETO FRAME, IT CAN MAKE DIRECT CONTACT WITH THE DISTRIBUTOR GEAR AND CAUSE THE MAGNETO TO MALFUNCTION.

7.9 INSTALL CONTACT POINTS

7.9.1 PRIMARY CONTACT POINTS - ALL MAGNETOS

A. Attach the contact point assembly on the bearing cap using appropriate screw.

NOTE: ON RETARD BREAKER MAGNETOS, THE PRIMARY POINTS ARE SECURED WITH A BLACK ANODIZED SCREW.

CAUTION: RETARD BREAKER MAGNETOS USE DIFFERENT LENGTH SCREWS TO SECURE THE CONTACT BREAKER ASSEMBLIES. USE OF INCORRECT MOUNTING SCREWS WILL DAMAGE UPPER MAGNETO BEARING AND CAUSE POSSIBLE MAGNETO FAILURE.

7.9.2 RETARD BREAKER CONTACT POINTS - RETARD BREAKER MAGNETOS ONLY

NOTE: INSTALL THE PRIMARY POINT ASSEMBLY BEFORE INSTALLING THE RETARD POINT ASSEMBLY.

A. Place the spacer on the bearing cap and attach the retard contact points assembly using the silver screw and plain washer.

B. Do not tighten the screws until the magneto is timed.

7.9.3 TACHOMETER DRIVE CONTACT POINTS - TACHOMETER DRIVE MAGNETOS ONLY

NOTE: INSTALL THE PRIMARY POINT ASSEMBLY BEFORE INSTALLING THE TACHOMETER POINT ASSEMBLY.

A. Place the tachometer contact points on the bearing cap and secure using two screws and plain washers.

B. Do not tighten screws until the magneto is timed.

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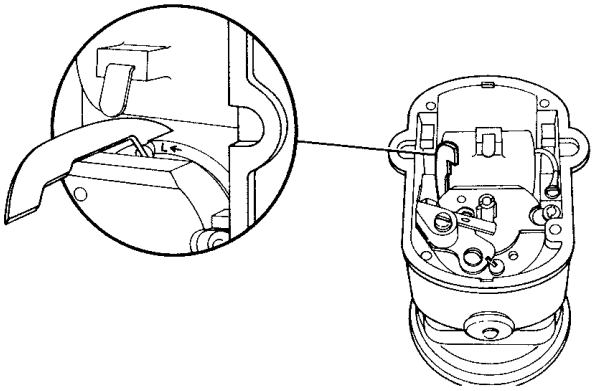

Figure 7.11.3

D. Rotate the magneto frame on the T-100 base until the T-150 "E" gap gauge rests against the pole lamination in the magneto frame. Rotate the magneto frame clockwise for left-hand rotation magnetos and counter-clockwise for right-hand rotation magnetos. The magneto rotor shaft is now in "E" gap position.

E. Use a timing light to adjust the contact points to be just opening when the frame is against the T-150 gauge. This will provide a point gap opening of .008 - .010 inches.

F. Impulse Coupled and Direct Drive Magnetos: Secure the points in this position by tightening the screws. Torque the adjusting screw to 18 - 20 in-lbs. Torque the pivot screw to 15 - 18 in-lbs.

Retard Breaker Magnetos: Secure the primary points by tightening the adjusting the screw. Torque to 15-18 in-lbs. Proceed to 7.11.2.

Tachometer Drive Magnetos: Secure the primary points by tightening the adjusting screw. Torque to 15-18 in-lbs. Proceed to 7.11.3.

G. Apply cam grease sparingly to each lobe of the cam. (See Figure 7.11.4).

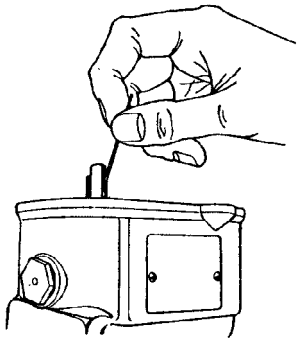

Figure 7.11.4

H. Attach the coil lead wire to the vertical bronze male terminal of the primary point assembly.

7.11.2 SET SECONDARY POINTS - RETARD BREAKER MAGNETOS ONLY

NOTE: FOR RETARD BREAKER MAGNETOS, THE PRIMARY POINTS MUST BE SET FIRST. THE RETARD (SECONDARY) POINTS ARE SET IN REFERENCE TO THE PRIMARY POINTS, AND THE PRIMARY POINTS MUST BE SET CORRECTLY TO MAKE SURE ACCURACY OF THE RETARD CONTACT SETTINGS.

A. Set the primary points according to the instructions in Section 7.11.1. Do not remove T-1 50 "E" gap gauge, and do not remove the magneto frame from T-125 base.

NOTE: RETARD POINTS ARE SET IN REFERENCE TO PRIMARY POINT SETTINGS. THE LAG ANGLE ON THE MAGNETO DATA PLATE IS THE RETARD BREAKER'S RETARD ANGLE MEASURED IN DEGREES. THE FOLLOWING PROCEDURE WILL SET THE RETARD POINTS THE REQUIRED NUMBER OF DEGREES FROM THE PRIMARY POINTS.

B. Holding the magneto securely in the base (in "E", gap position), tip the magneto and the T-125 base and loosen the timing disk retaining screws. The timing disk must rotate freely.

C. Make sure that the T-150 "E" gap gauge is still positioned against the correct lamination. Rotate the magneto frame until it contacts the pin in the T-125 base. Rotate the magneto frame clockwise for left-hand rotation magnetos, counterclockwise for right-hand rotation magnetos.

D. Hold the magneto securely in the base and tip the magneto and the T-125 base. Tighten one timing disk retaining screw to hold the timing disk in place. Remove the magneto from the T-125 base.

E. Turn the T-125 base over so that the timing disk is facing you. Loosen the timing disk retaining screw. Scribe a mark on the timing disk corresponding to the index mark on the T-125 base. This represents a point-of-reference for primary point "E" gap. (See Figure 7.11.5.)

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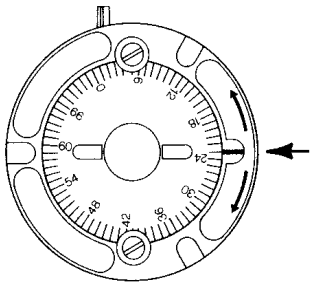

Figure 7.11.5

NOTE: THE ACTUAL NUMBER AT THE TIMING DISK INDEX MARK IS NOT CRITICAL. THIS INDEX MARK WILL BE USED AS A POINT OF REFERENCE FOR SETTING THE RETARD POINTS A SPECIFIED NUMBER OF DEGREES FROM THE PRIMARY POINTS.

F. Note the lag angle from the magneto dataplate.

G. The ticks on the timing disk each represent five degrees. To set the timing disk in the proper position, rotate the timing disk counterclockwise for left-hand rotation magnetos and clockwise for right-hand rotation magnetos. Rotate the disk according to the following chart:

Magneto Retard Angle	Number of Ticks on Timing Disk
5°	1
10°	2
15°	3
20°	4
25°	5
30°	6
35°	7
40°	8

EXAMPLE:
Lag angle as noted from dataplate: 25°
Rotation as noted from dataplate: L
To set timing disk, turn the timing disk 5 ticks (5 x 5° = 25) counterclockwise using scribed mark as reference point.

H. Tighten the timing disk retaining screws. Reverse the T-125 base and place the magneto in it, flange down (use the T-123 timing plug). Remove the T-150 "E" gap gauge from the magneto.

I. Rotate the magneto frame against the direction of normal rotation until the magneto bumps against the pin in the T-125 base. The magneto rotor shaft is now retarded from "E" gap position the number of degrees indicated on the magneto data plate.

J. Use a timing light to adjust the retard contact points to where they are just opening. Tighten the adjusting screws to secure the retard points in this position. Torque the adjusting screws to 18 - 20 in-lbs.

K. Apply cam grease sparingly to each lobe of the cam. (See Figure 7.11.6).

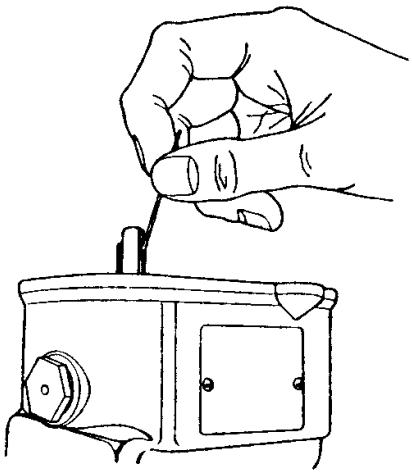

Figure 7.11.6

L. Attach the coil lead wire to the male terminal of the primary point assembly.

7.11.3 SET TACHOMETER DRIVE POINTS -TACHOMETER DRIVE MAGNETOS ONLY

A. Set the primary points according to the instructions in Section 7.11.1 above.

B. Adjust tachometer drive points to have an opening of .013 (± .002) with the rotor oriented to the position of maximum cam lift.

C. Tighten the adjusting screws to secure the points in this position. Torque the adjusting screws to 18 - 20 in-lbs.

D. Apply cam grease sparingly to each lobe of the cam. (See Figure 7.11.6).

7.12 INSTALL CONDENSER

A. Assemble the condenser into the distributor housing, being sure to rotate the condenser wire the same rotation as the condenser is tightened in the housing. (See Figure 7.12).

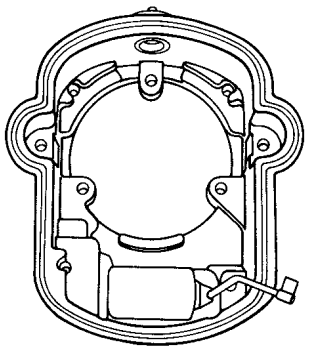

Figure 7.12

Retard Breaker Magnetos Only - Make sure the retard breaker contact lead is channeled underneath the condenser. See Figure 7.12.1.

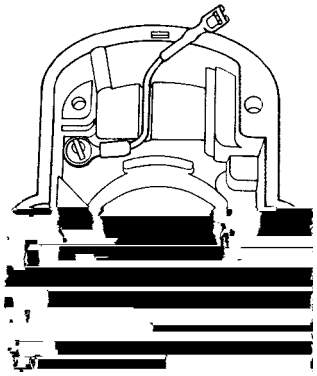

Figure 7.12.1

CAUTION: THE RETARD BREAKER LEAD WIRE MUST BE CHANNELED SECURELY UNDER THE CONDENSER. FAILURE TO DO SO MAY CAUSE THE LEAD WIRE TO INTERFERE WITH THE ROTOR GEAR MOVEMENT OR POINT OPERATION.

7.13 DISTRIBUTOR GEAR ASSEMBLY

A. Install the carbon brush into the spring.

1. Insert the small end of the carbon brush into the tapered end of spring.

2. Turn the carbon brush clockwise until the shoulder of the carbon brush seats on the spring.

B. Install the carbon brush assembly into the distributor gear.

1. Insert the open end of the spring into the open end of the distributor gear shaft.

2. Gently press the carbon brush and spring assembly into the shaft until the spring seats on the bottom of the shaft. The top of the carbon brush will protrude from the top of the shaft approximately 1/4 inch. (See Figure 7.13).

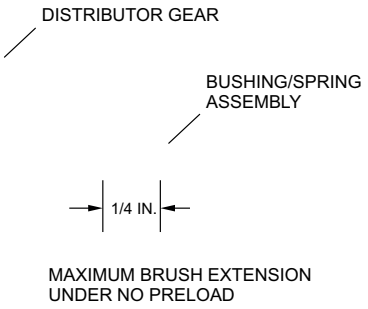

Figure 7.13

7.14 ASSEMBLE DISTRIBUTOR BLOCK

A. Refer to Step 3.3.8 for lubrication.

B. Assemble the distributor gear in the distributor block with the "L" and "R" facing you.

C. Assemble the bearing bar to the distributor block with the brush shield facing the notch in the distributor block as shown in Figure 7.14.

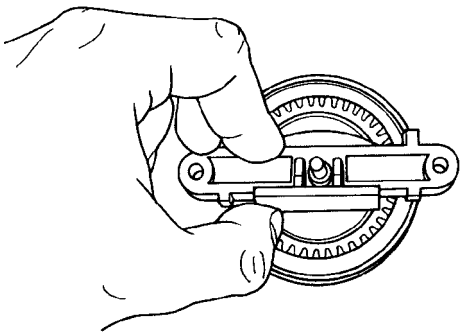

Figure 7.14

7.15 ALIGN ROTOR GEAR

A. Install the rotor gear onto the end of rotor shaft.

B. Align the "L" or "R" (depending on the rotation of the magneto - look at data plate) on the rotor gear so that it points up, toward the high tension lead of the coil. Secure the rotor shaft to prevent rotation during assembly. Alignment of rotor gear is critical. See Figure 7.15).

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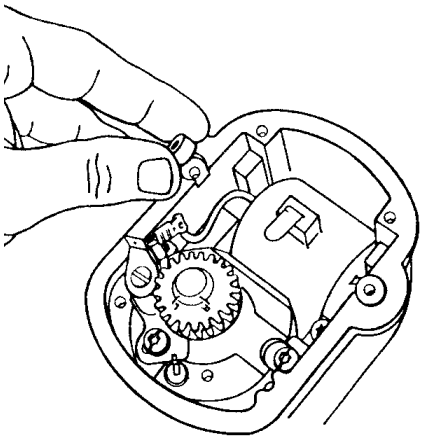

Figure 7.15

7.16 ALIGN DISTRIBUTOR GEAR

A. Align the "L" or "R" hole in the distributor gear with the "L" or "R" in the distributor block. Use "L" for left-hand rotation and "R" for right-hand rotation magnetos.

B. Lock the distributor gear in place with the T-118 timing pin through the appropriate hole in the block and gear.

C. Place the distributor block spacers on the magneto frame. (See Figure 7.16.)

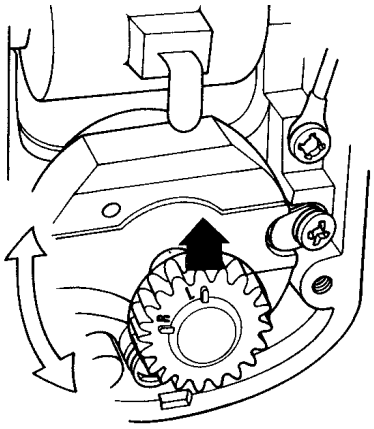

Figure 7.16

D. Place the distributor block on the magneto frame. The distributor gear and rotor gear are properly meshed when the index mark on the rotor gear aligns with the reference mark on the distributor block. (See Figure 7.16.A.)

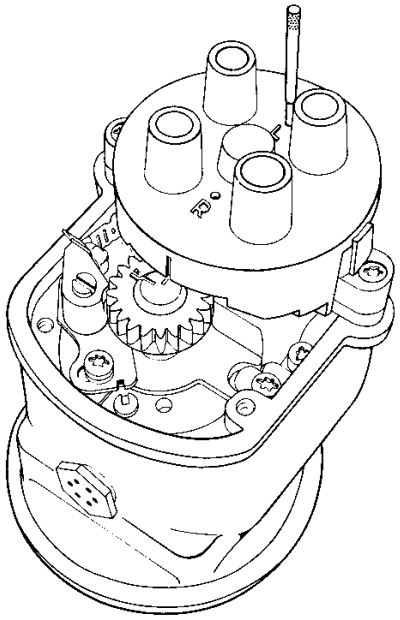

Figure 7.16.A

E. Secure the distributor block to frame using screws provided. Apply one drop of Loctite 242 thread sealant to each screw.

7.17 CONNECT CONDENSER WIRE

NOTE: USE CAUTION NOT TO BEND THE TERMINAL CONNECTOR. BENDING MAY CAUSE THE CONNECTOR TO BREAK, LEADING TO A "HOT" OR "DEAD" MAGNETO.

A. Connect the condenser wire to the primary terminal of the contact assembly.

B. Attach the terminal with the lead pointing left. (See Figure 7.17.)

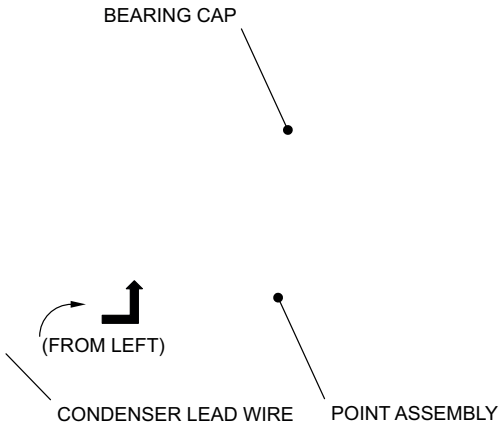

Figure 7.17

7.18 CONNECT RETARD CONTACT WIRE

A. Connect the retard terminal wire to the retard contact points. (See Figure 7.18.)

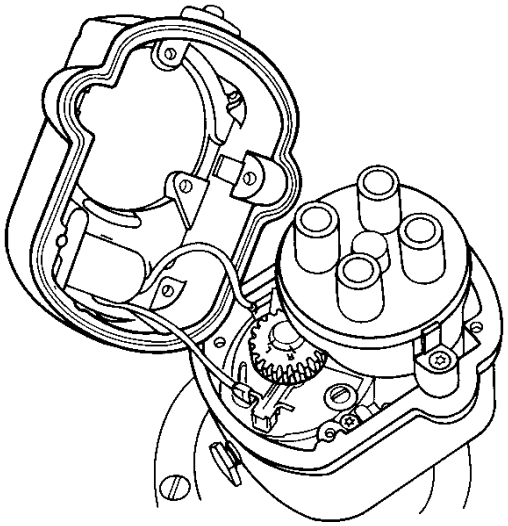

Figure 7.18

7.19 CONNECT TACHOMETER CONTACT WIRE

A. Connect the wires to the tachometer contact points. (See Figure 7.19)

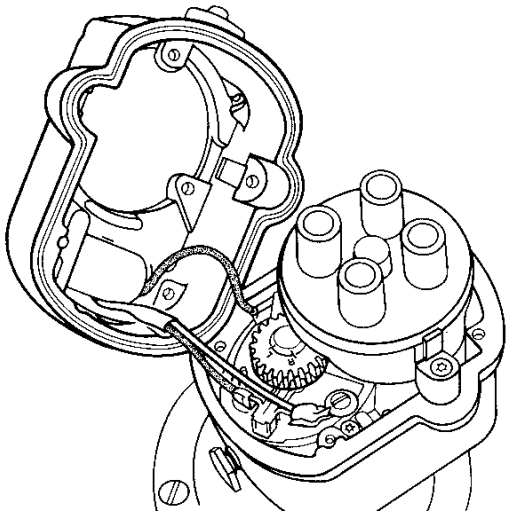

Figure 7.19

7.20 ATTACH THE DISTRIBUTOR HOUSING - NON PRESSURIZED MAGNETOS

A. Place the distributor housing onto the magneto frame.

7.21 ATTACH THE DISTRIBUTOR HOUSING - PRESSURIZED MAGNETOS

A. Install the housing gasket.

B. Place the distributor housing onto the magneto frame.

CAUTION: MAKE SURE THE CARBON BRUSH IS CONTAINED IN THE DISTRIBUTOR SHAFT DURING ASSEMBLY. IF THE CARBON BRUSH CATCHES ON THE SIDE OF THE DISTRIBUTOR SHAFT, THE COIL STRAP WILL BE BENT INTO THE WRONG POSITION DURING ASSEMBLY.

7.22 SECURE DISTRIBUTOR HOUSING

A. Secure the housing with three long screws and one short screw. Torque to 18 - 28 in-lbs.

B. Remove the T-118 timing pin.

CAUTION: DO NOT ROTATE THE MAGNETO ROTOR SHAFT WITH THE T-118 TIMING PIN INSERTED IN THE DISTRIBUTOR BLOCK. IF THE ROTOR SHAFT IS ROTATED WITH TIMING PIN INSERTED, THE MAGNETO MUST BE DISASSEMBLED AND INSPECTED FOR DISTRIBUTOR BLOCK AND GEAR DAMAGE.

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8.0 POST-ASSEMBLY TESTING

Complete Magneto Reassembly, Section 7.0. Make sure that the T-118 Timing Pin has been removed.

8.1 PRE-TEST PREPARATION

A. Mount the magneto on a suitable test stand in the same position as installed on the engine.

B. Install a Slick High-Temperature Ignition Harness on the magneto and connect each output led to a 5mm spark gap.

CAUTION: DO NOT OPERATE THE MAGNETO UNLESS THE IGNITION HARNESS IS INSTALLED AND THE OUTPUT LEADS ARE CONNECTED TO THE 5 MM GAP.

8.2 IMPULSE COUPLING

A. Rotate the test stand drive pulley in the same direction of rotation as stated on the magneto data plate.

B. The impulse coupling must engage the stop pin in the magneto frame below approximately 150 RPM. If the impulse coupling pawls slip past the stop pin or engage intermittently, the impulse coupling is not operating properly. Impulse coupling must not engage at speeds above 475 RPM.

8.3 COMING-IN SPEED

A. Determine the lowest speed at which the magneto can be turned and still spark all 5mm gaps without missing.

B. The test gap must fire consistently at 255 RPM maximum on non-impulse magnetos. On impulse coupled magnetos, the test gap must fire consistently up to 150 RPM maximum while the impulse coupling engaging and 475 RPM maximum without impulse coupling engaging.

8.4 HIGH-SPEED TEST

A. 4300/6300 Series Magnetos

1. Operate the magneto at 1000, 2000 and 3000 RPM for five minute at each speed setting.

2. Observe for sparking regularity at the spark gaps. Magneto must produce a consistent spark at all speed settings.

B. 6300 Series Magnetos

1. Conduct an additional five minute test at 4000 RPM.

8.5 LONG TERM TEST (OPTIONAL)

A. 4300 Series Magnetos

1. Test run the magneto for a minimum of three hours. Operate the magneto at 1725 RPM for the first two hours and 3400 RPM for the remaining hour.

2. Regular and consistent firing of the spark gaps is required during the entire test.

B. 6300 Series Magnetos

1. Test run the magneto for a minimum of three hours. Operate the magneto at 3000 RPM for the first two hours and 4500 RPM for the remaining hour.

2. Regular and consistent firing of the spark gaps is required during the entire test.

8.6 TEMPERATURE TEST

Measure the temperature on the outside surface of the magneto frame during the long-term test at the highest RPM setting. The magneto will generate heat during normal operation. The maximum temperature on the outside surface of the magneto frame is 175° F when tested at room temperature.

8.7 PRESSURE TESTING - PRESSURIZED MAGNETOS ONLY

After the magneto assembly, install a pressurized harness cap and apply 15 psi filtered air to the inlet nozzle of the magneto. Air flow at 15 psi is 11-40 standard cubic feet per hour (SCFH). If the flow is excessive, reposition the gaskets and re-torque the housing and harness cap screws. The screws must be torqued to 21 - 25 in-lbs. (See Figure 8.8 for Test Apparatus Details.) Testing must be conducted with magneto at room temperature.

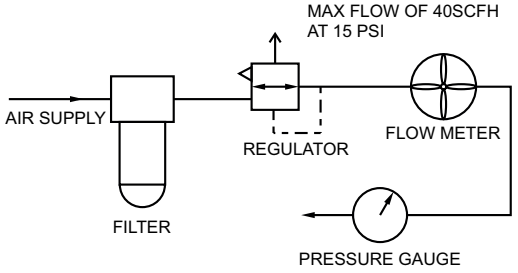

Figure 8.8

NOTE: FLOW METER MAY BE OBTAINED FROM:
DWYER INSTRUMENTS, INC., MODEL MMA-7
WWW.DWYER-INST.COM

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8.8 PREFLIGHT OPERATIONAL CHECK

Before flight or after magneto maintenance, observe the engine operation while running on both left or right magnetos individually. Both magnetos must operate normally and the engine must operate within the parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT FLY AIRCRAFT IF BOTH MAGNETOS ARE NOT FUNCTIONING PROPERLY.

8.9 POST FLIGHT OPERATIONAL CHECK

After flight, observe the engine operation while running on both left or right magnetos individually. Both magnetos must operate normally and the engine must operate within the parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT FLY AIRCRAFT IF BOTH MAGNETOS ARE NOT FUNCTIONING PROPERLY.

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9.0 MAINTENANCE CHECKLIST

A/C Type_____ Engine Make/Model_____
N#_____ Total Time on Engine_____
Magneto P/N_____ Total Time on Magneto_____
Magneto S/N_____ Date_____

EVERY 100 HOURS

□ ADJUST TIMING TO ENGINE — Sec. 3.2.1

□ INSPECTIONS
- □ Wiring Conditions and Connections — Sec. 3.2.2
- □ Vent Holes-Non-Pressurized Magnetos — Sec. 3.2.3
- □ P-Lead Attachment — Sec. 3.2.4
- □ Switch wire (Retard Breaker Mags Only) — Sec. 3.2.5
- □ Tachometer Drive Contact Wire (Tach Drive Mags Only) — Sec. 3.2.6
- □ Turbo Filter (Pressurized Mags Only) — Sec. 3.2.7
- □ Inlet Nozzle (Pressurized Magnetos Only) — Sec. 3.2.8
- □ Orifice Vent (Pressurized Magnetos Only) — Sec. 3.2.9

EVERY 250 HOURS (PRESSURIZED MAGNETOS)
EVERY 500 HOURS

□ GENERAL CLEANING — Sec. 3.3.1

□ INSPECTIONS-ALL MAGNETOS
- □ Ball Bearing Assembly — Sec. 3.3.2
- □ Rotor — Sec. 3.3.3
- □ Impulse Coupling (as applicable) — Sec. 3.3.4
- □ Driver Assembly (as applicable) — Sec. 3.3.5
- □ Coil — Sec. 3.3.6
- □ Contact Points — Sec. 3.3.7
- □ Condenser — Sec. 3.3.8
- □ Distributor Block Assembly — Sec. 3.3.9
- □ Carbon Brush Assembly — Sec. 3.3.10
- □ Structural Damage — Sec. 3.3.11

□ INSPECTIONS-PRESSURIZED MAGNETOS — Sec. 3.4
- □ Inlet Nozzle — Sec. 3.4.1
- □ Orifice Vent — Sec. 3.4.2
- □ Turbo Filter — Sec. 3.4.3
- □ Frame Gasket — Sec. 3.4.4
- □ Screw Gaskets — Sec. 3.4.4
- □ Harness Cap O-Ring — Sec. 3.4.5
- □ Magneto Interior - Check for Turbocharger Contaminants — Sec. 3.3.3 - 3.3.10
- □ Pressure Testing (as required) — Sec. 8.7

□ LUBRICATION — Sec. 3.3.9

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10. TROUBLESHOOTING GUIDE

The following charts are intended to be used as a guide only. Many non-ignition factors influence the performance of aircraft ignition systems and the replacement or repair of ignition components may not remedy problems in all cases. After verifying that all non-ignition related causes for possible problems have been explored, then proceed to use this troubleshooting guide.

10.1 TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	REMEDY
HARD STARTING	Incorrect external timing to engine.	Consult engine manufacturer's specification for ignition timing. Correct as required.
	Incorrect internal timing.	Consult Champion Aerospace Manual L-1363, Section 7.10 for internal timing specifications. Correct as required.
	Point gap setting incorrect.	Consult Champion Aerospace Manual L-1363, Section 7.10 for point gap specifications. Correct as required.
	Faulty impulse coupling.	Consult Champion Aerospace Manual L-1363, Section 3.3.4, for impulse coupling specifications and inspection procedures.
	Over torqued impulse coupling nut.	Torque nut to 120 - 180 in-lbs on magnetos with attached drive gears. There must be .010 to .020 in. play between drive gear and impulse coupling. Correct as necessary.
	Worn pawls or stop pin.	Inspect pawls and stop pin for wear. Correct as necessary.
	Impulse coupling fails to return to unwound position.	Inspect impulse coupling nut for torque.
	Fouled spark plugs.	Clean spark plugs according to manufacturer's specification.
	Incorrect spark plug gap.	Re-gap spark plug to manufacturer's specifications.
	Faulty ignition switch.	Inspect ignition switch for possibility of intermittent grounding and proper operation. Repair or replace as necessary.
	Corrosion on harness lead contacts.	Consult manual L-1499 for proper cleaning and inspection procedures. Correct as required.
	Broken rotor shaft at cam slot.	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
	Magneto Internal Component Failure:	Consult Champion Aerospace Manual L-1363, Section 3, for specifications and inspection procedures.

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PROBLEM	POSSIBLE CAUSE	REMEDY
HARD STARTING (Cont.)	Coil	Inspect for cracks, damage to high tension strap or pigtail connector and integrity of windings. Replace as necessary.
	Distributor Gear	Inspect electrode finger for looseness, gear teeth, shaft. Inspect carbon brush for damage. Replace as necessary.
	Distributor Block	Inspect distributor towers for evidence of abrasion or excessive burning. Examine rotor gear bushings for wear. Replace as necessary.
	Incorrect or non-standard starting procedures.	Consult engine manufacturer's operation manual for proper operation and performance. Correct as required.
	Faulty fuel delivery system.	Consult engine manufacturer's manual for specifications and operation. Correct as required.
	Inoperative retard contact point circuit.	Inspect wiring connections and operation of points. Correct as required.
PROPELLER KICKBACK DURING STARTING	Impulse coupling not staying engaged while starter engaged.	Inspect impulse coupling for operation. Correct as required.
	Inoperative retard contact point circuit.	Inspect for faulty wiring, timing, or inoperative contact points. Correct as required.
	Non-impulse magneto not grounded while starter engaged.	Inspect and correct as required.
	Broken rotor shaft at cam slot.	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
ROUGH RUNNING	Incorrect external timing to engine.	Consult engine manufacturer's manual for specifications of ignition timing. Correct as required.
	Incorrect internal timing.	Consult Champion Aerospace Manual L-1363, Section 7.10, for internal timing specifications. Correct as required.
	Fouled spark plugs.	Clean spark plugs according to manufacturer's specifications.
	Incorrect spark plug gap.	Re-gap spark plug to manufacturer's specifications.
	Faulty spark plug.	Test spark plug according to manufacturer's specifications.
	Faulty ignition lead.	Consult Champion Aerospace Harness Maintenance Manual L-1499, for ignition lead troubleshooting information.
	Faulty ignition switch.	Inspect ignition switch for possibility of intermittent grounding and proper operation. Repair of replace as necessary.
	Magneto Internal Component Failure:	Consult Champion Aerospace Manual L-1363, Section 3, for specifications and inspection procedures.

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PROBLEM	POSSIBLE CAUSE	REMEDY
ROUGH RUNNING (Cont.)	Points	Inspect for excessive burning, pitting, corrosion, gap setting and general operation. Replace as necessary.
	Cam	Inspect cam for excessive wear or unevenness that could cause "cam spread". Correct as necessary.
	Condenser	Inspect for faulty P-Lead connection, P-lead stud for over torqued condition, damaged pigtail connector and damaged grounding. Replace as necessary.
	Coil	Inspect for cracks, damage to high tension strap or pigtail connector and integrity of windings. Replace as necessary.
	Distributor Gear	Inspect electrode finger for looseness, gear teeth, shaft. Inspect carbon brush for damage. Replace as necessary.
	Distributor Block	Inspect distributor towers for evidence of abrasion or excessive burning. Examine rotor gear bushings for wear. Replace as necessary.
	Rotor shaft at cam slot	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
	Excessive heat.	Inspect baffling or cooling air duct. Correct as necessary.
	Faulty fuel delivery system.	Consult engine manufacturer's operations manual for proper operation and performance. Correct as required.
	Faulty induction system.	Inspect for leaks and faulty valve operation. Consult engine manufacturer’s specifications for proper operation and performance
	Faulty exhaust system.	Inspect for obstructions in exhaust pipes and mufflers, faulty valve operation. Consult engine manufacturer's specifications for proper operation and performance.
ROUGH RUNNING OR VIBRATION IN SPECIFIC RPM RANGE	Propeller out of track or unbalanced.	Consult propeller manufacturer's manual for specifications. Correct as necessary.
	Propeller imbalanced or installed incorrectly.	Correct as necessary.
	Propeller/Engine harmonic resonance.	Consult airframe manufacturer's operations manual. Correct as necessary.
	Magneto Internal Component Failure:	Consult Champion Aerospace Manual L-1363, Section 3 for specifications and inspections procedures.
	Points	Inspect for excessive burning, pitting, corrosion, gap setting and general operation. Replace as necessary.

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PROBLEM	POSSIBLE CAUSE	REMEDY
ROUGH RUNNING OR VIBRATION IN SPECIFIC RPM RANGE (Cont.)	Cam	Inspect cam for excessive wear or unevenness that could cause "cam spread". Correct as necessary.
	Condenser	Inspect for faulty P-lead connection, P-lead stud for over torqued condition, damaged pigtail connector and damaged grounding. Replace as necessary.
	Coil	Inspect for cracks, damage to high tension strap or pigtail connector and integrity of windings. Replace as necessary.
	Distributor Gear	Inspect electrode finger for looseness, gear teeth, shaft. Inspect carbon brush for damage. Replace as necessary.
	Distributor Block	Inspect distributor towers for evidence of abrasion or excessive burning. Examine rotor gear bushings for wear. Replace as necessary.
	Rotor shaft at cam slot	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
	Faulty fuel delivery system.	Consult engine manufacturer's manual for specifications and operation. Correct as required.
	Faulty induction system.	Inspect for leaks and faulty valve operation. Consult engine manufacturer's specifications for proper operation and performance. Correct as required.
	Faulty exhaust system.	Inspect for obstructions in exhaust pipes and mufflers, faulty valve operation. Consult engine manufacturer's specification for proper operation and performance
EXCESSIVE RPM DROP DURING MAGNETO CHECK	Incorrect external timing to engine.	Consult engine manufacturer's manual for specifications of ignition timing. Correct as necessary.
	Incorrect internal timing.	Consult Champion Aerospace Manual L-1363, Section 7.10, for internal timing specifications. Correct as required.
	Broken rotor shaft at cam slot.	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
	Fouled spark plugs.	Clean spark plugs according to manufacturer's specifications.
	Incorrect spark plug gap.	Re-gap spark plug to manufacturer's specifications.
	Faulty spark plug.	Test spark plug according to manufacturer's specifications.
	Faulty tachometer.	Confirm tachometer accuracy at RPM where magneto drop noted. Correct as necessary.

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PROBLEM	POSSIBLE CAUSE	REMEDY
EXCESSIVE RPM DROP DURING MAGNETO CHECK (Cont'd)	Faulty ignition lead.	Consult Champion Aerospace Harness Maintenance Manual L-1499 for ignition lead troubleshooting information. Correct as required.
	Corrosion on harness lead contacts.	Consult Champion Aerospace Harness Maintenance Manual L-1499 for proper cleaning and inspection procedures. Correct as required.
MAGNETO WILL NOT FIRE	Faulty ignition switch.	Inspect ignition switch for possibility of intermittent grounding and proper operation. Repair or replace as necessary.
	Faulty condenser.	Consult Champion Aerospace Manual L-1363, Section 3.3.7. Inspect for faulty P-lead connection, broken P-lead stud, damaged pigtail connector, and damaged grounding. Replace as necessary.
	Point gap setting incorrect.	Consult Champion Aerospace Manual L-1363, Section 7.10, for point cap specifications. Correct as required.
	Retard contact point circuit inoperative.	Inspect and correct as required.
	Broken rotor shaft at cam slot.	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
MAGNETO "HOT"	Faulty ignition switch.	Inspect ignition switch for possibility of intermittent grounding and proper operation. Repair or replace as necessary.
	Broken "P" lead wire.	Repair as necessary.
POWER LOSS	Incorrect external timing to engine.	Consult engine manufacturer's manual for specifications of ignition timing. Correct as required.
	Faulty Tachometer	Consult engine manufacturer's manual for specifications of ignition timing. Correct as required.
	Broken rotor shaft at cam slot.	Consult Champion Aerospace Manual L-1363, Section 3.3.3.C.
MOUNTING FLANGE BROKEN	Hold down clamp over torqued.	Torque hold-down clamps to 190-220 in-lbs.
	Hold down clamps torqued unevenly.	When magneto is reinstalled, be sure clamps are tightened with even pressure.
	Magneto gasket residue on accessory case mounting pad.	Be sure mounting face is free of gasket residue.
POINTS BURNED EXCESSIVELY	Faulty condenser.	Consult Champion Aerospace Manual L-1363, Section 3.3.7, for testing procedure. Replace as necessary.
	Improper spark plug gap.	Re-gap plugs according to manufacturer's specifications.
	Fouled spark plug.	Clean spark plug according to manufacturer's specifications.

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PROBLEM	POSSIBLE CAUSE	REMEDY
POINTS BURNED EXCESSIVELY (Cont'd)	Excessive heat.	Inspect baffling or cooling air duct. Correct as necessary.
HIGH TENSION LEAD ON COIL WORN OR BURNED THROUGH	Improper tension between high tension lead and carbon brush.	Consult Champion Aerospace Manual L-1363, Section 7.7, for high tension lead loading specifications.
COIL CRACKED OR ARCING IN CASE	Faulty coil.	Consult Champion Aerospace Manual L-1363, Section 3.3.5, for specifications and inspection procedures. Replace as necessary.
	Improper spark plug gap.	Consult Champion Aerospace Manual L-1363 for proper cleaning procedures. Correct as necessary.
	Fouled spark plug.	Clean spark plug according to manufacturer's specifications.
	Faulty spark plug.	Inspect spark plug according to manufacturer's specifications.
	Excessive heat.	Inspect baffling or cooling air duct. Correct as necessary.
ELECTRODE FINGER LOOSE ON DISTRIBUTOR GEAR	Timing pin wedged between electrode and distributor block during timing process.	Consult Champion Aerospace Manual L-1363 for proper timing procedures. Replace block and gear assembly.
DISTRIBUTOR BLOCK TOWERS SCORED OR EXCESSIVELY BURNED DISTRIBUTOR GEAR	Electrode finger contacting towers.	Inspect and replace as necessary.
BUSHINGS EXCESSIVELY WORN	Improper lubrication of bushing.	Consult Champion Aerospace Manual L-1363, Section 3.3.8, for proper maintenance procedures.
BEARING BAR BURNED	Carbon tracking due to excessive carbon brush wear.	Consult Champion Aerospace Manual L-1363, Section 7.7, for high tension lead loading specifications.
SPUN BEARING	Bearing not updated to correct configuration.	Consult Champion Aerospace Manual L-1363, Section 3.3.2 and 7.1, for proper maintenance procedure.
	Improper bearing installation.	Consult Champion Aerospace Manual L-1363, Section 3.3.2 and 7.1, for proper maintenance procedure.
PRESSURIZED MAGNETOS ONLY: INTERNAL CONTAMINATION AND CORROSION	Faulty pressurization or filtration system.	Consult engine manufacturer's manual for pressurization system specifications.
ALL MAGNETOS: INTERNAL CONTAMINATION AND CORROSION	Excessive or improper solvents or cleaning agents.	Consult Champion Aerospace Manual L-1363 for proper cleaning procedures. Correct as necessary.

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11.0 4300 SERIES MAGNETOS OVERHAUL PARTS REPLACEMENT LIST

The following parts must be replaced at overhaul. Additional parts may require replacement depending on the conditions as determined during magneto inspection. Install only NEW Champion Aerospace OEM Replacement Parts.

CAUTION: NON-CHAMPION FAA/PMA OR USED PARTS ARE NOT ACCEPTABLE DUE TO LIFE LIMITS AND INTERCHANGEABILITY CONCERNS.

Use only genuine Champion Aerospace manufactured parts obtained from Champion Aerospace or its authorized distributors. Genuine Champion Aerospace parts are produced and inspected under rigorous procedures to insure airworthiness and suitability in Slick magnetos. Parts purchased from sources other than Champion Aerospace or its authorized distributors, even though outwardly identical in appearance may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in a Slick magneto. Salvaged magneto parts, reworked parts obtained from non-Champion Aerospace approved sources, or parts the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render service work with this part, even though originally manufactured by Champion Aerospace, unsuitable or unsafe for use in a Slick magneto.

WARNING: CHAMPION AEROSPACE LLC EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR MALFUNCTIONS, FAILURES, DAMAGE OR INJURY CAUSED BY USE OF NON-CHAMPION AEROSPACE PARTS OR FAILURES TO FOLLOW PROCEDURES HEREIN.

The Slick magnetos are engineered to that mechanical parts wear at a balanced rate. Consistent and complimentary wear patterns establish the recommended maintenance intervals defined in Champion Aerospace service literature, therefore used, service worn parts must not be used to troubleshoot or repair a magneto. No original parts are to be replaced by used service worn parts on magnetos being returned to service.

WARNING: NON-CHAMPION AEROSPACE MANUFACTURED PARTS MAY WEAR AT UNEVEN AND DIFFERENT RATES THAN ORIGINAL CHAMPION AEROSPACE MANUFACTURED PARTS, MAKING CHAMPION AEROSPACE SERVICE LITERATURE AN INAPPROPRIATE GUIDE TO PROPER MAINTENANCE.

Parts not manufactured by Champion Aerospace, even if FAA/PMA Approved, may not fit or operate like original Champion Aerospace manufactured parts. FAA testing of PMA parts does not require operation on an engine or flight tests and does not require the test duration to exceed the maintenance intervals called out in Champion Aerospace literature. For these reasons, used service worn parts or parts not manufactured by Champion Aerospace may adversely affect magneto reliability in ways not anticipated by Champion Aerospace and its service literature.

NOTE: AN ALTERNATIVE TO OVERHAUL IS COMPLETE MAGNETO REPLACEMENT WITH A NEW SLICK MAGNETO. NEW SLICK MAGNETOS INCORPORATE ALL OF THE LATEST DESIGN FEATURES AND ARE A COST EFFECTIVE ALTERNATIVE TO AN OVERHAUL.

Description	Qty
Condenser	1
Double Sealed Bearing	1
Bearing Cap Assembly	1
Coil	1
Oil Seal	1
Contact Point Kit	1
Rotor Gear	1
Distributor Block and Gear	1
Woodruff Key(s)	1 or 2
Cotter Pin	1
Washer	1
Impulse Coupling	1

Reference Section 11.0 for correct part number for a specified model magneto.

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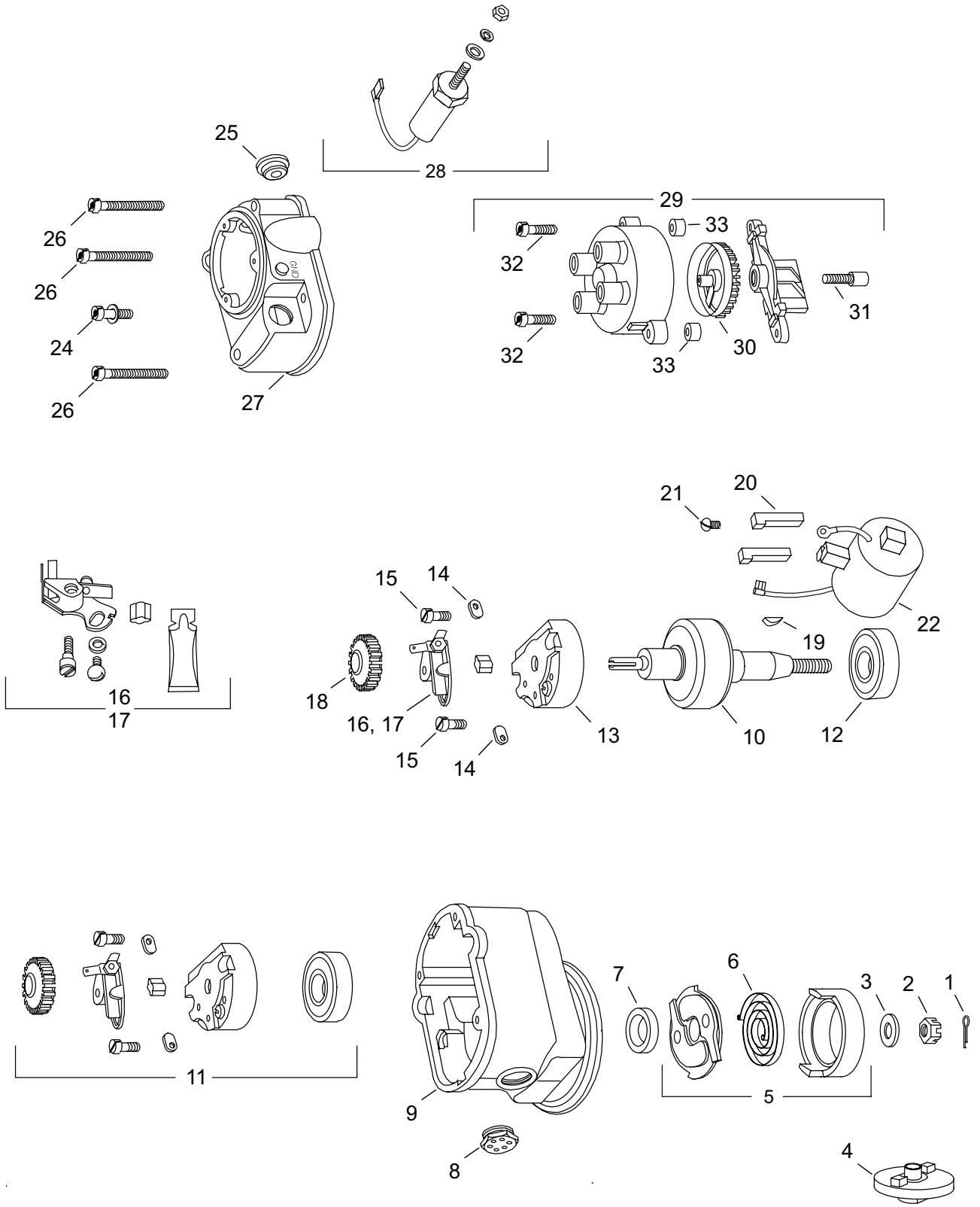
11.1 4300 SERIES MAGNETOS EXPLODED PARTS DIAGRAM



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11.2 4300 SERIES MAGNETOS SERVICE PARTS LIST(SHEET 1 of 2)

Ref No.	Description	4301	4302	4303	4309	4310	4316	4330	4331	4333	4342	4344	4345	4347	4347	Qty. Used
1	Cotter Pin	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	1
2	Nut	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3492	M3019	M3019	M3019	M3019	M3019	1
3	Washer	M3172	M3172	M3172	M5372	M5372	M3172	M3172	M3172	-	M3172	M3172	M3172	M3172	M3172	1
4	Driver Shell	-	-	-	K5265	K5265	-	-	-	-	-	-	-	-	-	1
5	Impulse Coupling Assy.	M3007	-	-	-	-	M3076	M3068	-	M3994	-	-	-	-	-	1
6	Impulse Coupling Spring	M917	-	-	-	-	M917	M917	-	M917	-	-	-	-	-	1
7	Oil Seal	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	1
8	Air Vent	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	1
9	Frame	M3859	M3900	M3859	M3900	M3900	M3888	M3888	M3900	M5002	M3900	M3900	M3900	M3900	M3900	1
10	Rotor	M3073	M3513	M3338	M3073	M3073	M3047	M3065	M3065	M5000	M3548	M3513	M3548	M3548	M3512	1
11	Bearing Kit	K3318-4	K3318-4	K3318-4	K3318-4	K3301	K3318-4	K3318-4	K3318-4	K3318-4	K3301	K3301	K3301	K3301	K3301	1
12	Ball Bearing	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	1
13	Bearing Cap Assy.	K3485	K3485	K3485	K3485	K3630	K3485	K3485	K3485	K3485	K3630	K3630	K3630	K3630	K3630	1
14	Bearing Cap Clamp	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	2
15	Screw	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	2
16	Contact Point Primary	M3081	M3081	M3081	M3081	M3637	M3081	M3081	M3081	M3081	M3637	M3637	M3637	M3637	M3637	1
17	Contact Point Secondary	-	-	-	-	M3637	-	-	-	-	M3740	M3740	M3637	M3637	M3637	1
18	Rotor Gear	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3927	M3927	1
19	Woodruff Key	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	1
20	Coil Wedge	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	2
21	Screw	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	1
22	Coil	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	1
23	Blank															
24	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	1
25	Air Vent with Hood	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	1
26	Screw	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	3
27	Housing, Distributor	M3902	M3902	M3902	M3902	M3832	M3902	M3902	M3902	M3902	M3784	M3784	M3832	M3832	M3832	1
28	Capacitor	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	1
29	Dist. Block & Gear Assy.	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	1
30	Dist. Gear	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	1
31	Carbon Brush	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	1
32	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	2
33	Spacer	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	2

NOTE: Harness Cap Screws M1553, quantity 3, are used to attach wiring harness to all magneto models.

11.2 4300 SERIES MAGNETOS SERVICE PARTS LIST(SHEET 2 of 2)

Ref. No.	Description	4353	4354	4370	4371	4372	4373	4374	4381	4392	Qty. Used
1	Cotter Pin	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	1
2	Nut	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	1
3	Washer	M3172	M3172	M3172	M3172	M3172	M3172	M3172	M3172	M3172	1
4	Driver Shell	-	-	-	-	-	-	-	-	-	1
5	Impulse Coupling Assy.	-	M3529	-	M3163	M3100	M3529	M3689	M3007	M3939	1
6	Impulse Coupling Spring	-	M917	-	M917	M917	M917	M917	M917	M917	1
7	Oil Seal	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	M3062	1
8	Air Vent	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	M1077	1
9	Frame	M3900	M3859	M3900	M3859	M3859	M3859	M3888	M3859	M3888	1
10	Rotor	M3548	M3158	M3548	M3158	M3158	M3158	M3065	M3158	M3065	1
11	Bearing Kit	K3301	K3301	K3318-4	K3318-4	K3318-4	K3318-4	K3318-4	K3318-4	K3318-4	1
12	Ball Bearing	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	1
13	Bearing Cap Assy.	K3630	K3630	K3485	K3485	K3485	K3485	K3485	K3485	K3485	1
14	Bearing Cap Clamp	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	2
15	Screw	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	2
16	Contact Point Primary	M3637	M3637	M3081	M3081	M3081	M3081	M3081	M3081	M3081	1
17	Contact Point Secondary	M3637	M3637	-	-	-	-	-	-	-	1
18	Rotor Gear	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	M3827	1
19	Woodruff Key	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	1
20	Coil Wedge	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	2
21	Screw	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	1
22	Coil	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	1
23	Blank										
24	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	1
25	Air Vent with Hood	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	M3084	1
26	Screw	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	M3015	3
27	Housing, Distributor	M3832	M3832	M3902	M3902	M3902	M3902	M3902	M3902	M3902	1
28	Capacitor	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	1
29	Dist. Block & Gear Assy.	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	K3822	1
30	Dist. Gear	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	K3008	1
31	Carbon Brush	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	1
32	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	2
33	Spacer	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	2

NOTE: Harness Cap Screws M1553, quantity 3, are used to attach wiring harness to all magneto models.

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11.3 4300 SERIES MAGNETO MAINTENANCE KITS

Kit P/N	Capacitor	Ball Bearing	Bearing Cap Assy	Coil	Oil Seal	Contact Point Kit	Rotor Gear	Distr. Block & Gear	Woodruff Key	Cotter Pin	Washer	Applicable Magnetos
MK401	K3984	M3006	K3485	K3975	M3062	M3081	M3828	K3822	M2536	M2556	M3172	4301, 4302, 4303, 4309, 4316, 4330, 4331, 4333, 4370, 4371, 4372, 4373, 4374, 4381, 4392
MK402	K3984	M3006	K3630	K3975	M3062	M3637 (2)	M3828	K3822	M2536	M2556	M3172	4310, 4345, 4347, 4348, 4354, 4354
MK403	K3984	M3006	K3630	K3975	M3331	M3637 (1) M3740 (1)	M3828	K3822	M2536	M2556	N/A	4342, 4344

11.4 4300 SERIES MAGNETO 500 HOUR INSPECTION KITS

Kit P/N	Contact Point Kit	Carbon Brush	Capacitor Kit	4 Cyl Rotor Gear	Cotter Pin	Applicable Magnetos
MK431	M3081	K3215	K3984	M3827	M2556	4301, 4302, 4303, 4309, 4316, 4330, 4331, 4333, 4370, 4371, 4372, 4373, 4374, 4381, 4392
MK432	M3637 (2)	K3215	K3984	M3827	M2556	4310, 4345, 4347, 4348, 4354, 4354
MK433	M3637 (1) M3740 (1)	K3215	K3984	M3827	M2556	4342, 4344

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11.5 6300 SERIES MAGNETOS OVERHAUL PARTS REPLACEMENT LIST

The following parts must be replaced at overhaul. Additional parts may require replacement depending on the conditions as determined during magneto inspection. Install only NEW Champion Aerospace OEM Replacement Parts.

CAUTION: NON-CHAMPION FAA/PMA OR USED PARTS ARE NOT ACCEPTABLE DUE TO LIFE LIMITS AND INTERCHANGEABILITY CONCERNS.

Use only genuine Champion Aerospace manufactured parts obtained from Champion Aerospace or its authorized distributors. Genuine Champion Aerospace parts are produced and inspected under rigorous procedures to insure airworthiness and suitability in Slick magnetos. Parts purchased from sources other than Champion Aerospace or its authorized distributors, even though outwardly identical in appearance may not have had the required tests and inspections performed, may be different in fabrication techniques and materials, and may be dangerous when installed in a Slick magneto. Salvaged magneto parts, reworked parts obtained from non-Champion Aerospace sources, or parts the service history of which is unknown or cannot be authenticated, may have been subjected to unacceptable stresses or temperatures, or have other hidden damage, not discernible through routine visual or usual nondestructive testing techniques. This may render service work with this part, even though originally manufactured by Champion Aerospace, unsuitable or unsafe for use in a Slick magneto.

WARNING: CHAMPION AEROSPACE LLC EXPRESSLY DISCLAIMS ANY RESPONSIBILITY FOR MALFUNCTIONS, FAILURES, DAMAGE OR INJURY CAUSED BY USE OF NON-CHAMPION AEROSPACE APPROVED PARTS OR FAILURES TO FOLLOW PROCEDURES HEREIN.

The Slick magnetos are engineered to that mechanical parts wear at a balanced rate. Consistent and complimentary wear patterns establish the recommended maintenance intervals defined in Champion Aerospace service literature, therefore used, service worn parts must not be used to troubleshoot or repair a magneto. No original parts are to be replaced by used service worn parts on magnetos being returned to service. Further, non-Champion Aerospace manufactured parts may wear at uneven and different rates than original Champion Aerospace manufactured parts, making Champion Aerospace service literature an inappropriate guide to proper maintenance.

WARNING: NON-CHAMPION AEROSPACE MANUFACTURED PARTS MAY WEAR AT UNEVEN AND DIFFERENT RATES THAN ORIGINAL CHAMPION AEROSPACE MANUFACTURED PARTS, MAKING CHAMPION AEROSPACE SERVICE LITERATURE AN INAPPROPRIATE GUIDE TO PROPER MAINTENANCE.

Parts not manufactured by Champion Aerospace, even if FAA/PMA Approved, may not fit or operate like original Champion Aerospace manufactured parts. FAA testing of PMA parts does not require operation on an engine or flight tests and does not require the test duration to exceed the maintenance intervals called out in Champion Aerospace literature. For these reasons, used service worn parts or parts not manufactured by Champion Aerospace may adversely affect magneto reliability in ways not anticipated by Champion Aerospace and its service literature.

NOTE: AN ALTERNATIVE TO OVERHAUL IS COMPLETE MAGNETO REPLACEMENT WITH A NEW SLICK MAGNETO. NEW SLICK MAGNETOS INCORPORATE ALL OF THE LATEST DESIGN FEATURES AND ARE A COST EFFECTIVE ALTERNATIVE TO AN OVERHAUL.

Description	Qty
Condenser	1
Double Sealed Bearing	1
Bearing Cap Assembly	1
Coil	1
Oil Seal	1
Contact Point Kit	1
Rotor Gear	1
Distributor Block and Gear	1
Woodruff Key(s)	1 or 2
Cotter Pin	1
Washer	1
Impulse Coupling	1

PRESSURIZED MAGNETOS:
In addition to above parts, the following components must be replaced at every overhaul.

Description	Qty
Pressurized Magneto Kit	1
Round Head Screw	1
Round Head Screw	3
Frame Gasket	1
Housing Screw	4
Harness Cap 'O' Ring	1

Reference Section 11.0 for correct part number for a specified model magneto.

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11.6 6300 SERIES MAGNETOS SERVICE PARTS LIST (SHEET 1 of 2)

Ref. No.	Description	6309	6310	6313	6314	6320	6324	6331	6340	6350	6351	6355	6360	6361	6362	Qty. Used
1	Cotter Pin	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	1
2	Nut	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	1
3	Washer	M3172	M3172	M3172	M3172	M3172	M3172	-	-	-	-	-	-	-	M3172	1
4	Drive Hub	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
5	Impulse Coupling Assy.	-	M3050	-	M3089	M3050	M3089	M3800	-	-	M3333	M3635	-	M3333	M3050	1
6	Impulse Coupling Spring	-	M917	-	M917	M917	M917	M917	-	-	M917	M917	-	M917	M917	
7	Oil Seal	M3062	M3062	M3062	M3062	M3062	M3062	M3331	M3331	M3331	M3331	M3331	M3331	M3331	M3331	1
8	Pressure Vent Plug	-	-	-	-	M3179	M3179	M3179	M3179	-	-	-	M3179	M3179	-	1
9	Air Vent	M1077	M1077	M1077	M1077	-	-	-	-	M1077	M1077	M1077	-	-	M1077	1
10	Frame	M3946	M3837	M3946	M3847	M3837	M3847	M3888	M3900	M3900	M3859	M3859	M3900	M3859	M3837	1
11	Gasket Pressure Kit	-	-	-	-	K3307	K3307	K3307	K3307	-	-	-	K3307	K3307	-	1
12	Ball Bearing	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	1
13	Rotor	M3914	M3047	M3914	M3093	M3047	M3093	M3792	M5618	M5617	M3327	M3416	M5617	M3327	M3047	1
14	Bearing Cap Assy.	M3630	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	M3485	1
15	Bearing Cap Clamp	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	2
16	Screw	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	2
17	Contact Point Primary	M3637	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	M3081	1
18	Contact Point Secondary	M3637	-	-	-	-	-	-	-	-	-	-	-	-	-	1
19	Rotor Gear	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	1
20	Woodruff Key	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	1*
21	Coil Wedge	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	2
22	Screw	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	1
23	Coil	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	1
24	Blank															
25	Screw	M3021	M3021	M3021	M3021	-	-	-	-	M3021	M3021	M3021	-	-	M3021	1
-26	Harness Cap	-	-	-	-	-	-	-	-	-	-	-	-	-	M3154	1
-27	Screw	-	-	-	-	-	-	-	-	-	-	-	-	-	M3125	3
28	Pressure Tube Fitting	-	-	-	-	M3180	M3180	M1280	M1280	-	-	-	M1280	M1280	-	1
29	Air Vent with Hood	M3084	M3084	M3084	M3084	-	-	-	-	M3084	M3084	M3084	-	-	M3084	1
30	Screw	M3015	M3015	M3015	M3015	-	-	-	-	M3015	M3015	M3015	-	-	M3015	3
31	Housing, Distributor	M3832	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	M3902	1
32	Capacitor	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	1
33	Dist. Block & Gear Assy.	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	1
34	Dist. Gear	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	1
35	Bearing Kit	K3630	K3320	K3320	K3320	K3320	K3320	K3319	K3319	K3319	K3319	K3319	K3319	K3319	K3320	1
36	Carbon Brush	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	1
37	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	2
38	Spacer	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	2

- Not Illustrated. * Models 6331, 6340, 6350, 6351, 6355, 6360, 6361, 6363, 6365, 6371, 6390, 6391, and 6394 use Qty 2 Woodruff Keys.

NOTE: Harness Cap Screws M1553, quantity 3, are used to attach wiring harness to all magneto models.

11.6 6300 SERIES MAGNETOS SERVICE PARTS LIST (SHEET 2 of 2) (Cont'd)

Ref. No.	Description	6363	6364	6365	6367	6371	6377	6379	6380	6382	6390	6391	6393	6394	6399	Qty. Used
1	Cotter Pin	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	M2556	1
2	Nut	M3019	M3492	M3019	M3492	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	M3019	1
3	Washer	-	-	-	-	-	M3172	M3172	M3172	M3172	-	-	-	-	M3172	1
4	Drive Hub	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
5	Impulse Coupling Assy.	-	M3590	-	M3524	-	M5014	M5020	M3050	M3050	-	-	-	-	M3939	1
6	Impulse Coupling Spring	-	M917	-	M917	-	M917	M917	M917	M917	-	-	-	-	M917	1
7	Oil Seal	M3331	M3062	M3331	M3062	M3331	M3062	M3062	M3062	M3062	M3331	M3331	M3331	M3331	M3062	1
8	Pressure Vent Plug	M3179	-	M3179	-	-	-	-	-	-	-	M3179	-	M3179	-	1
9	Air Vent	-	M1077	-	M1077	M1077	M1077	M1077	M1968	M1968	M1077	-	M1077	-	M1077	1
10	Frame	M3900	M3853	M3900	M3856	M3900	M3859	M3859	M3850	M3850	M3900	M3900	M3900	M3900	M3972	1
11	Gasket Pressure Kit	K3307	-	K3307	-	-	-	-	-	-	-	K3307	-	K3307	-	1
12	Ball Bearing	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	M3006	1
13	Rotor	M5617	M3496	M5617	M3499	M5617	M5015	M5015	M3047	M3047	M5617	M5618	M5617	M5618	M3948	1
14	Bearing Cap Assy.	M3630	M3485	M3630	M3485	M3630	M3485	M3485	M3485	M3485	M3630	M3630	M3630	M3630	M3485	1
15	Bearing Cap Clamp	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	M3018	2
16	Screw	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	M3221	2
17	Contact Point Primary	M3637	M3081	M3637	M3081	M3637	M3081	M3081	M3081	M3081	M3637	M3637	M3637	M3637	M3081	1
18	Contact Point Secondary	M3637	-	M3637	-	M3637	-	-	-	-	M3740	M3637	M3637	M3637	-	1
19	Rotor Gear	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	M3828	1
20	Woodruff Key	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	M2536	1*
21	Coil Wedge	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	M3040	2
22	Screw	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	M3020	1
23	Coil	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	K3975	1
24	Blank															
25	Screw	-	M3021	-	M3021	M3021	M3021	M3021	M3021	M3021	M3021	-	M3021	-	M3021	1
-26	Harness Cap	-	-	-	-	-	-	-	-	M3154	-	-	-	-	-	1
-27	Screw	-	-	-	-	-	-	-	-	M3125	-	-	-	-	-	3
28	Pressure Tube Fitting	M1280	-	M1280	-	-	-	-	-	-	-	M1280	-	M1280	-	1
29	Air Vent with Hood	-	M3084	-	M3084	M3084	M3084	M3084	M3084	M3084	M3084	-	M3084	-	M3084	1
30	Screw	-	M3015	-	M3015	M3015	M3015	M3015	M3015	M3015	M3015	-	M3015	-	M3015	3
31	Housing, Distributor	M3832	M3902	M3832	M3902	M3902	M3902	M3902	M3902	M3902	M3874	M3832	M3832	M3832	M3902	1
32	Capacitor	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	K3984	1
33	Dist. Block & Gear Assy.	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	K3823	1
34	Dist. Gear	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	K3056	1
35	Bearing Kit	K3302	K3320	K3302	K3320	K3302	K3320	K3320	K3320	K3320	K3302	K3302	K3302	K3302	K3320	1
36	Carbon Brush	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	K3215	1
37	Screw	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	M3021	2
38	Spacer	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	M3826	2

- Not Illustrated. * Models 6331, 6340, 6350, 6351, 6355, 6360, 6361, 6363, 6365, 6371, 6390, 6391, and 6394 use Qty 2 Woodruff Keys.

NOTE: Harness Cap Screws M1553, quantity 3, are used to attach wiring harness to all magneto models.

11.7 6300 SERIES MAGNETO MAINTENANCE KITS

Kit No.	Capacitor	Double Sealed Bearing	Bearing Cap Assy	Coil	Oil Seal	Contact Point Kit	Rotor Gear	Distr. Block & Gear	Woodruff Key	Cotter Pin	Washer	Applicable Magnetos
MK601	K3984	M3006	K3485	K3975	M3062	M3081	M3828	K3823	M2536 (2)	M2556	M3172	6310, 6313, 6314, 6320, 6324, 6362, 6364, 6367, 6377, 6379, 6380, 6382, 6399
MK602	K3984	M3006	K3630	K3975	M3062	M3637 (2)	M3828	K3823	M2536 (2)	M2556	M3172	6309
MK603	K3984	M3006	K3630	K3975	M3331	M3637 (1) M3740 (1)	M3828	K3823	M2536 (2)	M2556	N/A	6390
MK604	K3984	M3006	K3485	K3975	M3331	M3081	M3828	K3823	M2536 (2)	M2556	N/A	6331, 6340, 6350, 6351, 6355, 6360, 6361
MK605	K3984	M3006	K3630	K3975	M3331	M3637 (2)	M3828	K3823	M2536 (2)	M2556	N/A	6363, 6365, 6371, 6391, 6393, 6394

11.8 6300 SERIES MAGNETO 500 HOUR INSPECTION KITS

Kit P/N	Contact Point Kit	Carbon Brush	Capacitor Kit	6 Cyl Rotor Gear	Cotter Pin	Applicable Magnetos
MK631	M3081	K3215	K3984	M3828	M2556	6310, 6313, 6314, 6320, 6324,6331, 6340, 6350, 6351, 6355, 6360, 6361, 6362, 6364, 6367, 6377, 6379, 6380, 6382, 6399
MK632	M3637 (2)	K3215	K3984	M3828	M2556	6309, 6363, 6365, 6371, 6391, 6393, 6394
MK633	M3637 (1) M3740 (1)	K3215	K3984	M3828	M2556	6390

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12.0 SERVICE LIMITS

12.1 SERVICE TORQUE SPECIFICATIONS:

M-3614	Primary/Retard Point	15 - 18 in-lbs
M-3081	Contact Point	15 - 18 in-lbs
M-1053	P-Lead Nut	13 - 15 in-lbs
M-1077	Air Vent Body	80 - 90 in-lbs
M-1343	Air Vent Body	80 - 90 in-lbs
M-1553	Harness Cap Screw	18 - 28 in-lbs
M-1723	Magneto Mounting Clamp	190 - 220 in-lbs
M-2550	Air Vent Hood Screw	5 - 7 in-lbs
M-2555	Housing Screw	18 - 28 in-lbs
M-3015	Housing Screw	18 - 28 in-lbs
M-3019	Impulse Coupling Nut	120 - 320 in-lbs
M-3020	Contact Point / Coil Ground	20 - 24 in-lbs
M-3021	Distributor Block Screw	18 - 28 in-lbs
M-3125	Harness Adapter Screw	18 - 28 in-lbs
M-3180	Air Inlet Nozzle	80 - 90 in-lbs
M-3984	Capacitor	150 - 160 in-lbs
M-3221	Bearing Cap Screw	20 - 24 in-lbs

* If the cotter pin will not align with the pin hole within the specified torque range, remove the nut and lightly lap the bottom surface of the nut with a piece of emery cloth.

12.2 LUBRICATION:

M-1827	Cam Grease - For Rotor Cam
R5008	Lube Oil, Slick, 32 oz - For Distributor Block and Gear assembly Oilite Bearings

12.3 CONSUMABLES:

Loctite 242	For Bearing Cap Hold-Down Screws and Distributor Block Screws

12.4 TOLERANCES:

Primary Coil	.50 - 1.2 Ohms
Secondary Coil	13,000 - 20,500 Ohms
Condenser	.35 MFD ± 10%

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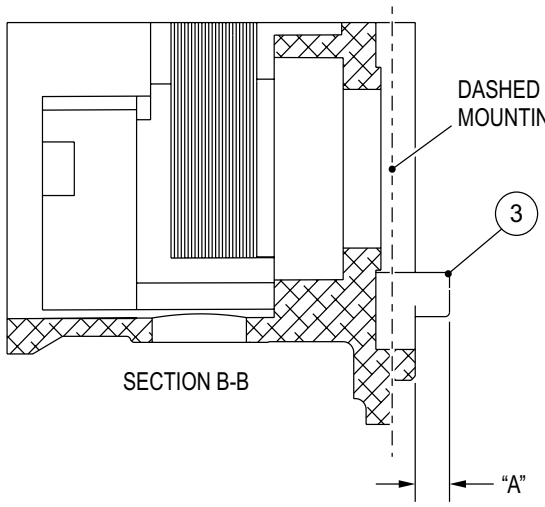
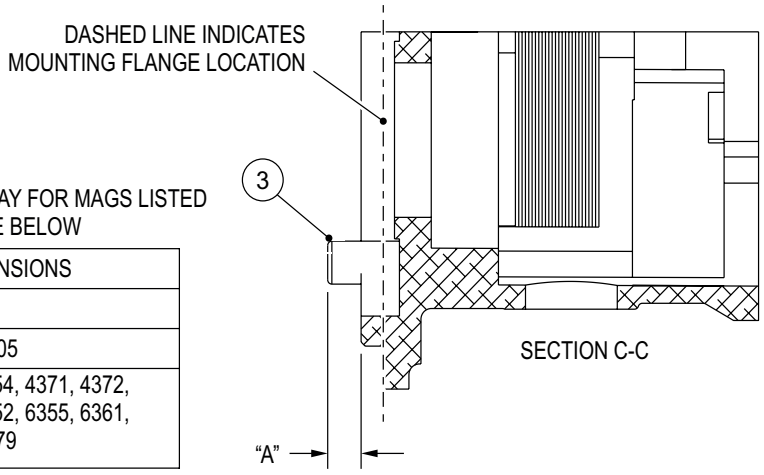


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.125 ± .005
4316, 4330, 4374, 4392, 6331

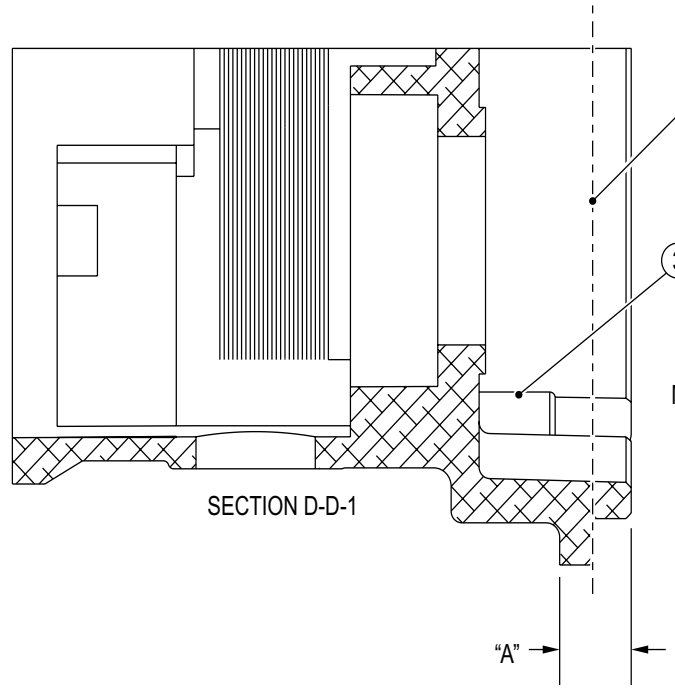


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.125 ± .005
4301, 4303, 4346, 4354, 4371, 4372, 4373, 4381, 6351, 6352, 6355, 6361, 6377, 6379

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTIONS B-B AND C-C. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT GREATER THAN 0.130 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 1. MAGNETO FRAME CUTAWAY SECTIONS B-B AND C-C

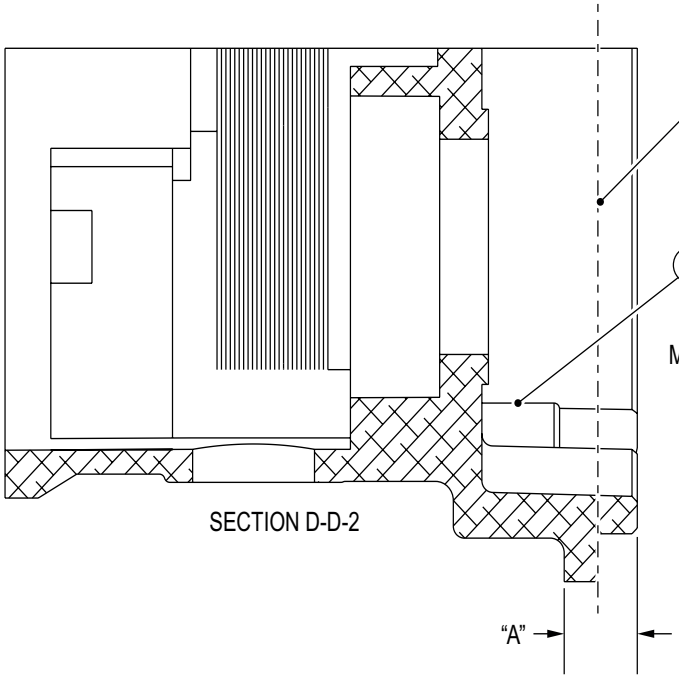


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.437 ± .005
6310, 6320, 6362, 6380, 6382

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTION D-D-1. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT LESS THAN 0.432 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 2. MAGNETO FRAME CUTAWAY SECTION D-D-1

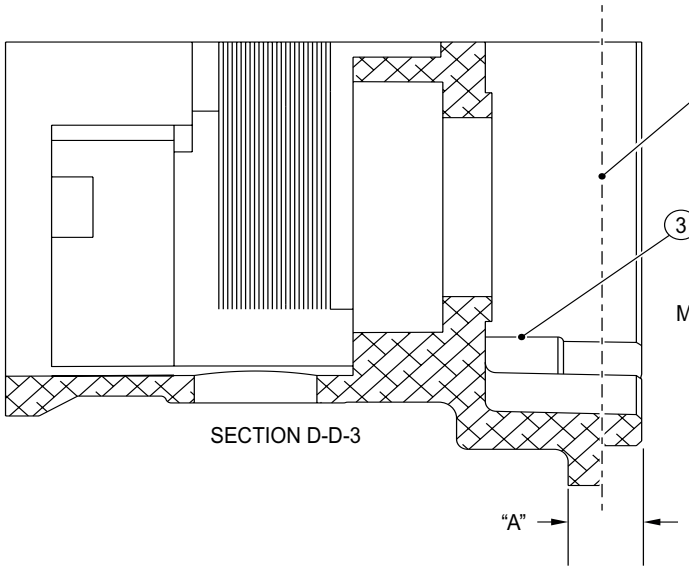


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.312 ± .005
6399

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTION D-D-2. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT LESS THAN 0.307 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 3. MAGNETO FRAME CUTAWAY SECTION D-D-2

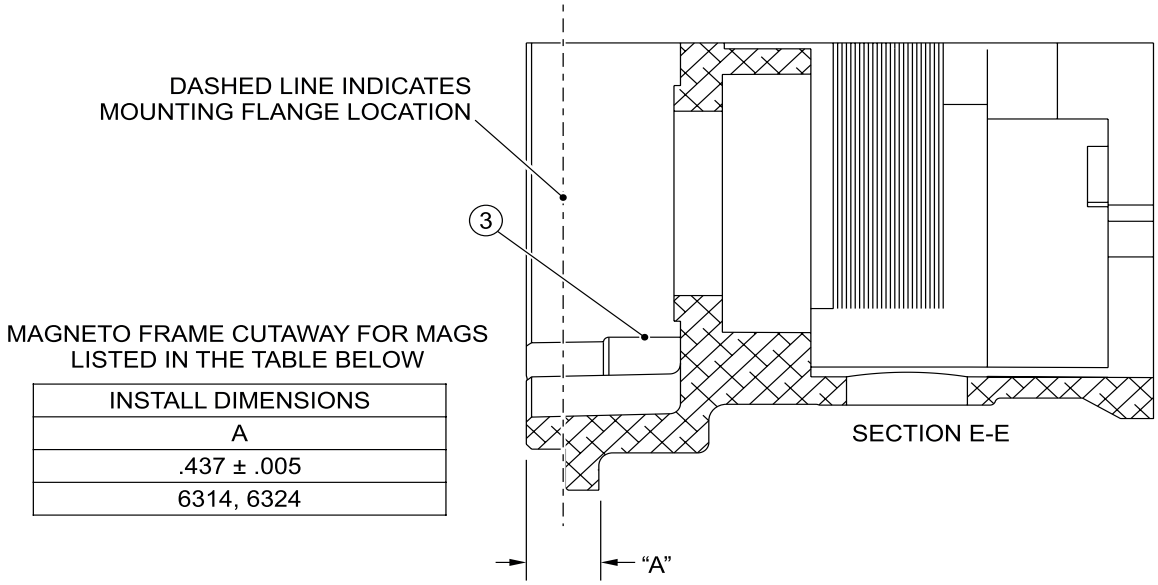


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.250 ± .005
4333

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTION D-D-3. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT LESS THAN 0.245 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 4. MAGNETO FRAME CUTAWAY SECTION D-D-3

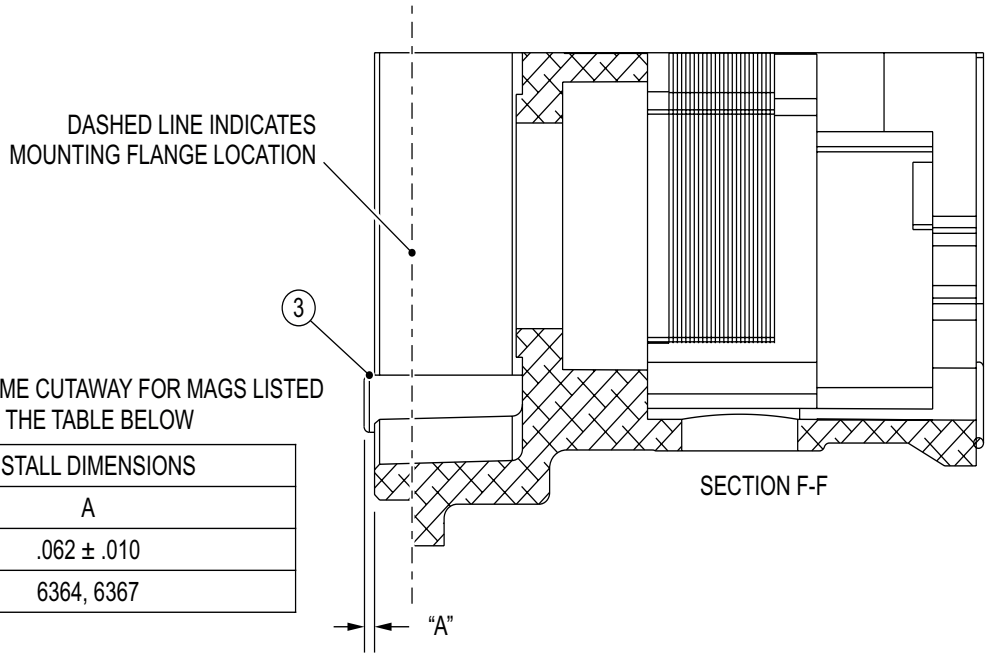


MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.437 ± .005
6314, 6324

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTION E-E. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT LESS THAN 0.432 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 5. MAGNETO FRAME CUTAWAY SECTION E-E



MAGNETO FRAME CUTAWAY FOR MAGS LISTED IN THE TABLE BELOW

INSTALL DIMENSIONS
A
.062 ± .010
6364, 6367

USE A CALIBRATED MEASURING DEVICE TO MEASURE DISTANCE "A", AS SHOWN IN CUTAWAY SECTION F-F. MAKE SURE THE FRAME SURFACE IS FREE OF CONTAMINANTS. ANY MEASUREMENT GREATER THAN .072 INCH OF ANY PART OF THE STOP PIN (3), THE MAGNETO SHOULD BE REMOVED FROM SERVICE AND RETURNED TO CHAMPION FOR WARRANTY.

FIGURE 6. MAGNETO FRAME CUTAWAY F-F

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