

### 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.**

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		
05	01	91	04	20	21	3-1	J

Champion Aerospace LLC  
1230 Old Norris Road  
Liberty, South Carolina/USA 29657  
© 2021 Champion Aerospace LLC

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

**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.

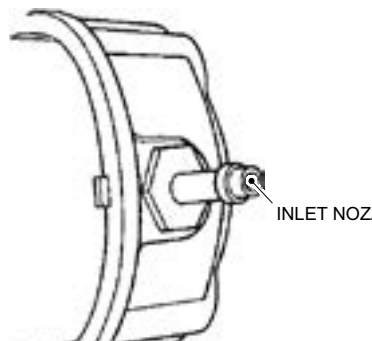


Figure 3.2.8

**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).

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-2	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

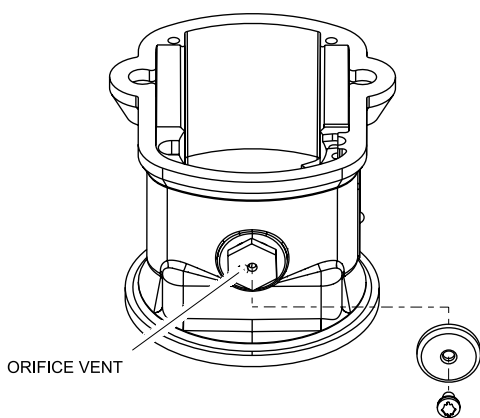


Figure 3.2.9

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).

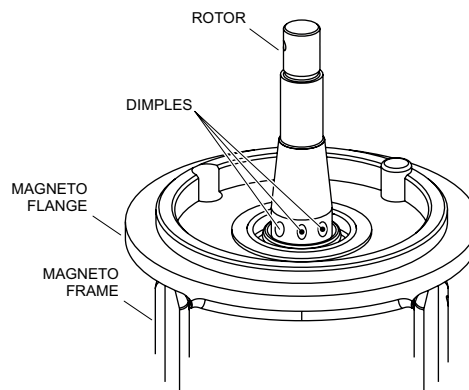


Figure 3.3.3

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.

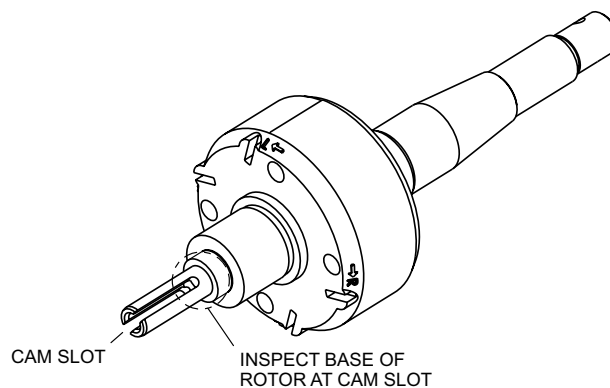


Figure 3.3.3A

#### 3.3.4 INSPECT IMPULSE COUPLING - IMPULSE COUPLED MAGNETOS ONLY

**WARNING: MAKE SURE IGNITION SWITCH IS IN THE "OFF" POSITION AND THE CONDENSER LEAD IS GROUNDED.**

**WARNING: THE FOLLOWING PROCEDURE AND STEPS IN THIS SECTION MUST BE ACCOMPLISHED WITH STRICT ADHERENCE TO THE REQUIREMENTS STATED HEREIN.**

- A. Clean Impulse Coupling
1. All portions of the impulse coupling must be cleaned, exposing the bare metal, to make sure of a reliable inspection.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-3	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

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

B. Inspect Coupling

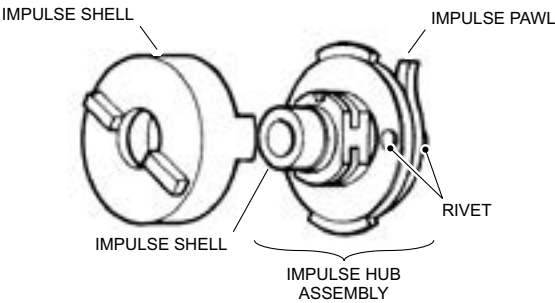


Figure 3.3.4

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.)

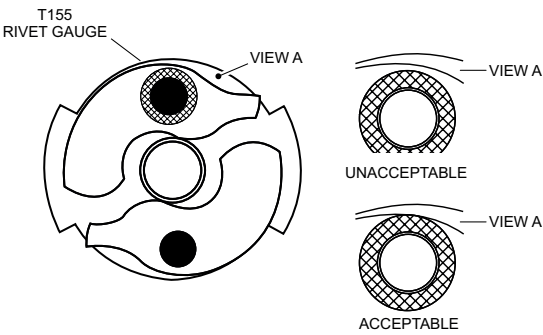


Figure 3.3.4A

- 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).

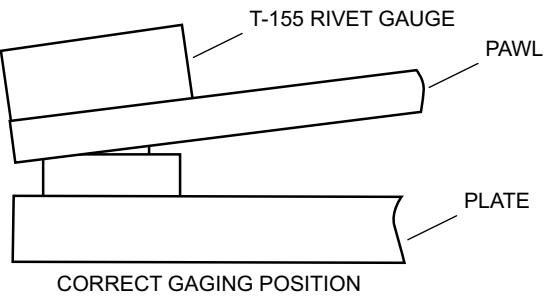
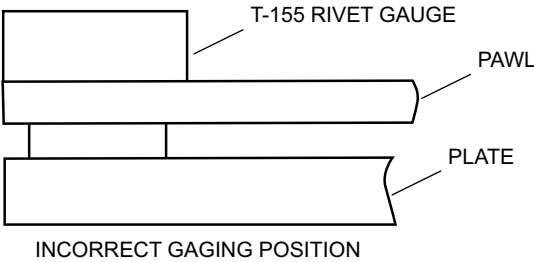


Figure 3.3.4B

- 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 Gauge, 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.

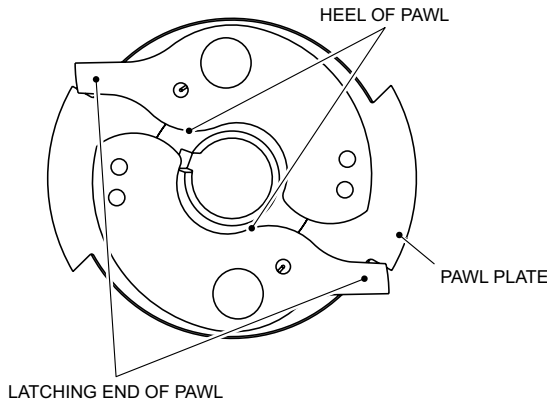


Figure 3.3.4C

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.

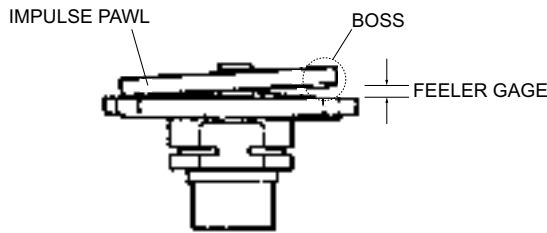


Figure 3.3.4D

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).

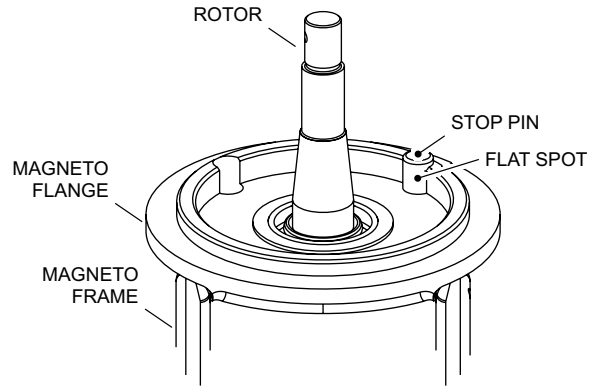


Figure 3.3.4E

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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-5	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

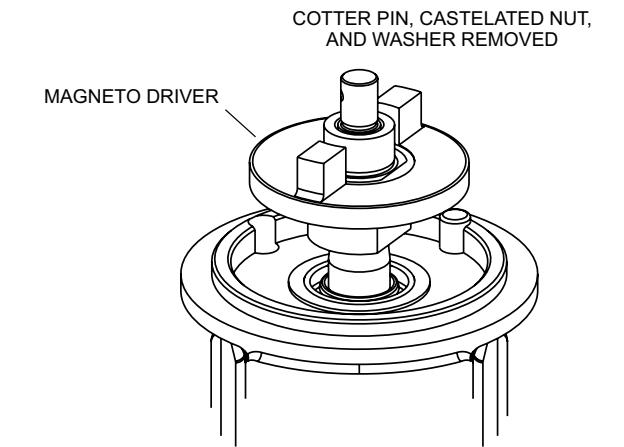


Figure 3.3.5

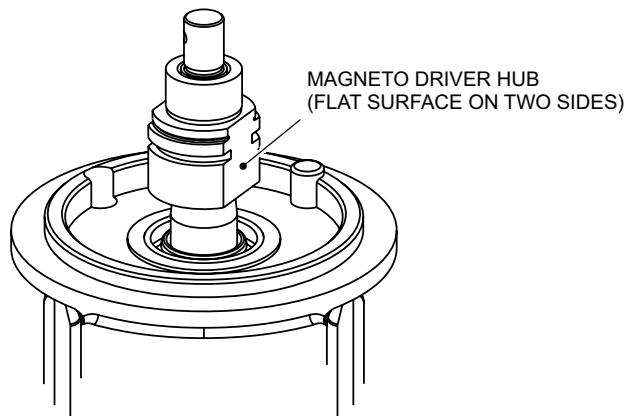


Figure 3.3.5A

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.

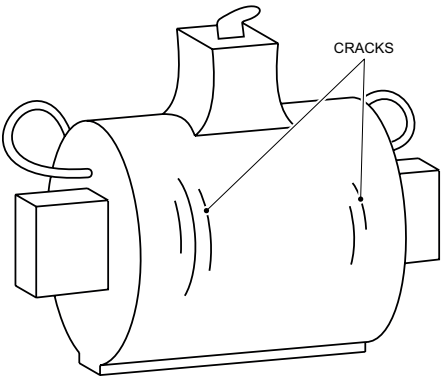


Figure 3.3.6

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.

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.

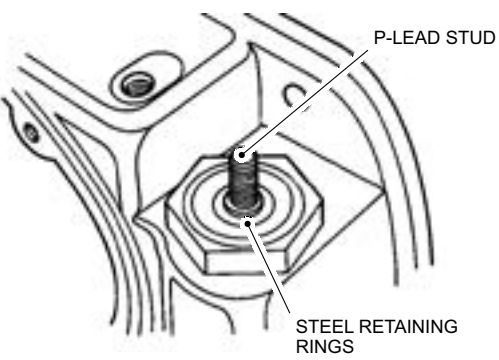


Figure 3.3.8A

**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.**

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).

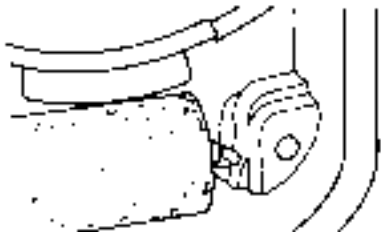


Figure 3.3.8

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 Megohms 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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-7	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

L-1363J

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.

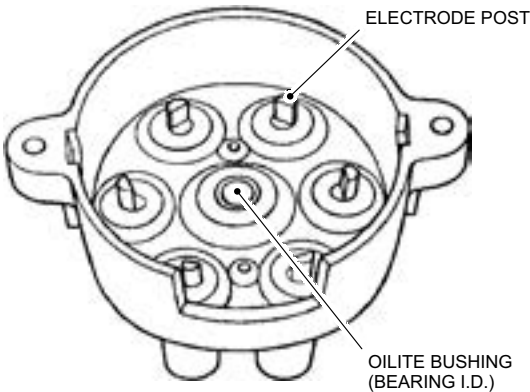


Figure 3.3.9

- 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).

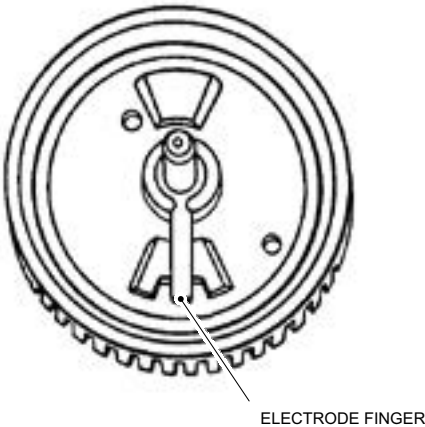


Figure 3.3.9A

- 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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-8	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE



## 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.

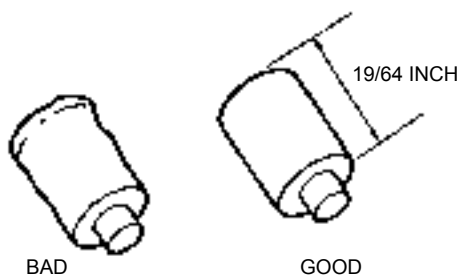


Figure 3.3.10

- 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.

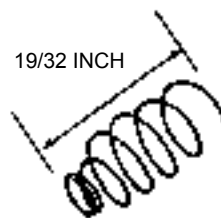


Figure 3.3.10A

- 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 &amp; 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.

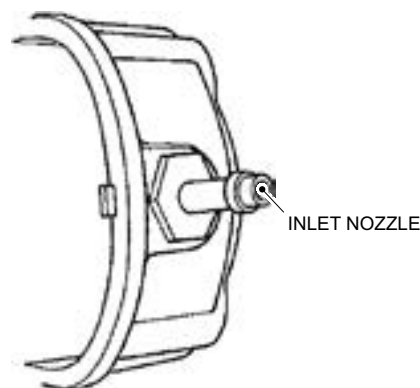


Figure 3.4.1

## 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).

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		
05	01	91	04	20	21	3-9	J

Champion Aerospace LLC  
1230 Old Norris Road  
Liberty, South Carolina/USA 29657  
© 2021 Champion Aerospace LLC

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

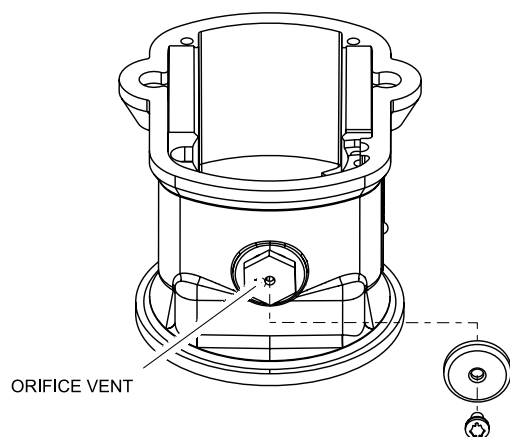


Figure 3.4.2

### 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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		3-10	J
05	01	91	04	20	21			
THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE								

## 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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		4-1	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

## L-1363J

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.

## 4.2.6 PRESSURE TEST MAGNETO

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

### 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  $.025 \pm .005$  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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		4-2	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE

**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, remove 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.**

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		5-1	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE



## 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.

ISSUED			REVISED			Champion Aerospace LLC 1230 Old Norris Road Liberty, South Carolina/USA 29657 © 2021 Champion Aerospace LLC	PAGE NO.	REVISION
MO	DAY	YR	MO	DAY	YR		4-1	J
05	01	91	04	20	21			

THIS DOCUMENT SUBJECT TO THE CONTROLS AND RESTRICTIONS ON THE FIRST PAGE