



L-1503C

Maintenance and Overhaul Manual

SCOPE: This manual provides detailed maintenance, assembly, and disassembly instructions and technical information about the design and operation of LASAR® systems.

ISSUED			REVISED			PAGE NO.	PAGE REV.
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	COVER	C

UNISON

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
© 2007 Unison Industries
www.unisonindustries.com

LOG OF REVISIONS

Rev	Description	Pages Revised	Date
A	Added magneto part numbers 4755, 6755, 6766, 6.7770, and 6776.	Total Reprint	8/31/00
B	Corrected Table 9-14.	Total Reprint	05/31/07
C	Updated paragraph 0-4. Corrected Table 9-11 and 9-14. Added column to Table 9-14. Corrected torque value in paragraph 9.6.B. Added NOTE to paragraph 9.14.B. Corrected RPM values in paragraphs 10.2.B, 10.3.B, and 10.3.C. Corrected M3019 torque value in paragraph 12.1. Added NOTE.	Total Reprint	07/31/07

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
i/ii Blank	C

TABLE OF CONTENTS

0.	NOTICES	0-1
0.1	COPYRIGHT STATEMENT	0-1
0.2	SOFTWARE LICENSE AGREEMENT	0-1
0.3	GENUINE SLICK PARTS	0-2
0.4	RELEVANT PUBLICATIONS	0-2
0.5	WORLDWIDE NETWORK	0-2
1	HOW TO USE THIS MANUAL	1-1
2	TECHNICAL REFERENCE	2-1
2.1	OVERVIEW	2-1
2.2	SYSTEM CONFIGURATION	2-1
2.3	MODES OF OPERATION	2-2
2.4	FUEL OCTANE REQUIREMENTS	2-3
2.5	DEFINITIONS	2-4
2.6	SELECTING THE CORRECT LASAR® SYSTEM CONFIGURATION	2-4
3	REQUIRED TOOLS	3-1
3.1	STANDARD SHOP TOOLS	3-1
3.2	T-100 ASSEMBLY AND TIMING KIT	3-1
3.3	T-300 SYNCHROLASAR® TIMING LIGHT	3-2
4	LASAR® SYSTEM MAINTENANCE SCHEDULES	4-1
4.1	INSPECTION INTERVALS	4-1
4.1.1	100 HOUR INSPECTION	4-1
4.1.2	250 HOUR INSPECTION	4-1
4.1.3	500 HOUR INSPECTION	4-1
4.2	PARTS REPLACEMENT SCHEDULE	4-2
5	LASAR® CONTROLLER MAINTENANCE AND INSPECTION	5-1
5.1	GENERAL	5-1
5.2	RECOMMENDED 100 HOUR INSPECTIONS	5-1
5.3	RECERTIFICATION	5-1
6	LOW VOLTAGE CONTROL HARNESS MAINTENANCE AND INSPECTION	6-1
6.1	GENERAL	6-1
6.2	RECOMMENDED 100 HOUR INSPECTIONS	6-1
7	LASAR® MAGNETO DISASSEMBLY	7-1
7.1	GENERAL ORDER OF DISASSEMBLY	7-1
7.2	REMOVE DRIVE ADAPTER - NON-IMPULSE COUPLED MAGNETOS	7-1
7.3	REMOVE IMPULSE COUPLING - IMPULSE COUPLED MAGNETOS	7-1
7.4	REMOVE WOODRUFF KEY/S	7-2
7.5	REMOVE HOUSING ASSEMBLY	7-3
7.6	REMOVE DISTRIBUTOR BLOCK AND GEAR ASSEMBLY	7-3
7.7	REMOVE ROTOR GEAR (WITH SENSOR VANE) - SENSOR MAGNETOS ONLY	7-3
7.8	REMOVE ROTOR GEAR (WITHOUT SENSOR VANE)- NON-SENSOR MAGNETOS ONLY	7-3
7.9	REMOVE CONTACT POINT ASSEMBLY	7-4
7-10	REMOVE ROTOR ASSEMBLY	7-4
7.11	REMOVE BEARING AND BEARING CAP ASSEMBLY	7-4
7.12	REMOVE COIL	7-6
7.13	REMOVE AIR VENTS	7-6
7.14	REMOVE OIL SEAL	7-6

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
iii	C

8	LASAR® MAGNETO COMPONENT PART INSPECTIONS	8-1
8.1	INSPECT AIR VENT HOLES	8-1
8.2	INSPECT DRIVE ADAPTER	8-1
8.3	INSPECT IMPULSE COUPLING - IMPULSE COUPLED MAGNETOS ONLY	8-1
8.4	INSPECT BEARING AND BEARING CAP ASSEMBLY	8-4
8.5	INSPECT ROTOR	8-4
8.6	INSPECT COIL	8-5
8.7	INSPECT CONTACT POINTS	8-5
8.8	INSPECT HOUSING ASSEMBLY	8-5
8.9	INSPECT ROTOR GEAR (WITH SENSOR VANE) - SENSOR MAGNETOS ONLY	8-6
8.10	INSPECT ROTOR GEAR (WITHOUT SENSOR VANE) - NON-SENSOR MAGNETOS ONLY	8-6
8.11	INSPECT DISTRIBUTOR BLOCK ASSEMBLY	8-6
8.12	INSPECT CARBON BRUSH	8-8
8.13	INSPECT FOR STRUCTURAL DAMAGE	8-8
9	LASAR® MAGNETO ASSEMBLY	9-1
9.1	GENERAL ORDER OF ASSEMBLY	9-1
9.2	ASSEMBLE BEARING AND BEARING CAP ASSEMBLY ONTO SHAFT	9-1
9.3	INSTALL ROTOR SHAFT ASSEMBLY	9-2
9.4	INSTALL OIL SEAL	9-3
9.5	INSTALL WOODRUFF KEY/S	9-4
9.6	INSTALL DRIVE ADAPTER OR IMPULSE COUPLING	9-4
9.7	INSTALL COIL	9-4
9.8	INSTALL CONTACT POINT ASSEMBLY	9-5
9.9	INSTALL ROTOR GEAR (WITHOUT SENSOR VANE) - NON-SENSOR MAGNETOS ONLY	9-5
9.10	INSTALL ROTOR GEAR (WITH SENSOR VANE) - SENSOR MAGNETOS ONLY	9-5
9.11	ADJUST CONTACT POINT ASSEMBLY SETTING	9-6
9.12	INSTALL SPEED/POSITION SENSOR BRACKET - SENSOR MAGNETOS ONLY	9-7
9.13	ADJUST VANE SENSOR CLEARANCE - SENSOR MAGNETOS ONLY	9-7
9.14	ADJUST SPEED/POSITION SENSOR TIMING - SENSOR MAGNETOS ONLY	9-8
9.15	ASSEMBLE DISTRIBUTOR GEAR	9-9
9.16	ASSEMBLE DISTRIBUTOR BLOCK	9-10
9.17	ALIGN ROTOR GEAR	9-10
9.18	ALIGN DISTRIBUTOR GEAR	9-11
9.19	CONNECT COIL LEADS	9-12
9.20	SECURE HOUSING ASSEMBLY	9-12
9.21	INSTALL AIR VENT BODIES	9-12
10	LASAR® MAGNETO POST-ASSEMBLY TESTING	10-1
10.1	PRETEST PREPARATION	10-1
10.2	IMPULSE COUPLING - IMPULSE COUPLED MAGNETOS ONLY	10-1
10.3	COMING-IN SPEED	10-1
10.4	HIGH-SPEED TEST	10-1

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
iv	C

10.5	LONG-TERM TEST - OPTIONAL	10-2
10.6	TEMPERATURE TEST-OPTIONAL	10-2
10.7	PRE-FLIGHT OPERATIONAL CHECK	10-2
10.8	POST-FLIGHT OPERATIONAL CHECK	10-2
11	EXPLODED VIEWS	11-1
12	SERVICE SPECIFICATIONS	12-1
12.1	SERVICE TORQUE SPECIFICATIONS	12-1
12.2	LUBRICATION	12-1
12.3	CONSUMABLES	12-1
12.4	TOLERANCES	12-1

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
v/(vi Blank)	C

0. NOTICES

0.1 COPYRIGHT STATEMENT

All rights reserved. This manual is produced exclusively for use with LASAR® systems, magnetos and 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 Unison Industries. Unison and LASAR® are trademarks of Unison Industries.

WARNING: IMPROPER OR UNAUTHORIZED APPLICATIONS OF THE INFORMATION CONTAINED IN THIS MANUAL MAY RESULT IN LOSSES OR DAMAGE TO THE USER.

The accuracy and applicability of this manual has not been verified for any assembly, component or part not manufactured by Unison Industries. Any use of this manual for other than its intended purpose or for performing any installation, maintenance, replacement, adjustment, inspection, or overhaul of any assembly, component or part not manufactured by Unison Industries is not approved, endorsed or sanctioned by Unison Industries.

No liability will be assumed by Unison Industries for actual, consequential or other types of damages directly or indirectly resulting from the unauthorized use of this manual for other than its stated purposes.

When performing installation, maintenance, replacement, adjustment, inspection or overhaul of any LASAR® assembly, component or part, it is imperative that the latest revision of the appropriate LASAR® manual or product support document be referenced. Contact Unison to be sure you have the latest manual or support document revision before performing any work.

All reasonable attempts were made to make this manual as complete and accurate as possible. If you have any questions, comments, corrections or require clarification of any information contained herein, please call or write Unison Industries Customer Service Department at 815-965-4700, 530 Blackhawk Park Avenue, Rockford, IL 61104.

0.2 SOFTWARE LICENSE AGREEMENT

Unison software pre-installed in LASAR® systems is licensed, not sold, under the general terms of this License. Any individuals or groups of individuals purchasing LASAR® ignition agree to become bound by the terms of this agreement.

- A. **Software Definition:** All software supplied by Unison under license, whether supplied in object or source code, soft or fixed media, separately or embedded in firmware or in another product. Software is warranted and supported by Unison, which is responsible for meeting applicable Unison product specifications.
- B. **Software License Grant:** All software programs which are embodied in human readable source form or a machine readable object form and which include, but are not limited to, programs having a series of instructions, statements and data, and related material provided by Unison are the property of Unison and/or others and are subject to the terms set forth in this License, in which the Purchaser is provided solely with personal and nonexclusive license to use such programs solely for their personal use and for its intended purposes in the country in which the software was furnished and for execution on the system for which it was provided.
- C. **Copyright And Title:** No title to the intellectual property in the software programs or material is transferred to the Purchaser under this License. All software and its copyrights are owned by Unison and/or its suppliers. The software is protected by United States Copyright Laws and International Treaty Provisions. The written materials, software and firmware may not be copied.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
0-1	C

- D. Restrictions: The software contains trade secrets and critical engine operating parameters and should not be accessed, altered or changed in any matter. The software is protected by a security system function and any attempt to access, alter or change the software in any form not approved by Unison will void this License and the product warranty, cause the system to no longer conform to FAA approvals and airworthiness standards, and render the system unairworthy, which can result in equipment damage, personal loss, bodily injury, or death.

0.3 GENUINE SLICK PARTS

The procedures outlined in this manual are generalized for all models of LASAR® systems, using only genuine Unison manufactured Slick parts. This manual must not be used to maintain or overhaul a LASAR® system that contains parts not manufactured by Unison Industries. Component part numbers are detailed in the Exploded View located in Section Eleven.

Use only genuine Slick parts obtained from Unison approved sources. Genuine Slick parts are produced and inspected under rigorous procedures to insure airworthiness and suitability in LASAR® systems. Parts purchased from sources other than Unison Industries, 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 LASAR® system. Salvaged parts, reworked parts obtained from non-Unison 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 through originally manufactured by Unison, unsuitable or unsafe for use in a LASAR® system. Unison Industries expressly disclaims any responsibility for malfunctions, failures, damage or injury caused by use of non-Unison approved parts.

LASAR® systems are engineered so that mechanical parts wear at a balanced rate. Consistent and complimentary wear patterns establish the recommended maintenance intervals defined in LASAR® service literature, therefore used, service worn parts should never be used to troubleshoot or repair a magneto, nor should original parts be replaced by used service worn parts on magnetos being returned to service. Further, non-Unison manufactured parts may wear at uneven and different rates than original Unison manufactured parts, making LASAR® service literature an inappropriate guide to proper maintenance. Parts not manufactured by Unison Industries, even if FAA-PMA approved may not fit or operate like original Unison manufactured parts. Non-Unison products are not tested to the same standards as originally installed parts and are not authorized for replacement. For these reasons, used service worn parts or parts not manufactured by Unison Industries may adversely affect magneto reliability in ways not anticipated by Unison Industries and not reflected in service literature.

0.4 RELEVANT PUBLICATIONS

- L-1500 LASAR® System Master Service Manual which includes:
 L-1502 LASAR® Installation, Operation, and Troubleshooting Manual
 L-1504 LASAR® Application Guide
 LASAR® STC and Service Letters appropriate to each installation
 F-1100 Slick Master Manual which includes:
 L-1499 Ignition Lead Assembly and Maintenance Manual (replaces L-1177 and L-1178)
 L-1318 Application Data

0.5 WORLDWIDE NETWORK

Slick hardware is available through an international network of aircraft distributors that offer outstanding product support, delivery and service. See Slick Distributor List Form L-1051 for details.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	0-2	C

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

1. HOW TO USE THIS MANUAL

This manual provides off wing maintenance and overhaul instructions. LASAR® publication number L-1502 Installation, Operation and Troubleshooting and all relevant Service Letters should be referenced for details relating to installation and removal of LASAR® systems and system troubleshooting.

The information in this manual is divided into twelve sections. Section Two provides an overview on system components and a basic technical reference on the design and operation of LASAR® systems. Section Three illustrates tools needed to correctly perform inspection and maintenance. Detailed instructions for system maintenance including inspection intervals and procedures are contained in Sections Four, Five, and Six. LASAR® magneto disassembly, component inspection, reassembly, and testing are contained in Sections Seven, Eight, Nine, and Ten. Section Eleven provides exploded views and parts breakdowns for LASAR® magnetos. Section Twelve contains service specifications.

It is recommended that this entire manual be thoroughly read before beginning any inspection or maintenance procedure. Parts should be inspected during the disassembly process and properly discarded if found to be unserviceable.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
1-1/(1-2 Blank	C

2.0 TECHNICAL REFERENCE

2.1 OVERVIEW

LASAR® is the integration of microelectronics with conventional magneto designs to provide controllable ignition timing capable of optimizing engine performance while providing redundant mechanical backup ignition for safety. LASAR® senses engine RPM, manifold pressure, cylinder head temperature (CHT) and other engine operating parameters, then selects the optimum ignition timing from a three dimensional nonlinear Engine Personality Map (EPM) which is programmed into the system's microprocessor. The controller then signals the dual-mode magnetos when to initiate a spark event, and controls the size and shape of the spark at the spark plug to optimally ignite the fuel in the cylinder. At sea level takeoff power, ignition timing is set to the same fixed ignition timing as conventional magnetos. At reduced power settings or higher altitudes, ignition timing continuously varies between TDC and 50 degrees BTDC to optimize efficiency of the fuel combustion.

Automatic timing advance from the LASAR® system may cause cylinder head temperatures (CHTs) to increase as fuel is burned more efficiently within the combustion chamber. Incremental CHT rise due to ignition timing advance from a non-CHT controlled LASAR® system is typically 20°F. To accommodate LASAR® system installations on airframes with marginal engine cooling or on airframes where engine cooling characteristics have not been determined, LASAR® systems are offered with CHT control circuitry that incrementally reduces the timing advance angle as CHTs approach a preset maximum limit, thereby reducing CHT rise due to advanced ignition timing. If ignition timing advance is reduced by the CHT control feature, engine performance improvements resulting from optimized ignition timing will be reduced. In extreme situations where the engine continually operates at maximum cylinder head temperatures, LASAR® will command the same ignition timing as provided by conventional magnetos, resulting in comparable engine performance.

Two different limits (climb and cruise) are used to control CHT rise due to ignition timing advance. These limits vary between installations and are preprogrammed into the LASAR® controller software. During engine operation, the LASAR® system initially selects the climb limit whenever power is first applied to the controller. The climb limit remains selected until a 15 minute timer expires. The 15 minute timer begins to count when CHT exceeds the cruise limit for the first time. Once the 15 minute timer expires, the cruise CHT limit remains selected, including subsequent climbs.

Some airframe installations include an annunciator light mounted in the cockpit which becomes illuminated when the LASAR® system is operating in the backup mode, or when the controller is receiving power when the engine is not running. In automatic mode operation, a normally closed relay within the controller is energized which isolates the annunciator light from ground and prevents illumination of the light. In backup mode operation, the relay is not energized, allowing a ground path for the light which then becomes illuminated.

With installation of LASAR® systems, existing engine speed signals from "P" leads and/or magneto rotor sensors are not available. Electrical tachometers may be modified to correctly interpret the LASAR® system's four pole rotor magnets, or the speed signal provided the LASAR® controller.

2.2 SYSTEM CONFIGURATION

The controller is the heart of the LASAR® system. As a microprocessor based solid-state device, the controller will provide years of reliable service without the need of regularly scheduled maintenance procedures. When the LASAR® controller has reached the engine TBO, it should be returned to Unison Industries for re-calibration. No field service of the controller is authorized by Unison.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	2-1	C

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

Both magnetos utilize a relay which, when powered by the controller, electrically isolates the contact points from coil current. If power to the relay is interrupted, the contact points come back on line and conventional back up magneto ignition is provided at the standard fixed timing angle. The sensor magneto is equipped with a crankshaft speed/position sensor to provide a reference point for the automatic advance timing feature of LASAR®. The non-sensor magneto is not equipped with a sensor. Current production sensor and non-sensor magnetos (serial numbers beginning with "00" and subsequent) are completely repairable and supported by component part availability. Prior production magnetos (serial numbers beginning with "95" - "99") are no longer supported by component part availability and are therefore, *not* repairable.

The LASAR® controller interfaces with various airframe systems and the two magnetos through a low voltage control harness (LVCH). This harness includes two bundled wire branches which terminate in connectors mating to the LASAR® magnetos. These two terminated wire bundles are available in various lengths to accommodate different system installations.

2.3. MODES OF OPERATION

Initial Power-On

The LASAR® controller requires aircraft input electrical power to allow operation in the automatic mode. When power is applied to the controller, the controller performs initialization and power-up Built-In-Test diagnostics and illuminates the enunciator light (if equipped).

Engine Starting

The LASAR® system will fire both channels (two spark plugs per cylinder) during engine starting when electrical power is supplied to the controller and the system is operating in the automatic mode. The first spark is produced when the crankshaft speed/position sensor is triggered twice (360 degrees of magneto rotation) within six seconds. These "starting sparks" have roughly 300% more energy than sparks produced by conventional magnetos. The enunciator light (if equipped) should turn off when the engine is cranking and the controller is operating in the automatic mode. Ignition energy delivered by LASAR® remains at the high setting until the engine reaches 700 RPM, at which time the controller reduces spark energy to a level roughly equivalent to that produced by conventional magnetos. Engine timing is controlled to top dead center until engine speed reaches 275 RPM, at which point the system smoothly transitions to advance timing according to the Engine Personality Map (EPM).

Pre-Flight Magneto Check

A preflight magneto check initiates comprehensive hardware and software tests of the LASAR® system, including backup magneto operation. When the ignition switch is turned from the "BOTH" position to the "LEFT" or "RIGHT" position, the system automatically switches the selected magneto to backup operation and if equipped, the cockpit enunciator light becomes illuminated. When the ignition switch is returned to the "BOTH" position, the system remains in backup operation for approximately 20 seconds to facilitate engine RPM drop comparison. After the ignition switch has been in the "BOTH" position for more than 20 seconds, the system automatically switches to automatic mode operation and the cockpit enunciator light, if equipped will turn off. Proper functioning of the cockpit enunciator light should be confirmed each time a preflight magneto check is performed. Preflight magneto check PASS/FAIL criteria is identical to that of conventional magneto ignition systems.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	2-2	C

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

Automatic Mode Operation

The automatic mode is the normal operating mode when there are no faults present, power is applied to the controller, and the ignition switch is in the "BOTH" position. While in this mode, the controller is initializing the spark event through the magnetos at the exact ignition timing angle needed to maximize engine performance. The cockpit enunciator light (if equipped) should not be illuminated.

Backup Mode Operation

When operating in the backup mode the LASAR® system provides traditional magneto ignition. The LASAR® system automatically switches to the backup mode when the system receives inadequate electrical power, or internal system diagnostics detects a hardware or software fault. The system may be manually switched to backup operation by turning the ignition switch to the "LEFT" or "RIGHT" position, or by interrupting input power to the controller by manually pulling the circuit breaker, if equipped. Engine performance in the backup mode is identical to engine performance with traditional magnetos. During backup mode operation the LASAR® controller provides a ground return path for the cockpit enunciator light (if equipped) which becomes illuminated provided the light is receiving adequate input power. To restart the engine in-flight with the LASAR® ignition system operating in the backup mode, windmill the engine above 500 rpm.

Piloting

Operation of the LASAR® system is transparent to the pilot under most conditions. Unless the aircraft is equipped with a cockpit enunciator light, the pilot is typically unaware of the two million logic and control command decisions that take place inside the controller every second. What the pilot does experience with LASAR® ignition is better engine starting and smoother engine operation resulting from the controller's decisions and commands.

The performance improvements including reduced fuel consumption realized on any aircraft will be dependent on the flight profile, throttle and mixture settings, engine RPM, CHT, manifold pressure, and the cylinder to cylinder balance of the induction system. For flight planning purposes, always follow the original operating manual including mixture leaning procedures and cowl flap operation.

CAUTION: NEVER FACTOR IN ANY IMPROVEMENT IN FUEL CONSUMPTION RESULTING FROM LASAR® ENGINE CONTROL SYSTEMS, AS THESE IMPROVEMENTS WILL VARY FROM FLIGHT TO FLIGHT DEPENDING ON THE FLIGHT PROFILE AND MIXTURE LEANING PROCEDURE.

2.4 FUEL OCTANE REQUIREMENTS

The LASAR® system is approved for use on engines operating with a minimum fuel grade of 100 octane. Operation of LASAR® equipped engines using a minimum fuel grade of less than 100 octane has not been validated.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	2-3	C

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

2.5 DEFINITIONS

TDC:	Top Dead Center. Referenced to the position of the crankshaft when the piston in cylinder number one is at the top of its compression stroke.
BTDC:	Before Top Dead Center. Referenced to the position of the crankshaft when the piston in cylinder number one is before the top of its compression stroke.
EPM:	Engine Personality Map.
SOP:	Standard Operating Program.
ROTATION:	The direction that the magneto rotor shaft turns when viewed from the mounting end of the magneto.
SENSOR MAGNETO:	Magneto with crankshaft speed/position sensor. Identified by ten (10) pin connector.
NON-SENSOR MAGNETO:	Magneto without crankshaft speed/position sensor. Identified by eight (8) pin connector.
LVCH HARNESS:	Low voltage control harness. Connects LASAR® controller to left and right magnetos, and the airframe.
CHT:	Cylinder Head Temperature
BUSH KIT:	Combines electronic ignition and impulse coupled magneto technology to provide the performance and fuel efficiency of a standard LASAR® system with the engine start reliability of an impulse coupled system.

2.6 SELECTING THE CORRECT LASAR® SYSTEM CONFIGURATION

L-1504 LASAR® Application Guide and Service Letter SL1-96 or SL1-00 (which include the Approved Parts Matrix referenced in the Supplemental Type Certificate) identifies the appropriate LASAR® system configuration for each certified engine or airframe application. For non-certified installations, the maximum engine operating temperature must be determined by following the procedures outlined in Section 5 of Service Letter SL1-96 or SL1-00. If the observed maximum engine operating temperature is within 50°F of the maximum limit specified by the engine manufacturer, LASAR® ignition equipped with CHT control is recommended.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	2-4	C

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

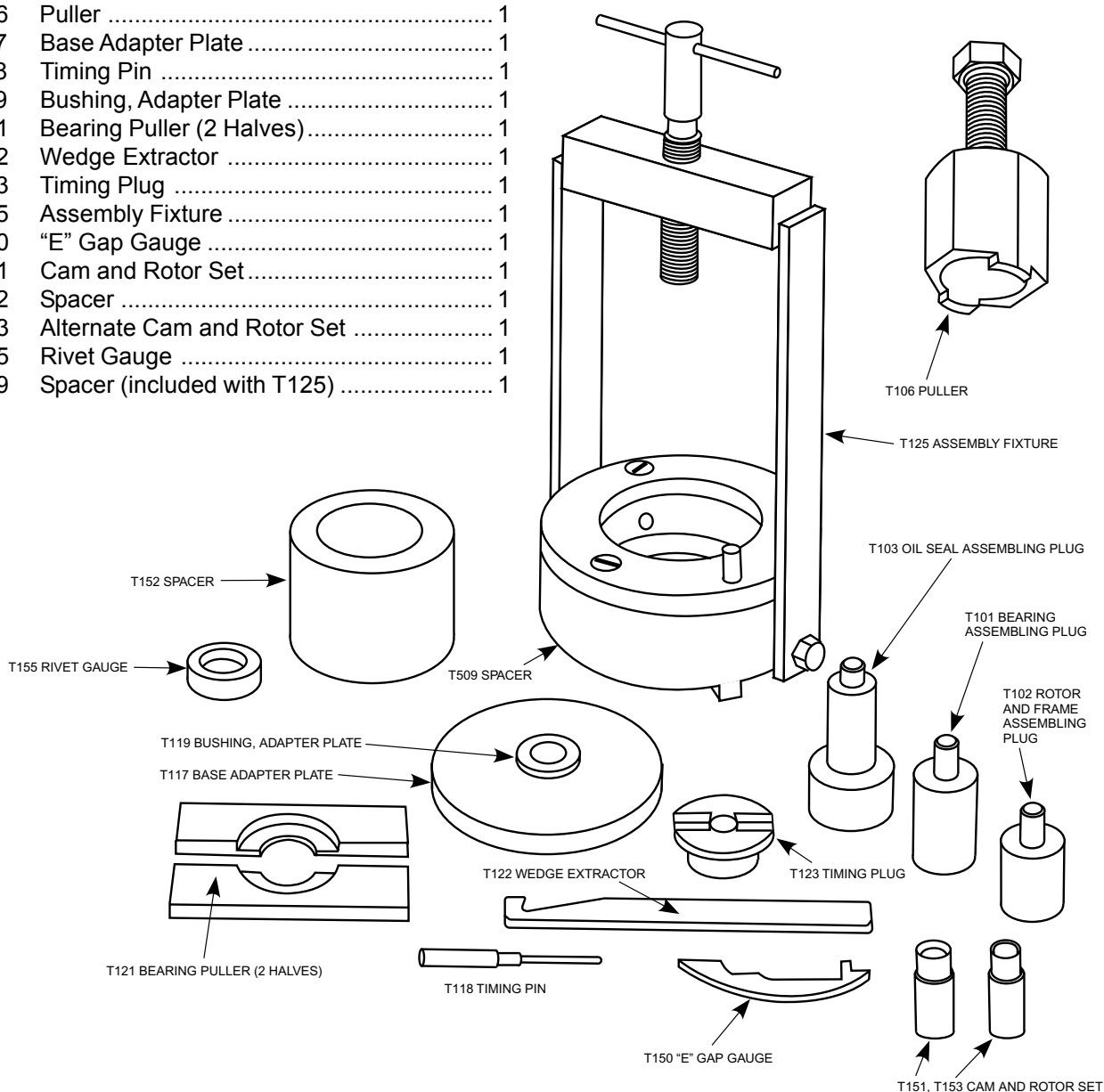
3. REQUIRED TOOLS

3.1 STANDARD SHOP TOOLS

In addition to the T-100 Assembly and Timing Kit listed below, standard shop tools are necessary to accomplish many of the procedures in this manual.

3.2 T-100 ASSEMBLY AND TIMING KIT INCLUDES:

P/N	Description	Qty
T101	Bearing Assembling Plug	1
T102	Rotor and Frame Assembling Plug	1
T103	Oil Seal Assembling Plug	1
T106	Puller	1
T117	Base Adapter Plate	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

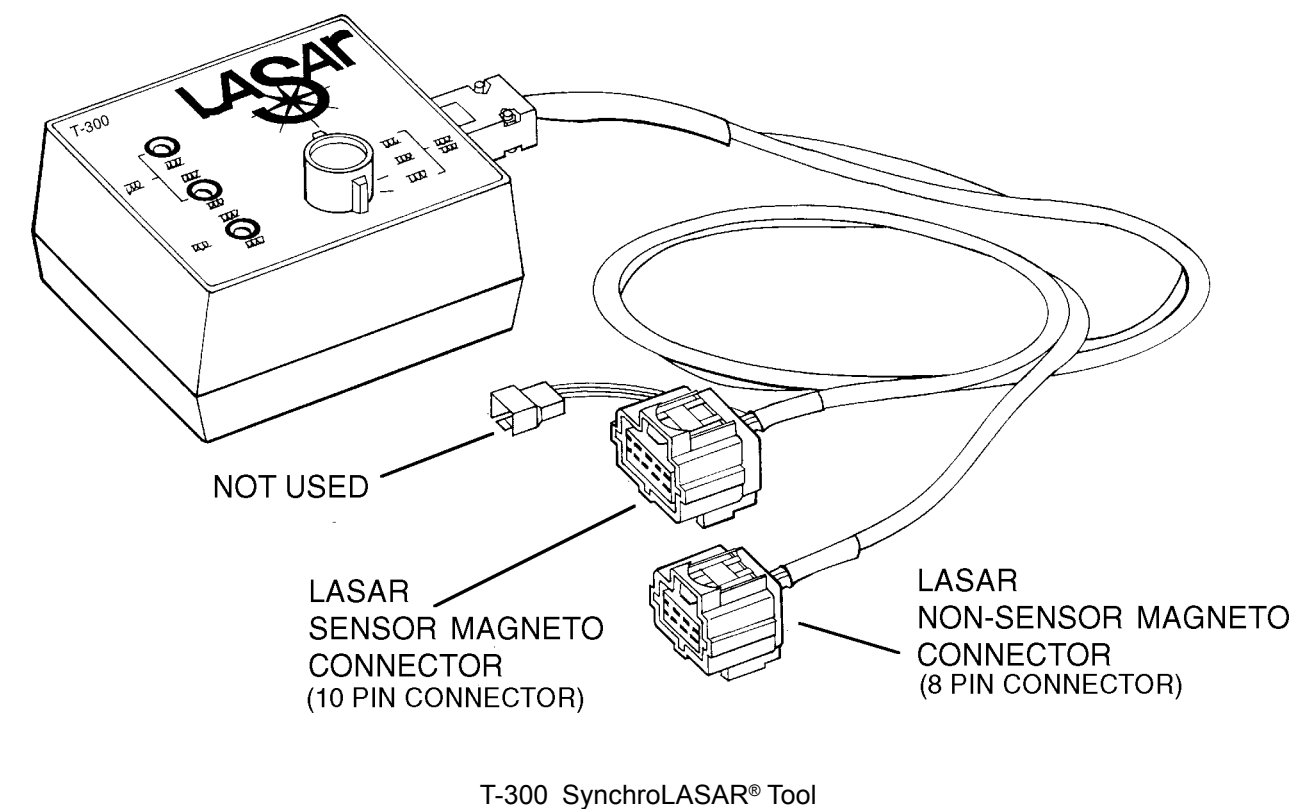


ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
3-1	C

3.3 T-300 SyncroLASAR® TIMING LIGHT



ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
3-2	C

4. LASAR® SYSTEM MAINTENANCE SCHEDULES

4.1 INSPECTION INTERVALS

The following is a list of recommended inspection areas to be accomplished at 100, 250, and 500 hour engine operating intervals. Specific sections of this manual are referenced where appropriate.

4.1.1 100 Hour Inspections

- A. Adjust magneto to engine timing. Refer to L-1502 Installation, Operation, and Troubleshooting Manual for specific procedures.
- B. Inspections
 - 1. Low Voltage Control Harness (LVCH) wiring and connections (Section 6).
 - 2. LASAR® Controller mounting (Section 5).
 - 3. Manifold Pressure connections (Section 5).
 - 4. Magneto to engine ground strap.
 - 5. Vent holes (Section 8).

4.1.2 250 Hour Inspections (Six cylinder Impulse Coupled LASAR® Magnetos only)

- A. Inspections
 - 1. Six cylinder impulse coupled LASAR® magnetos (model 6755) installed in the left magneto slot of the engine require a 250 hour inspection per SB1-98.

4.1.3 500 Hour Inspections

- A. Inspections
 - 1. Low Voltage Control Harness (LVCH) wiring and connections (Section 6).
 - 2. LASAR® Controller mounting (Section 5).
 - 3. Manifold Pressure connections (Section 5).
 - 4. Magneto to engine ground strap.
 - 5. Vent holes (Section 8).
 - 6. Impulse Coupling (Section 8).
 - 7. Ball bearing assembly (Section 8).
 - 8. Distributor block and gear (Section 8).
 - 9. Rotor gear and vane (Section 8).
 - 10. Hall effect sensor (Section 8).
 - 11. Coil (Section 8).
 - 12. Contact points (Section 8).
 - 13. Installation of screws (Section 8).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
4-1	C

4.2 PARTS REPLACEMENT SCHEDULE AT MAGNETO OVERHAUL

The following magneto parts must be replaced during overhaul. Magneto overhaul is required during engine TBO at a minimum. Additional parts may require replacement depending on conditions as determined during magneto inspection. Install only genuine Slick replacement parts. Exploded View reference numbers are shown in parentheses, unless otherwise stated.

- Impulse Coupling (5)
- Oil Seal (6)
- Bearing (9)
- Bearing Cap Assembly (11)
- Contact Point Assembly and Cam (14)
- Rotor Gear (with Sensor Vane), Snap Ring, and Washer (Sensor Magnetos) (17)
- Rotor Gear (without Sensor Vane) (Non-Sensor Magnetos) (17)
- Coil (21)
- Woodruff Key/s (20)
- Housing Assembly (23)
- Distributor Block and Gear (31)
- All Securing Hardware

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
4-2	C

5. LASAR® CONTROLLER MAINTENANCE AND INSPECTION

5.1 GENERAL

The LASAR® controller is a microprocessor based solid state device which does not require regularly scheduled maintenance or adjustment. No disassembly or repair of the controller is authorized by Unison Industries.

WARNING: THE SOFTWARE RESIDENT IN THE LASAR® CONTROLLER CONTAINS TRADE SECRETS AND CRITICAL ENGINE OPERATING PARAMETERS AND SHOULD NOT BE ACCESSED, ALTERED, OR CHANGED IN ANY MANNER. THE SOFTWARE IS PROTECTED BY A SECURITY SYSTEM FUNCTION AND ANY ATTEMPT TO ACCESS, ALTER, OR CHANGE THE SOFTWARE IN ANY FORM NOT APPROVED BY UNISON WILL VOID THIS LICENSE AND THE PRODUCT WARRANTY, CAUSE THE SYSTEM TO NO LONGER CONFORM TO FAA APPROVALS AND AIRWORTHINESS STANDARDS, AND RENDER THE ENGINE UNAIRWORTHY, WHICH CAN RESULT IN EQUIPMENT DAMAGE, PERSONAL LOSS, BODILY LOSS, BODILY INJURY OR DEATH.

5.2 RECOMMENDED 100 HOUR INSPECTIONS

- A. Inspect the manifold pressure hose for cracks, breakage, or signs of leakage. The hose connections at the engine source and the controller should be tight.
- B. Inspect the LASAR® controller mounting security. The controller mounting bolts should be tight and the mounting surface should not be bent or cracked.
- C. Inspect the controller housing. No cracks are permissible. All cover, mounting bracket, and connector screws should be tight. The RS232 port protection cap should be securely in place.
- D. Remove and replace any controller or pressure hose which does not meet these inspection criteria.

5.3 RECERTIFICATION

The LASAR® controller should be returned to Unison Industries for recertification at each engine overhaul.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	5-1/(5-2 Blank)	C

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

6. LOW VOLTAGE CONTROL HARNESS MAINTENANCE AND INSPECTION

6.1 GENERAL

- A. The low voltage control harness normally does not need to be disconnected for periodic inspections. If necessary, however, disengage the low voltage control harness from the controller by gently prying up the release tab from the rear of the low voltage control harness connector, then pulling only on the connector body. The magneto connectors have a push button release mechanism.

CAUTION: DO NOT INSERT ANY OBJECTS, INCLUDING TEST PROBES, INTO THE LVCH CONNECTORS. INSERTION OF ANY OBJECTS INTO THE CONNECTORS MAY RESULT IN DAMAGE TO THE CONTACTS AND SUBSEQUENT ELECTRICAL FAILURE, AND WILL VOID THE PRODUCT WARRANTY.

NOTE: If any LVCH connectors are disengaged, apply a heavy coating of M-5430 connector lubricant to both mating surfaces and contacts before reconnecting.

6.2 RECOMMENDED 100 HOUR INSPECTIONS

- A. If the low voltage control harness is removed from the controller, inspect the elastomer in the connector for proper positioning and for tears or nicks which may allow leakage.
- B. Inspect all connectors and wires for corrosion, contamination, arcing, or chafing.
- C. Inspect connector locking mechanism for breakage.
- D. Inspect low voltage control harness connections to P-leads, airframe power source, etc. Connections should be secure and insulated.
- E. Remove and replace any low voltage control harness which does not meet these inspection criteria.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
6-1/(6-2 Blank)	C

7. LASAR® MAGNETO DISASSEMBLY

Following are disassembly instructions for Slick 4700/6700 Series Magnetos. The directions are generalized and refer to both 4700/6700 Series Magnetos unless specifically noted. Refer to Section Eleven for Exploded Views and component part numbers. Exploded View reference numbers are shown in parentheses, unless otherwise stated.

NOTE: Current production sensor and non-sensor magnetos (serial numbers beginning with "00" and subsequent) are completely repairable and supported by component part availability.

Prior production magnetos (serial numbers beginning with "95" - "99") are no longer supported by component part availability and are therefore, not repairable.

An alternate to overhaul is complete magneto replacement with a new LASAR® magneto. New magnetos incorporate all the latest design features and are a cost effective alternative to overhaul. For repair of LASAR® magnetos not listed above, contact Unison's Service Center at 815-965-4700, 530 Blackhawk Park Avenue, Rockford, IL 61104.

7.1 GENERAL ORDER OF DISASSEMBLY

Remove:

- Drive Adapter (5)
- Impulse Coupling (5) - Impulse Coupled Magnetos
- Woodruff Key/s (20)
- Housing Assembly (23)
- Distributor Block and Gear Assembly (31)
- Rotor Gear (with Sensor Vane) - Sensor Magnetos (17)
- Rotor Gear (without Sensor Vane) - Non-Sensor Magnetos (17)
- Contact Point Assembly (14)
- Rotor Assembly (10)
- Bearing (9) and Bearing Cap Assembly (11)
- Coil (21)
- Air Vents (26)
- Oil Seal (6) and Bearing (9)

7.2 REMOVE DRIVE ADAPTER (5) - NON-IMPULSE COUPLED MAGNETOS

- A. Remove cotter pin (1), and discard.
- B. Remove nut (2) and washer (3) or hub (4).

NOTE: The 4700 Series Magneto drive adapter consists of two pieces (hub and shell). The 6700 Series Magneto drive adapter is a one piece unit.

- C. **4700 Series Magnetos only** - Using a wheel puller, remove the outer shell of drive adapter (5), then use the T106 Puller to remove the inner hub of drive adapter (5).
- D. **6700 Series Magnetos only** - Using a wheel puller, remove drive adapter (5).

7.3 REMOVE IMPULSE COUPLING (5) - IMPULSE COUPLED MAGNETOS

- A. Remove cotter pin (1), nut (2), and washer (3) or hub (4).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-1	C

- B. Grasp shell of impulse coupling assembly and gently pull the assembly outward to clear the latching ears of the impulse hub assembly. (See Figure 7.3).

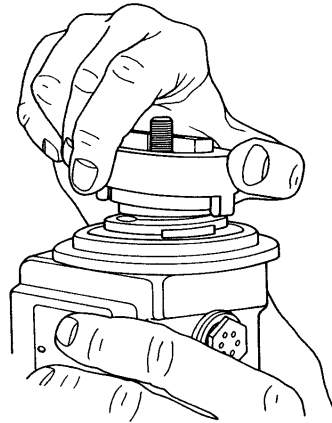


Figure 7.3

CAUTION: STRONG SPRING TENSION.

- C. Turn shell to release spring tension.
- D. Remove impulse shell and attached impulse spring.
- E. Engage T106 Puller into grooves in the hub assembly. Tighten T106 Puller bolt and remove impulse coupling hub assembly. (See Figure 7.3A).

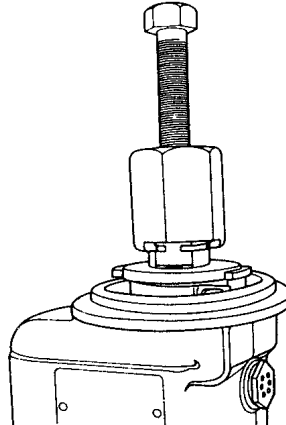


Figure 7.3A

7.4 REMOVE WOODRUFF KEY/S (20)

- A. Pry woodruff key/s (20) from rotor shaft (10) using diagonal (side-cutter) pliers, and discard.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-2	C

7.5 REMOVE HOUSING ASSEMBLY (23)

- A. For stability, mount magneto on T125 Assembly Fixture.
- B. Remove the four screws (28 and 29) securing the housing assembly (23) to the frame (8). Gently pull the housing assembly (23) away from the frame (8) to expose the green and white coil (21) leads.

CAUTION: THE HOUSING ASSEMBLY (23) CONSISTS OF THE CIRCUIT BOARD, THE SPEED/ POSITION SENSOR, AND THE PIGTAIL HARNESS. MOUNT THE HOUSING ASSEMBLY ON A SUITABLE SUPPORT STRUCTURE TO PREVENT THE SPEED/ POSITION SENSOR WIRES FROM BREAKING DURING DISASSEMBLY.

- C. Disconnect the coil (21) green and white leads from the circuit board.
- D. Disconnect the circuit board yellow wire from the contact point terminal (14).
- E. Turn rotor shaft (10) until sensor vane (17) is clear of speed/position sensor (part of 23).
- F. Loosen and remove the screw with lockwasher (16), and flat washer (15) securing the speed/ position sensor bracket (24) to the bearing cap assembly (11). Remove the speed/position sensor bracket (24) from the rotor shaft (10).
- G. Remove the housing assembly (23) from the magneto frame (8).

7.6 REMOVE DISTRIBUTOR BLOCK AND GEAR ASSEMBLY (31)

- A. Remove two screws (32) that secure the distributor block and gear assembly (31) to the magneto frame (8).
- B. Remove the distributor bearing bar (part of 31), distributor gear (part of 31), distributor block (part of 31), and spacers (33) from the frame (8).

7.7 REMOVE ROTOR GEAR (WITH SENSOR VANE) (17) - SENSOR MAGNETOS ONLY

- A. Using snap ring pliers, remove the snap ring (19) from the rotor shaft (10), and discard.
- B. Remove the wavy washer (18) from the rotor shaft (10), and discard.
- C. Pry rotor gear (with vane sensor) (17) out of the end of the rotor (10) using two flat blade screwdrivers, and discard.

7.8 REMOVE ROTOR GEAR (WITHOUT SENSOR VANE) (17) - NON-SENSOR MAGNETOS ONLY

- A. Pry the rotor gear (without vane sensor) (17) out of the rotor assembly (10) using two flat blade screwdrivers, and discard.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-3	C

7.9 REMOVE CONTACT POINT ASSEMBLY (14)

- A. Remove the cam (part of 14) from the rotor shaft (10), and discard.
- B. Remove screw with lockwasher (16), and flat washer (15) securing contact point assembly (14) to bearing cap assembly (11).
- C. Remove contact point assembly (14) from rotor shaft (10).

7.10 REMOVE ROTOR ASSEMBLY (10)

- A. Using TORX driver, remove two screws (12) and two bearing plate clamps (13).

NOTE: Screws (12) are factory installed with Loctite 81802 and may be difficult to remove.

CAUTION: DO NOT PINCH COIL (21) LEADS BETWEEN MAGNETO FRAME (8) AND T125 ASSEMBLY FIXTURE.

- B. Place magneto frame (8), flange side up, on T125 assembly fixture . (See Figure 7.10.)

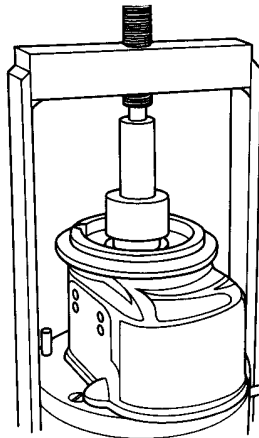


Figure 7.10

CAUTION: ROTOR (10) IS MAGNETIZED. DO NOT ALLOW ROTOR TO COME INTO CONTACT WITH METAL OR OTHER STRONG MAGNETIC FIELDS.

- C. Using T102 rotor and frame assembling plug, turn T125 assembly fixture T-handle screw to press against the drive end of the rotor shaft (10) and withdraw the rotor (10) and bearing cap assembly (11) from the drive frame (8).

7.11 REMOVE BEARING (9) AND BEARING CAP ASSEMBLY (11)

NOTE: If bearing (9) and bearing cap assembly (11) are removed from the rotor shaft (10), they must be discarded and replaced. Refer to Section Eight for Bearing and Bearing Cap Assembly Inspection Procedures before removing.

- A. Place T117 base adapter plate on T125 assembly fixture. Place T152 spacer on T117 base adapter plate.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-4	C

- B. Place rotor (10) on T152 spacer. Place T151 rotor tool over rotor shaft. (See Figure 7.11).

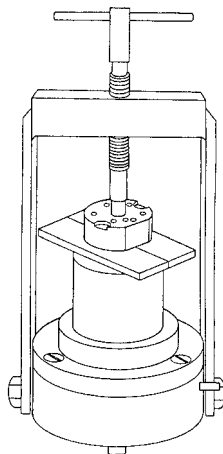


Figure 7.11

- C. Press rotor shaft (10) out of bearing cap assembly (11) far enough to place both halves of T121 bearing puller between bearing cap assembly (11) and rotor magnet head (10).
- D. Continue to press rotor shaft (10) until bearing cap assembly (11) is free. (See Figure 7.11A).
- E. Discard bearing cap assembly (11).

CAUTION: BEARING CAP ASSEMBLY (11) 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. BEARING CAP AND BEARING ASSEMBLY SHOULD NEVER BE DISASSEMBLED.

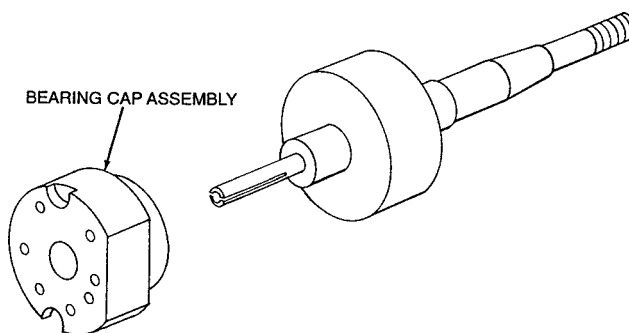


Figure 7.11A

NOTE: If the drive end bearing (9) did not press out of the magneto frame (8) with the rotor (10) and bearing cap assembly (11), disregard steps E through H. The bearing (9) must be removed later using the Oil Seal (6) and Bearing (9) Removal procedure.

- E. Insert both halves of T121 bearing puller between drive end bearing (9) and rotor magnet head (10).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-5	C

- F. Place rotor (10) and T121 bearing puller on T152 spacer.
- G. Press rotor shaft (10) and remove drive end bearing (9).
- H. Discard bearing (9).

7.12 REMOVE COIL (21)

- A. Inspect coil (21) per Section 8, paragraph 8.6. Remove only as required.
- B. Using T122 coil wedge extractor or 6 inch adjustable wrench, pry out coil wedges (22) and remove coil (21). (See Figure 7.12).

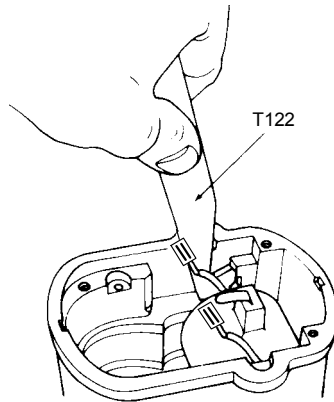


Figure 7.12

7.13 REMOVE AIR VENTS (7)

- A. Remove air vent hood assembly (30) from housing assembly (23).
- B.. Remove air vents (7) from magneto housing (23) and from frame (8).

7.14 REMOVE OIL SEAL (6) AND BEARING (9)

- A. Place magneto frame (8), flange side up, on T125 assembly fixture.

NOTE: If the drive end bearing (9) was removed from the magneto frame (8) with the rotor (10) and bearing cap assembly (11), disregard any reference to the bearing (9) in the following procedures.

- B. Use T103 oil seal assembling plug and T-handle to press the oil seal (6) and bearing (9) out of the magneto frame (8).

NOTE: An Arbor press may be used instead of the T125 assembly fixture.

- C. Discard oil seal (6) and bearing (9).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
7-6	C

8. LASAR® MAGNETO COMPONENT PART INSPECTIONS

Exploded View reference numbers are shown in parentheses, unless otherwise stated.

8.1 INSPECT AIR VENT (7) HOLES

- A. Air vent (7) holes must be clean and clear of any obstruction.

8.2 INSPECT DRIVE ADAPTER (5)

- A. The four cylinder drive adapter consists of two pieces (hub and shell) that must be tight when assembled, with no looseness between the two parts. The six cylinder drive adapter is a one piece unit.
- B. Clean drive adapter (5).
1. All portions of the drive adapter must be cleaned, exposing bare metal, to ensure a reliable inspection.
 2. Use a suitable grease dissolving solvent to remove all oil or sludge buildups on drive adapter.
- C. Inspect drive adapter (5). Minor surface corrosion is acceptable. Cracks, rust, or major corrosion are unacceptable and the drive adapter must be repaired or replaced as required.

8.3 INSPECT IMPULSE COUPLING (5) - IMPULSE COUPLED MAGNETOS ONLY

- A. Clean Impulse Coupling (5)
1. All portions of the impulse coupling must be cleaned, exposing bare metal, to ensure a reliable inspection.
 2. Use a suitable grease dissolving solvent to remove all oil or sludge buildups on impulse coupling.
- B. Inspect Impulse Coupling (5) (See Figure 8.3.)

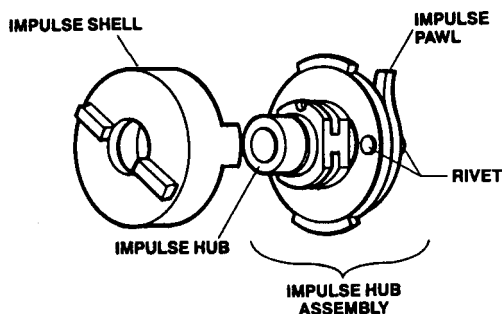


Figure 8.3

NOTE: In many cases, stringers, inclusions, and heat checks may appear as surface discontinuities on impulse coupling components. These conditions are normal and generally do not, by themselves, require impulse coupling replacement.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-1	C

1. Using acceptable procedures, inspect the impulse coupling shell for cracks, rust or signs of corrosion. None of these conditions are acceptable. Replace impulse coupling (5) as necessary.
2. 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 impulse coupling (5) as necessary.
3. Inspect the hub shaft and keyway for deformation or damage. Replace impulse coupling (5) as necessary.
4. Inspect impulse coupling pawls. If the latching end that contacts the stop pin in the magneto frame is rounded, peened, or excessively worn, replace the impulse coupling (5).
5. Inspect pawl retaining rivets. If the rivets are loose or show indications of movement, replace the impulse coupling (5).
6. Install the T155 Rivet Gauge over the rivet head. (See Figure 8.3A.)

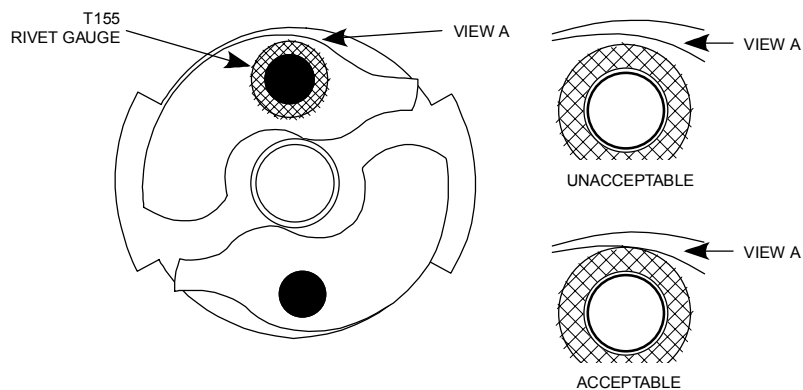


Figure 8.3A

7. 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 8.3B.)
8. Rotate the pawl in an arc while pushing upward and outward on the pawl.

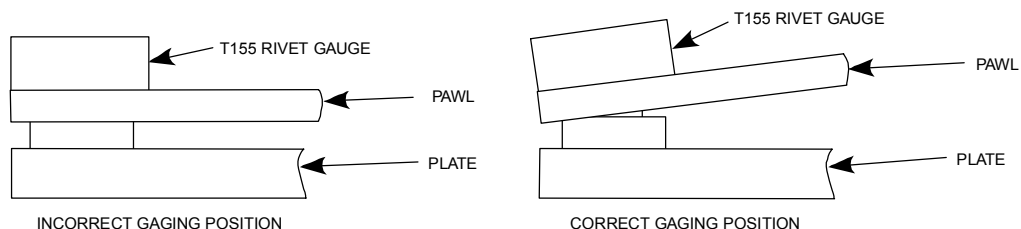


Figure 8.3B

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-2	C

9. If the edge of the pawl is visible beyond or can be felt to extend beyond the edge of the T155 Rivet Gage, then replace the coupling. (See Figure 8.3A.)
10. Measure the clearance between the boss on the underside of each 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 8.3C.

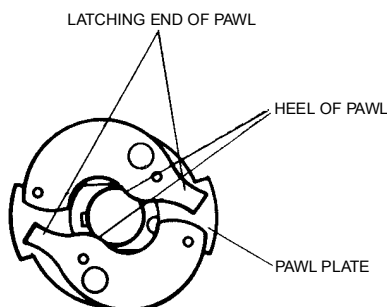


Figure 8.3C

11. Maximum clearance for pawls with one boss is 0.150 inch. Maximum clearance for pawls with two bosses is 0.150 inch for left-hand rotation couplings and 0.140 inch for right-hand rotation impulse couplings. If the feeler gage can pass between the full width of the boss and the pawl plate, replace the impulse coupling (5). See Figure 8.3D. For coupling rotation, see magneto data plate.

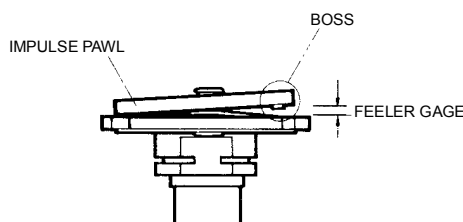


Figure 8.3D

C. Reassemble Impulse Coupling (5)

1. Lubricate the pawl assembly with aircraft engine oil. Ensure that the pawls move freely.
2. Lubricate the hub and spring with aircraft engine oil.
3. Assemble the inner eye of the impulse spring into the grooves in the impulse hub.
4. Set the impulse shell on the hub. There is no tension in the coupling in this position.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-3	C

5. Hold the shell in one hand and the pawls with the thumb and forefinger of the other hand.
6. Pull the hub straight back slowly far enough to clear the projections on the shell.

CAUTION: DO NOT WIND COUPLING MORE THAN $\frac{1}{4}$ TURN.

7. 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.)
8. Make sure the shell is seated squarely on the hub and turns freely.

8.4 INSPECT BEARING (9) AND BEARING CAP ASSEMBLY (11)

- A. Inspect bearing (9) and bearing cap assembly (11) by rotating the rotor shaft (10). Check for free movement. If rotor shaft sticks, binds, or feels loose, replace bearing (9) and bearing cap assembly (11).

NOTE: If bearing (9) and/or bearing cap assembly (11) are removed from rotor shaft (10), the bearing (9) and/or bearing cap assembly (11) must be discarded and replaced.

8.5 INSPECT ROTOR (10)

- A. Inspect the rotor (10) for damaged or worn keyway, rotor surface, drive end threads, and cam slot.
 - B. Check rotor bearing (9) and bearing cap assembly (11) surfaces for wear.
 - C. Inspect oil seal (6) contact surface. Shaft should be free from grooves and nicks.
 - D. Inspect rotor shaft (10) at impulse coupling (5) location (impulse coupled magnetos only).
1. 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 (10) must be replaced. (See Figure 8.5).

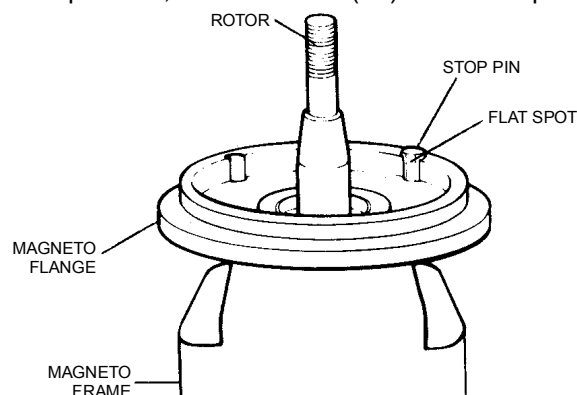


Figure 8.5

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-4	C

8.6 INSPECT COIL (21)

- A. Inspect the coil (21) for visible radial cracks. If any cracks are evident, replace coil. (See Figure 8.6).

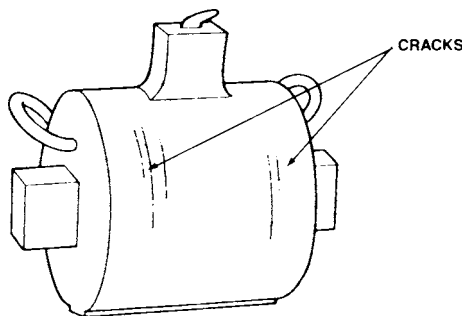


Figure 8.6

- B. Inspect the coil (21) for primary and secondary resistance and continuity. Coil (21) must be replaced if resistance is outside of tolerances or an open circuit exists. Resistance measured between the white wire and green wire should be .50 to 1.2 ohms. Resistance measured between the coil tab and green wire should be 13,000 to 20,500 ohms.

8.7 INSPECT CONTACT POINTS (14)

- A. Inspect contact points (14) for signs of pitting and discoloration. If points are not discolored and have a white, frosty surface around the edges, points are functioning normally and can be reused.
- B. If the contact points (14) are blue or pitted indicating excessive arcing, then they should be discarded. Primary contact assembly and cam must be replaced as a set.
- C. Inspect cam and contact spring for wear. The contact points (14) and cam must be replaced if any appreciable wear is present.

8.8 INSPECT HOUSING ASSEMBLY (23)

- A. Circuit board should be clean and free from cracks or signs of arcing or corrosion. Replace housing assembly (23) if these conditions exist.
- B. Cracks radiating from standoff screw holes are not permissible. Replace housing assembly (23) if these conditions exist.
- C. Visually inspect circuit board securing screws for looseness. If circuit board screws are loose, remove and apply Loctite 81802 locking compound to screws. Torque the 4-40 screws to 6 in.-lbs and the 6-32 screws to 10 in.-lbs.
- D. Inspect circuit board yellow wire for broken or frayed wire strands. No frayed wires are permissible. Replace housing assembly (23) if these conditions exist.
- E. Inspect speed/position sensor for signs of arcing. No signs of arcing are permissible. Replace housing assembly (23) if these conditions exist.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-5	C

- F. Inspect speed/position sensor for broken, frayed or exposed connecting wires. Replace housing assembly (23) if these conditions exist.
- G. Inspect the speed/position sensor tunnel for signs of abrasion or strike damage caused by the rotor vane. Replace housing assembly (23) if these conditions exist.
- H. Inspect all connectors and wires for corrosion, contamination, arcing, or chafing. Replace housing assembly (23) if these conditions exist.
- J. Inspect connector locking mechanism for breakage. Replace housing assembly (23) if these conditions exist.

8.9 INSPECT ROTOR GEAR (WITH SENSOR VANE) (17) - SENSOR MAGNETOS ONLY

- A. Inspect gear teeth for wear and general integrity. Replace as required.
- B. Inspect the vane for signs of looseness. The vane should be held securely to the gear when tested with light finger pressure. Gear (17) must be replaced if vane is loose.
- C. Inspect vane for abrasion or strike damage. Replace gear (17) if vane exhibits damage.
- D. Inspect gear (17) for fit to rotor shaft. Gear should fit tight. Replace if gear shows end play or axial looseness.
- E. Inspect for presence of wavy washer (18) and snap ring (19). Snap ring should be properly seated in groove of shaft.

8.10 INSPECT ROTOR GEAR (WITHOUT SENSOR VANE) (17) - NON-SENSOR MAGNETO ONLY

- A. Inspect gear teeth for wear and general integrity. Replace as required.
- B. Inspect gear for fit to rotor shaft. Gear should fit tight. Replace if gear shows end play or axial looseness.

8.11 INSPECT DISTRIBUTOR BLOCK ASSEMBLY (31)

- A. Clean distributor block assembly (31)
 - 1. Disassemble and clean the distributor block bearing bar using standard non-filming, nonconductive cleaner. Clean distributor gear with soapy water and rinse with clear water.

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

- 2. Using a cotton swab or "Q-Tip," clean all distributor block surfaces free of dirt, oil, carbon dust and other contaminants.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
8-6	C

B. Inspect Distributor Block (part of 31)

1. Visually inspect the block for carbon tracking, cracks, or other physical damage. Replace block assembly (31) as necessary.
2. Inspect the brass electrode posts for signs of physical wear. Replace block assembly (31) as necessary. During normal operation, the electrode posts will experience an electrical-metal transfer with the distributor gear electrode. This condition is normal and not cause for rejection. (See Figure 8.11).

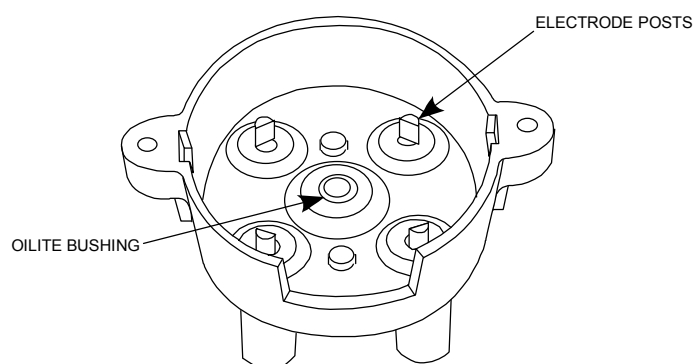


Figure 8.11

3. Inspect oilite bushing for gumming oil condition. The bushing should be free of contamination and the gear should turn freely in the distributor block with no appreciable drag.
4. Make sure the distributor block surfaces are free of all oil and carbon dust prior to reassembly.

C. Inspect Distributor Gear (part of 31)

1. Inspect gear teeth for wear and general integrity. Replace block assembly (31) as necessary.
2. Inspect the electrode finger for looseness. The electrode should be held securely to the shaft when tested with light finger pressure. Any loose condition requires block and gear (31) replacement. (See Figure 8.11A).

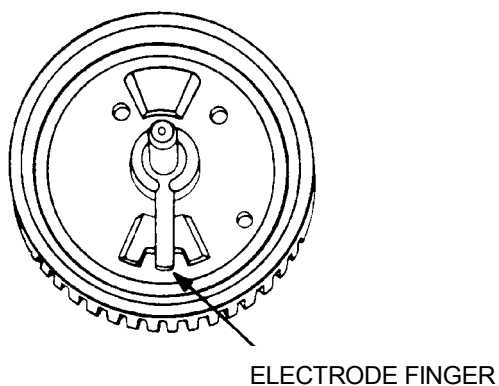


Figure 8.11A

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-7	C

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

D. Inspect Bearing Bar (part of 31)

1. Visually inspect for cracks or other physical damage. Replace assembly (31) as necessary.
2. Make sure the bearing bar is free of all oil and carbon dust prior to reassembly.

8.12 INSPECT CARBON BRUSH (34)

- A. Visually inspect the carbon brush (34). Overall length of the carbon brush must be greater than $\frac{19}{64}$ inch and the OD of the brush diameter must be uniform. (See Figure 8.12). Carbon brushes that do not meet these limits must be replaced.

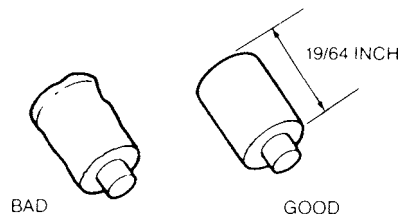


Figure 8.12

- B. Visually inspect the loading spring. Overall free standing length should be greater than $\frac{19}{32}$ inch. (See Figure 8.12A). Look for flat spots on the spring windings. Springs that appear worn or do not meet the overall length requirements must be replaced.

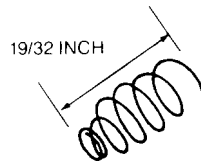


Figure 8.12A

8.13 INSPECT FOR STRUCTURAL DAMAGE

- A. Check magneto frame (8) and housing (23) for cracks or other damage. Inspect threaded areas to ensure threads are intact and not damaged.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
8-8	C

9. LASAR® MAGNETO ASSEMBLY

Exploded View reference numbers are shown in parentheses, unless otherwise stated.

NOTE: Current production sensor and non-sensor magnetos (serial numbers beginning with "00" and subsequent) are completely repairable and supported by component part availability.

Prior production magnetos (serial numbers beginning with "95" - "99") are no longer supported by component part availability and are therefore, not repairable.

9.1 GENERAL ORDER OF ASSEMBLY

Assemble Bearing (9) and Bearing Cap Assembly (11) onto Rotor Shaft (10)
 Install Rotor Shaft Assembly (10)
 Install Oil Seal (6)
 Install Woodruff Key/s (20)
 Install Drive Adapter Assembly (5) or Impulse Coupling (5)
 Install Coil (21)
 Install Contact Point Assembly (14)
 Install Rotor Gear (without Sensor Vane) (10) - Non-Sensor Magnetos
 Install Rotor Gear (with Sensor Vane) (17) - Sensor Magnetos
 Adjust Contact Point Assembly (14) Setting
 Install Speed/Position Sensor Bracket (24) - Sensor Magnetos
 Adjust Vane/Sensor (part of 23) Clearance - Sensor Magnetos
 Adjust Speed/Position Sensor (part of 23) Timing - Sensor Magnetos
 Assemble Distributor Gear (part of 31)
 Assemble Distributor Block (part of 31)
 Align Rotor Gear (17)
 Align Distributor Gear (part of 31)
 Connect Coil Leads (21)
 Secure Housing Assembly (23)
 Install Air Vent (7)

9.2 ASSEMBLE BEARING (9) AND BEARING CAP ASSEMBLY ONTO SHAFT (10)

- A. Insert the T117 base plate and T119 adapter plate bushing into the T125 assembly fixture.
- B. Place the bearing (9) over the threaded end of the rotor shaft (10). Place the bearing cap assembly (11) over the slotted end of the rotor shaft (10).

NOTE: The bearing cap assembly (11) is part of a kit that contains a bearing cap with a factory installed bearing, two bearing clamps, and two mounting screws. If you are installing a new bearing cap assembly, you should also install new clamps and screws.

- C. Insert the rotor shaft (10) into the adapter plate bushing (threaded end down).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-1	C

- D. Place the T101 bearing assembly plug onto the exposed end of the rotor shaft (10). (See Figure 9.2).

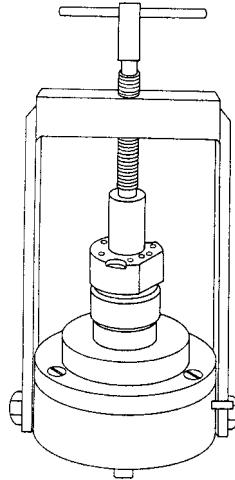


Figure 9.2

- E. Turn T-handle screw to seat the bearing (9) against the bearing shoulders on the rotor shaft (10).
- F. Remove the rotor shaft (10), adapter bushing, adapter plate, and bearing assembly plug from the T125 assembly fixture.

9.3 INSTALL ROTOR SHAFT ASSEMBLY (10)

- A. Place magneto frame (8) in T125 assembly fixture (flange down).
- B. Position rotor shaft assembly (10) in the magneto frame (8). Bearing cap (11) should be properly oriented prior to pressing into frame (8).
- C. Insert T101 bearing assembly plug into the T125 assembly fixture T-handle (See Figure 9.3).

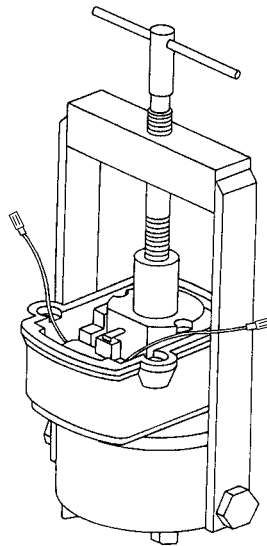


Figure 9.3

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-2	C

- D. Turn T-handle until the bearing cap (11) bottoms in the frame (8).
- E. Place T117 base adapter plate on T125 assembly fixture. Place magneto frame (8) in T117 base adapter plate.
- F. Place T151 cam and rotor set onto the end of the rotor shaft (10) and turn T-handle until the shaft (10) bottoms in magneto frame (8). (See Figure 9.3A).

NOTE: It may be necessary to lightly tap the bearing cap (11) on the side with a plastic mallet to realign the screw holes with the magneto frame (8).

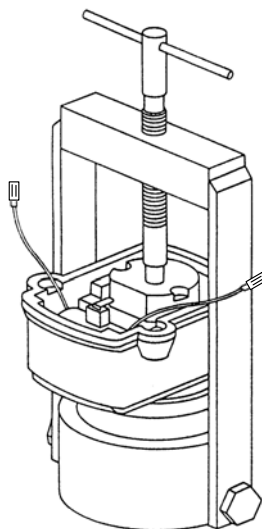


Figure 9.3A

- G. Apply one drop of Loctite 290 sealant into each of the bearing clamp hold-down screw holes.
- H. Install bearing clamps (13) and hold-down screws (12).
- J. Torque hold-down screws (12) to 20-24 in-lbs.

9.4 INSTALL OIL SEAL (6)

- A. Lubricate oil seal (6) with engine oil.
- B. Reverse the magneto frame (8) on the T125 assembly fixture so the drive end is facing up.

CAUTION: DO NOT PINCH COIL (21) LEADS BETWEEN MAGNETO FRAME (8) AND T125 ASSEMBLY FIXTURE.

- C. Insert the oil seal (6) over the rotor shaft (10). The convex center of the seal should face outward from the magneto frame (8).

CAUTION: ENSURE THAT THE OIL SEAL (6) IS NOT NICKED OR DAMAGED BY THE EDGES OF THE WOODRUFF KEY(S) (20) SLOT OR ROTOR SHAFT (10) THREADS.

- D. Press the oil seal (6) flush into the magneto frame (8) using the T103 oil seal assembly plug and the T-handle screw. (See Figure 9.4).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-3	C

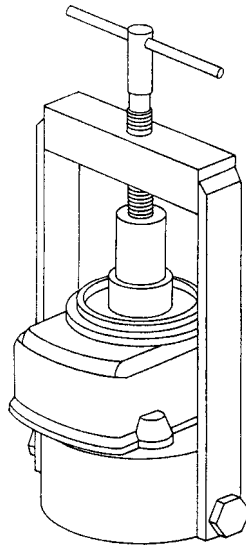


Figure 9.4

9.5 INSTALL WOODRUFF KEY/S (20)

- A. Press woodruff key(s) (20) into the key slot(s) of the rotor (10).

9.6 INSTALL DRIVE ADAPTER (5) OR IMPULSE COUPLING (5)

- A. Install drive adapter (5) or impulse coupler (5), drive washer (3) or hub (4), and drive nut (2).
- B. Torque drive nut (2) to 120 - 180 in-lbs to seat drive adapter (5) or impulse coupler (5) onto the rotor shaft (10) and install cotter pin (1) through hole in rotor shaft. If cotter pin does not align with pin hole using the specified torque range, remove nut (2) and lightly lap the bottom of the nut with emery cloth and retorque drive nut to specified torque range.
- C. For impulse coupled magnetos, check to see that the coupling (5) is free by snapping it through three or four times.

9.7 INSTALL COIL (21)

- A. Place the magneto frame (8) on the T125 assembly fixture.
- B. Insert the coil (21) into the frame (8) with the high tension tab facing the rotor shaft (10), making sure that it is back against the stops and centered between the right and left sides of the frame (8). The green lead of the coil will be on the left side. Insert the coil wedges (22) between the bridge and the frame.

NOTE: The coil (21) is part of a kit that contains a coil and two sets of wedges. If you are installing a new coil, you should also install a new set of wedges. Use the set of wedges that fit your magneto.

- C. Drive the two wedges (22) tight, using a hammer and flat punch.
- D. Position the coil (21) high tension lead flush to 1/32 inch below the parting surface of the magneto frame (8). (See Figure 9.7).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-4	C

CAUTION: IF THE HIGH TENSION LEAD PROTRUDES ABOVE THE MAGNETO FRAME (8), IT CAN MAKE DIRECT CONTACT WITH THE DISTRIBUTOR GEAR (31) AND CAUSE THE MAGNETO TO MALFUNCTION.

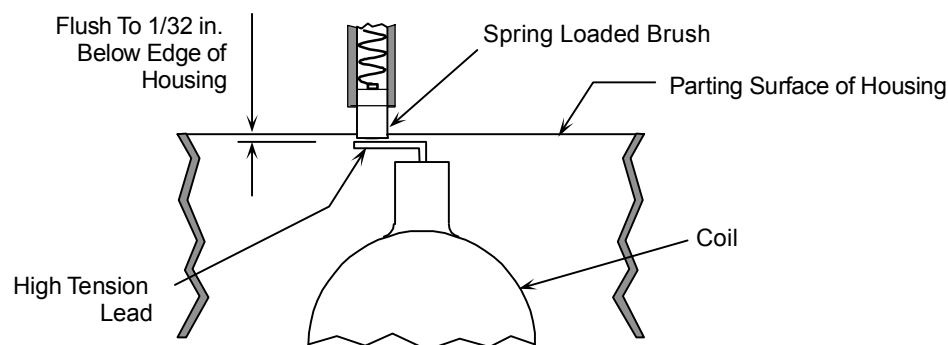


Figure 9.7

9.8 INSTALL CONTACT POINT ASSEMBLY (14)

- A. Place the magneto frame (8) on the T125 assembly fixture, then rotate the frame (8) so that the coil (21) green wire is on the left.
- B. Slide contact point assembly (14) onto rotor shaft (10).

NOTE: The contact point assembly (14) is part of a kit that contains a point assembly, cam, cam grease, mounting screw, and washer. If you are installing a new contact point assembly, you should also install a new cam, screw, and washer.

- C. Secure the contact point assembly (14) on the right hand side of the bearing cap (11) with screw (16) and washer (15) . Do not tighten screw (16) at this time.
- D. Install cam (part of 14) using a light hammer and T151 cam and rotor set.
- E. Drive the cam (part of 14) until it bottoms in the rotor (10) cam slot.

9.9 INSTALL ROTOR GEAR (WITHOUT SENSOR VANE) (17) - NON-SENSOR MAGNETOS ONLY

- A. Press rotor gear (17) onto rotor shaft (10).

9.10 INSTALL ROTOR GEAR (WITH SENSOR VANE) (17) - SENSOR MAGNETOS ONLY

- A. Press rotor gear (17) onto rotor shaft (10) until vane contacts top of cam (part of 14).

NOTE: The rotor gear (with sensor vane) (17) is part of a kit that contains a rotor gear with a factory installed sensor vane, a wavy washer, and a snap ring. If you are installing a new rotor gear (with sensor vane), you should also install a new wavy washer (18) and snap ring (19).

- B. Place wavy washer (18) onto rotor shaft (10) so that concave face of washer contacts the rotor gear (17).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-5	C

- C. Using snap ring pliers, install a new snap ring (19) into groove on the end of the rotor shaft (10). Ensure that the snap ring (19) is fully engaged and seated into the groove.

9.11 ADJUST CONTACT POINT ASSEMBLY (14) SETTING

- A. Loosen the screws securing the timing disk to the T125 assembly fixture base.
- B. Using Table 9-11, align the index mark on the base to the number that corresponds to the magneto part number. Tighten the securing screws to lock the disk in place.

Table 9-11
Contact Point Assembly Settings

Magneto P/N	Contact Point Setting
4755	68
4761	67
4766	67
4770	67
4771	67
4775	67
4776	67
6755	63
6770	62
6766	62
6776	60

- C. For magnetos configured with drive adapter (5) or impulse coupler (5), insert the magneto into the T125 assembly fixture base so that the lugs engage into the slot in the disk. If the magneto is not configured with a drive adapter (5) or impulse coupler (5), attach a T123 timing plug on the end of the rotor shaft (10), then insert the magneto into the base so that the lugs engage into the slot in the disk.
- D. With the rotor shaft (10) engaged into the slot, turn the magneto housing (23) until the pin fixed in the face of the T125 assembly fixture base contacts the left side of the magneto frame (8).

NOTE: The left side of the magneto frame (8) is the side closest to the coil (21) green lead.

CAUTION: MOUNT THE HOUSING ASSEMBLY (23) ON A SUITABLE SUPPORT STRUCTURE TO PREVENT THE COIL (21) GREEN LEAD FROM BREAKING DURING CONTACT POINT ASSEMBLY (14) ADJUSTMENT.

- E. Temporarily mount the housing assembly (23) on a suitable support structure.
- F. Connect coil (21) green lead to housing assembly (23) circuit board terminal farthest away from the housing assembly (23) circuit board yellow lead.
- G. Use two alligator clips and approximately 12 inches of black 18 AWG wire to fabricate a ground jumper. Connect ground jumper between the housing assembly (23) and the frame (8).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
9-6	C

- H. Use one female ¼ inch spade terminal, one male ¼ inch spade terminal, and approximately 12 inches of yellow 18 AWG wire to fabricate a sensor point jumper. Connect sensor point jumper between the housing assembly (23) circuit board yellow lead and the contact point (14) terminal.
- J. Use one female ¼ inch spade terminal, one male ¼ inch spade terminal, and approximately 12 inches of white 18 AWG wire to fabricate a white coil wire jumper. Connect white coil wire jumper between the coil (21) white wire and the housing assembly (23) circuit board terminal (closest to the circuit board yellow lead).
- K. Connect the ten pin (sensor magneto) or eight pin (non-sensor magneto) connector of the T-300 SynchroLASAR® tool to the housing assembly (23) harness connector. Turn the T-300 control knob to the ON position.
- L. Adjust contact point assembly (14) to the position where the T-300 "SENSOR BKR PT " light (sensor magneto) or "NON-SENSOR BKR PT" light (non-sensor magneto) just comes on. Tighten the securing screw (16) to hold contact point assembly (14) in this position and torque to 18 - 20 in-lbs.
- M. Disconnect the T-300 SynchroLASAR® tool; remove jumper wires; and disconnect the coil (21) green lead from housing assembly (23) circuit board terminal.
- N. Apply cam grease (part of 14) sparingly to each lobe of the cam (part of 14).

9.12 INSTALL SPEED/POSITION SENSOR BRACKET (24) - SENSOR MAGNETOS ONLY

- A. Mount speed/position sensor (part of 23) on the inside of sensor bracket (21) and secure by inserting screws (25), and starwashers (26), first through the holes in the bracket and then through the sensor (See Figure 9.13). Secure screws (25) with nuts (27). Do not torque screws (25) until vane sensor clearance adjustment is done.
- B. Lay the magneto frame (8) on its right side to facilitate easy installation of the speed/position sensor bracket (24).

NOTE: The right side of the magneto frame (8) is the side closest to the coil (21) white lead.
- C. Slide the speed/position sensor bracket (24) onto the rotor shaft (10).
- D. Install and temporarily tighten the screw with lockwasher (16), and flat washer (15) securing the speed/position sensor bracket (24) to the bearing cap assembly (11).

9.13 ADJUST VANE/SENSOR CLEARANCE - SENSOR MAGNETOS ONLY

- A. Carefully rotate the rotor shaft (10) to check the alignment of the vane (17) as it passes through the speed/position sensor (part of 23).
- B. As required, loosen the screws (25) on the speed/position sensor bracket (24) to adjust the vertical location of the sensor. See Figure 9.13.

NOTE: Screws (25) are factory installed with Loctite 290 and may be difficult to loosen.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-7	C

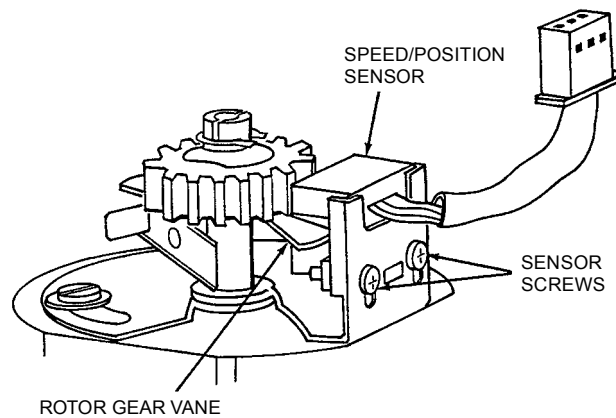


Figure 9.13

WARNING: DO NOT BEND THE VANES (17) TO ADJUST CLEARANCE THROUGH THE SENSOR.

- C. Rotate the rotor 180° until the other vane passes through the sensor. Both vanes should pass approximately through the center of the sensor.
- D. Torque screws (25) to 6 - 8 in-lbs.
- E. Apply one drop of Loctite 290 locking compound to the threaded end of each of the screws (25) at the nut (27) end.

9.14 ADJUST SPEED/POSITION SENSOR TIMING - SENSOR MAGNETOS ONLY

- A. Loosen the screws securing the timing disk to the T125 assembly fixture base.
- B. Using Table 9-14, align the index mark on the base to the number that corresponds to the magneto part number. Tighten the securing screws to lock the disk in place.

NOTE: The actual number at the timing disk index marks is not critical. This index mark will be used as a point of reference for establishing the TDC setting a specified number of degrees from the primary points.

Table 9-14
Speed/Position Sensor Setting

Magneto P/N	Speed/Position Sensor Setting	TDC Setting
4761	71	4
4766	71	4
4771	0	5
4776	0	5
6766	68	6.0
6776	67.5	7.5

- C. For magnetos configured with drive adapter (5), insert the magneto into the T125 assembly fixture base so that the lugs engage into the slot in the disk. If the magneto is not configured with an drive adapter (5), attach a T123 timing plug on the end of the rotor shaft (10), then insert the magneto into the base so that the lugs engage into the slot in the disk.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
9-8	C

- D. With the rotor shaft (10) engaged into the slot, turn the magneto frame (8) until the pin fixed in the face of the T125 assembly fixture base contacts the left side of the magneto frame.

NOTE: The left side of the magneto is the side closest to the coil (21) green lead.

CAUTION: MOUNT THE HOUSING ASSEMBLY (23) ON A SUITABLE SUPPORT STRUCTURE TO PREVENT THE SPEED/POSITION SENSOR WIRES FROM BREAKING DURING SENSOR TIMING ADJUSTMENT.

- E. Temporarily mount the housing assembly (23) on a suitable support structure.
- F. Connect coil (21) green lead to housing assembly (23) circuit board terminal farthest away from the yellow wire.
- G. Use two alligator clips and approximately 12 inches of black 18 AWG wire to fabricate a ground jumper. Connect ground jumper between the housing assembly (23) and the frame (8).
- H. Use one female ¼ inch spade terminal, one male ¼ inch spade terminal, and approximately 12 inches of yellow 18 AWG wire to fabricate a sensor point jumper. Connect sensor point jumper between the housing assembly (23) circuit board yellow lead and the contact point (14) sensor terminal.
- I. Use one female ¼ inch spade terminal, one male ¼ inch spade terminal, and approximately 12 inches of white 18 AWG wire to fabricate a white coil wire jumper. Connect white coil wire jumper between the coil (21) white lead and the housing assembly (23) circuit board terminal closest to the circuit board yellow lead.
- J. Connect the ten pin socket connector of the T-300 SynchroLASAR® tool to the housing assembly (23) harness connector. Turn the T-300 control knob to the ON position.
- K. Loosen screw with lockwasher (16) and position the sensor so that the "SENSOR TDC" light goes on just as the trailing edge of the rotor gear vane exits the sensor. Tighten the screw with lockwasher (16) that secures the sensor to the bearing cap assembly (11). Torque screw to 15 - 18 in-lbs.
- L. Disconnect the T-300 SynchroLASAR® tool; remove jumper wires; and disconnect the coil (21) green lead from housing assembly (23) circuit board terminal.

9.15 ASSEMBLE DISTRIBUTOR BLOCK AND GEAR ASSEMBLY (31)

NOTE: The distributor block and gear assembly (31) is part of a kit that contains a distributor block, distributor gear, bearing bar, carbon brush (34), two spacers (33), and two screws (32). If you are installing a new distributor block or gear, you should also install a new bearing bar, carbon brush (34), spacers (33), and screws (32).

- A. Install carbon brush (34) into spring.
1. Insert small end of carbon brush (34) into tapered end of spring.
 2. Turn carbon brush (34) clockwise until the shoulder of carbon brush seats on the spring.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-9	C

- B. Install carbon brush assembly (34) into the distributor gear (part of 31).
 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 (34) into the shaft until the spring seats on the bottom of the shaft. The top of the carbon brush should protrude from the top of the shaft approximately $\frac{1}{4}$ inch. (See Figure 9.15).

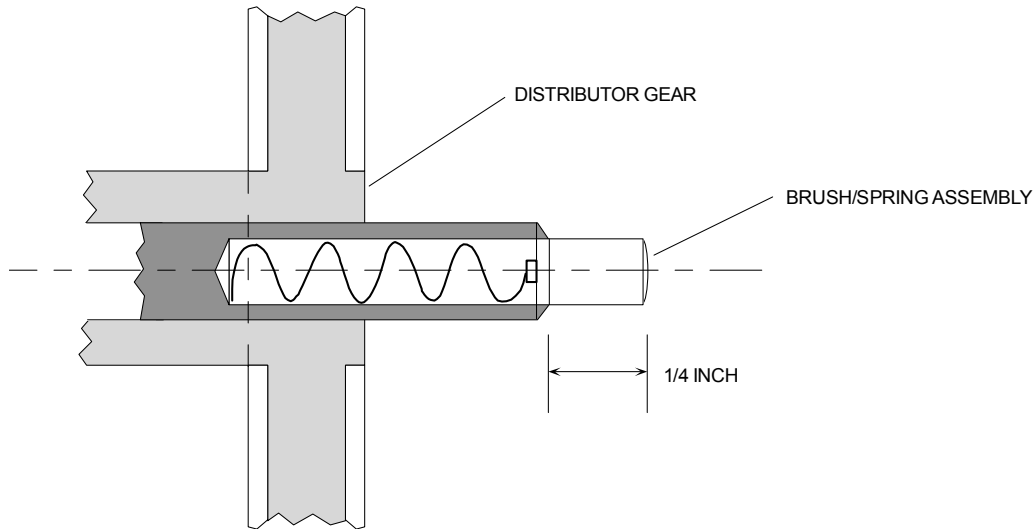


Figure 9.15

9.16 ASSEMBLE DISTRIBUTOR BLOCK

- A. Assemble the distributor gear in the distributor block.
- B. Assemble the bearing bar to the distributor block as shown in Figure 9.16.

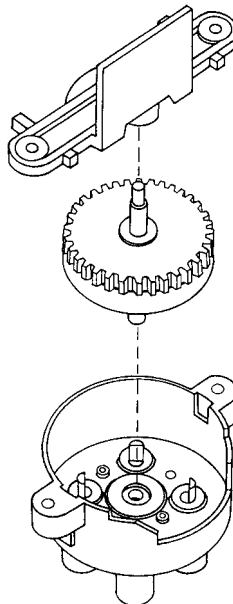


Figure 9.16

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-10	C

9.17 ALIGN ROTOR GEAR (17)

- A. Align the index mark on the rotor gear (17) so that it points toward the high tension tab of the coil (21). Secure rotor shaft (10) to prevent rotation during assembly. (See Figure 9.17).

NOTE: The index mark on rotor gears (17) used in non-sensor magnetos is a line on top of the gear. Vane gears (17) used in sensor magnetos have a raised boss.

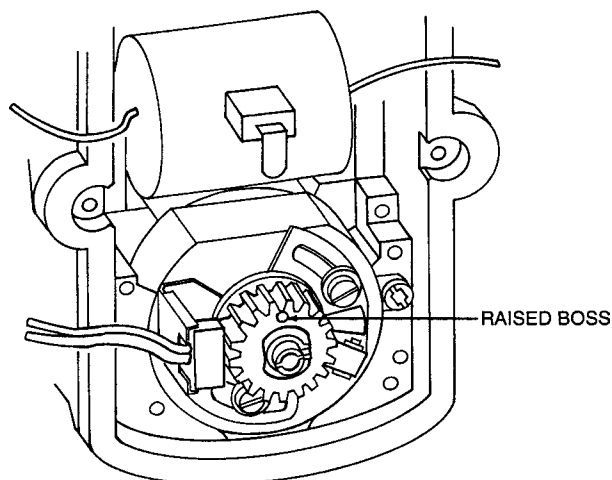


Figure 9.17

9.18 ALIGN DISTRIBUTOR GEAR

CAUTION: DO NOT TURN MAGNETO ROTOR SHAFT (10) WITH THE T-118 TIMING PIN INSERTED IN THE DISTRIBUTOR BLOCK. IF ROTOR SHAFT (10) IS TURNED WITH TIMING PIN INSERTED, THE MAGNETO MUST BE DISASSEMBLED AND INSPECTED FOR DISTRIBUTOR GEAR AND BLOCK (31) DAMAGE.

- A. Align the "X" hole in the distributor gear with the "X" in the distributor block.

CAUTION: DO NOT USE THE "L" OR "R" HOLE.

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

- C. Place distributor block spacers (33) on magneto frame (8). (See Figure 9.18).

CAUTION: THE CARBON BRUSH (34) MUST BE CONTAINED IN THE DISTRIBUTOR SHAFT DURING ASSEMBLY. IF THE CARBON BRUSH (34) CATCHES ON THE SIDE OF THE DISTRIBUTOR SHAFT, THE HIGH TENSION TABS OF THE COIL (21) WILL BE BENT INTO THE WRONG POSITION DURING ASSEMBLY.

- D. Place the distributor block on magneto frame (8). The distributor gear (part of 31) and rotor gear (17) are properly meshed when the index mark on the rotor gear (17) aligns with the reference mark on the distributor block (part of 31).

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-11	C

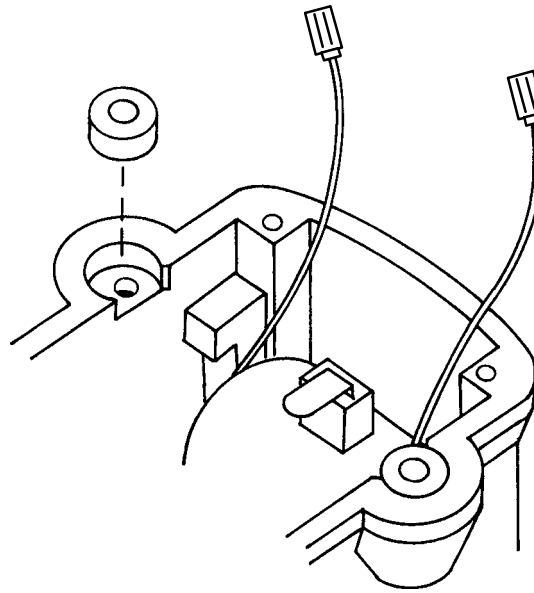


Figure 9.18

CAUTION: DO NOT PINCH COIL (21) LEADS BETWEEN MAGNETO FRAME (8) AND T125 ASSEMBLY FIXTURE.

- E. Secure distributor block assembly (31) to frame (8) with screws (32). Torque screws (32) to 18-28 in-lbs.

9.19 CONNECT COIL (21) LEADS

- A. Remove T-118 Timing Pin.
- B. Connect coil (21) white lead to the circuit board terminal next to the yellow wire.
- C. Connect coil (21) green lead to the remaining circuit board terminal.
- D. Wrap circuit board yellow wire around outside of coil (21) white lead (see Figure 9.19), then connect it to the contact point terminal.

CAUTION: PROPER ROUTING OF CIRCUIT BOARD YELLOW WIRE IS CRITICAL TO SUCCESSFUL MAGNETO OPERATION. TO PREVENT ROTOR VANE (17) FROM SEVERING CIRCUIT BOARD YELLOW WIRE, WRAP CIRCUIT BOARD YELLOW WIRE AROUND OUTSIDE OF COIL (21) WHITE LEAD BEFORE CONNECTING IT TO THE CONTACT POINT TERMINAL.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
9-12	C

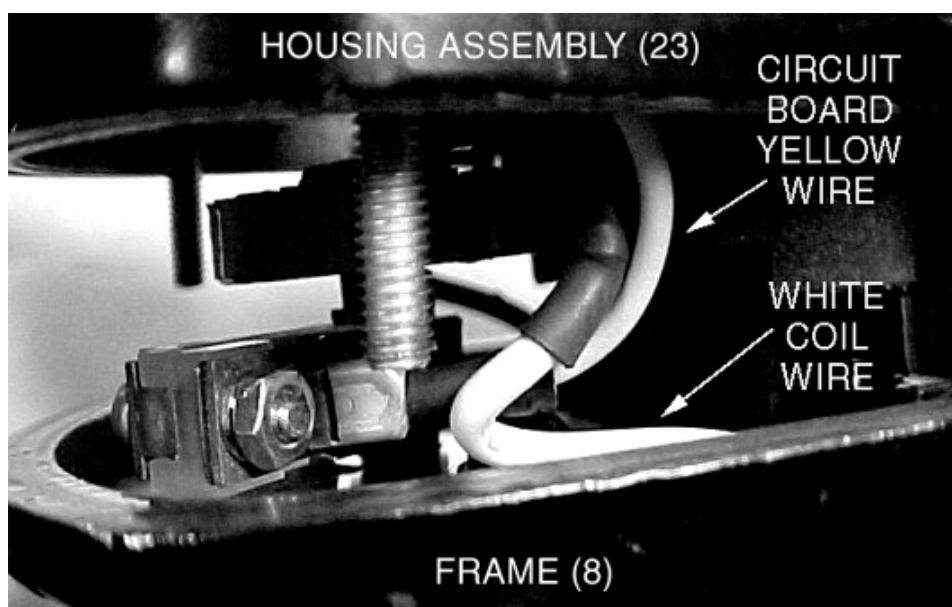


Figure 9.19

9.20 SECURE HOUSING ASSEMBLY (23)

- A. Secure the housing assembly (23) to the magneto frame (8) with four screws with lockwashers (28 and 29). Torque to 18 - 28 in-lbs.

CAUTION: DO NOT PINCH COIL (21) LEADS AT ANY TIME WHILE SECURING THE HOUSING ASSEMBLY (23) TO THE FRAME (8).

9.21 INSTALL AIR VENT BODIES (7)

- A. Install air vent body (7) in magneto frame (8). Torque to 80 - 90 in-lbs.
- B. Install air vent body (7) in housing assembly (23). Torque to 80 - 90 in-lbs.
1. Attach air vent/hood assembly (26) to housing assembly (23) air vent body (7). Torque to 5 - 7 in-lbs.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
9-13/(9-14 Blank)	C

10. LASAR® MAGNETO POST ASSEMBLY TESTING

10.1 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-Voltage Ignition Harness on the magneto and connect each output lead to a 5 mm, 3 point 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.

10.2 IMPULSE COUPLING - IMPULSE COUPLED MAGNETOS ONLY

- A. Rotate the test stand drive pulley in the same direction of rotation as stated on the magneto data plate.
- B. The impulse coupling should 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 should not engage at speeds above 475 RPM.

10.3 COMING-IN SPEED

- A. Determine the lowest speed at which the magneto can be turned and still spark all 5 mm gaps without missing.
- B. All non-impulse coupled test gaps must fire consistently at 255 RPM.
- C. All impulse coupled test gaps must fire consistently up to 150 RPM. Impulse coupling should not engage at speeds above 475 RPM.

10.4 HIGH-SPEED TEST

- A. 4700 Series Magnetos
 - 1. Operate the magneto at 1000, 2000 and 3000 RPM for five minutes at each speed setting.
 - 2. Observe sparking regularity at the spark gaps. Magneto must produce a consistent spark at all speed settings.
- B. 6700 Series Magnetos
 - 1. Operate the magneto at 1000, 2000, 3000, and 4000 RPM for five minutes at each speed setting.
 - 2. Observe sparking regularity at the spark gaps. Magneto must produce a consistent spark at all speed settings.

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
10-1	C

10.5 LONG-TERM TEST - OPTIONAL

- A. 4700 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. 6700 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.

10.6 TEMPERATURE TEST - OPTIONAL

- A. Measure the temperature on the outside surface of the magneto frame (8) during the long term test at the highest RPM setting. The magneto will generate heat during normal operation. Maximum temperature on the outside surface of the magneto frame is 175°F when tested at room temperature.

10.7 PRE-FLIGHT OPERATIONAL CHECK

- A. Before flight or after magneto maintenance, observe engine operation while running on both left or right magnetos individually. The LASAR® controller will automatically switch to backup operation when the ignition switch is turned to left or right position (refer to Section 2.3). Both magnetos should operate normally and engine should operate within parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT FLY AIRCRAFT IF THE LASAR® ENGINE CONTROL SYSTEM IS NOT FUNCTIONING PROPERLY.

10.8 POST-FLIGHT OPERATIONAL CHECK

- A. After flight observe engine operation while running on both left or right magnetos individually. The LASAR® controller will automatically switch to backup operation when the ignition switch is turned to left or right position (refer to Section 2.3). Both magnetos should operate normally and engine should operate within parameters outlined in the engine manufacturer's operating manual.

WARNING: DO NOT ATTEMPT FURTHER FLIGHT IF THE LASAR® ENGINE CONTROL SYSTEM IS NOT FUNCTIONING NORMALLY.

ISSUED			REVISED			PAGE NO.	REVISION
MO	DAY	YEAR	MO	DAY	YEAR		
07	11	97	07	31	07	10-2	C

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

11. EXPLODED VIEWS (Parts List)

Ref. No.	Description	Part No.	4755	4761	4766	4770	4771	4775	4776	6755	6766	6770	6776
1	Cotter Pin	M2556	1	1	1	1	1	1	1	1	1	1	1
2	Drive Nut	M3019	1	1	1	1	1	1	1	1	1	1	1
3	Washer	M3172	1		1	1		1					
		M5372		1			1	1					
4	Hub	M3343							1	1	1	1	
5	Drive Adapter Assembly	K5265		1			1	1					
		M5464								1	1	1	
	Impulse Coupling Assembly	M3163	1										
		M3333							1				
6	Oil Seal	M3062	1	1	1	1	1	1					
		M3331							1	1	1	1	
7	Air Vent	M1077	1	1	1	1	1	1	1	1	1	1	1
8	Frame	M5201		1	1	1	1	1		1	1	1	
		M5392	1						1				
9	Bearing	M3006	1	1	1	1	1	1	1	1	1	1	1
10	Rotor	K5277		1			1						
		K5285			1			1					
		K5254				1							
		K5212	1					1					
		K5416									1		
		K5436								1		1	
		K5496							1				
11	Bearing Cap Assembly Kit Includes: - Cap and Bearing Assy - M3221 Screw (2 ea) - M3018 Clamp-Bearing (2 ea)	K3630	1	1	1	1	1	1	1	1	1	1	1
12	Screw	M3221	3	3	3	3	3	3	3	3	3	3	3
13	Bearing Cap Clamp	M3018	2	2	2	2	2	2	2	2	2	2	2
14	Contact Point Assembly Kit Includes: - M3612 Point Assembly (1 ea) - M3614 Screw (1 ea) - M3615 Washer (1 ea) - M3611 Cam (1 ea) - M1827 Cam Grease (1 ea)	K3640	1	1	1	1	1	1	1	1	1	1	1
15	Washer	M3615	1	2	2	1	2	1	2	1	2	1	2
16	Screw	M3614	1	2	2	1	2	1	2	1	2	1	2
17	Rotor Gear (Without Sensor Vane)	K5247	1			1		1					
		K3828							1		1		
	Rotor Gear Kit (With Sensor Vane) Includes: - M5243 Wavy Washer (1 ea) - M5242 Snap Ring (1 ea)	K5227		1	1		1		1				
		K5428								1		1	
18	Wavy Washer	M5243		1	1		1		1		1		1

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
11-1	C

L-1503

Ref. No.	Description	Part No.	4755	4761	4766	4770	4771	4775	4776	6755	6766	6770	6776
19	Snap Ring	M5242		1	1		1		1		1		1
18	Screw	M3614	1	2	2	1	2	1	2	1	2	1	2
20	Woodruff Key	M2536	1	1	1	1	1	1	1	1	2	2	2
21	Coil Includes: - M5275 Coil (1 ea) - M3040 Coil Wedge (4 ea)	K5275	1	1	1	1	1	1	1	1	1	1	1
22	Coil Wedge	M3040	2	2	2	2	2	2	2	2	2	2	2
23	Housing Assembly (Without Sensor)	M5289	1			1		1		1		1	
	Housing Assembly (With Sensor)	M5290		1	1		1		1		1		1
24	Sensor Bracket	M5221		1	1		1		1		1		1
25	Screw (Sensor Bracket)	M5172		2	2		2		2		2		2
26	Starwasher (Sensor Bracket)	M5174		2	2		2		2		2		2
27	Nut (Sensor Bracket)	M5173		2	2		2		2		2		2
28	Screw (Housing)	M3015	2	2	2	2	2	2	2	2	2	2	2
29	Screw (Housing)	M5257	2	2	2	2	2	2	2	2	2	2	2
30	Air Vent / Hood Assy	M3084	1	1	1	1	1	1	1	1	1	1	1
31	Distributor Block and Gear Assy Kit Includes: - Distributor Block (1 ea) - Distributor Gear (1 ea) - Bearing Bar (1 ea) - M3826 Spacer (2 ea) - M3021 Screw (2 ea) - M3215 Carbon Brush (1 ea)	K3822	1	1	1	1	1	1					
		K3823								1	1	1	1
32	Screw (Distributor Block)	M3021	2	2	2	2	2	2	2	2	2	2	2
33	Spacer	M3826	2	2	2	2	2	2	2	2	2	2	2
34	Carbon Brush	K3215	1	1	1	1	1	1	1	1	1	1	1
35	Ground Strap	M5161	1	1	1	1	1	1	1	1	1	1	1

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
 www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
11-2	C

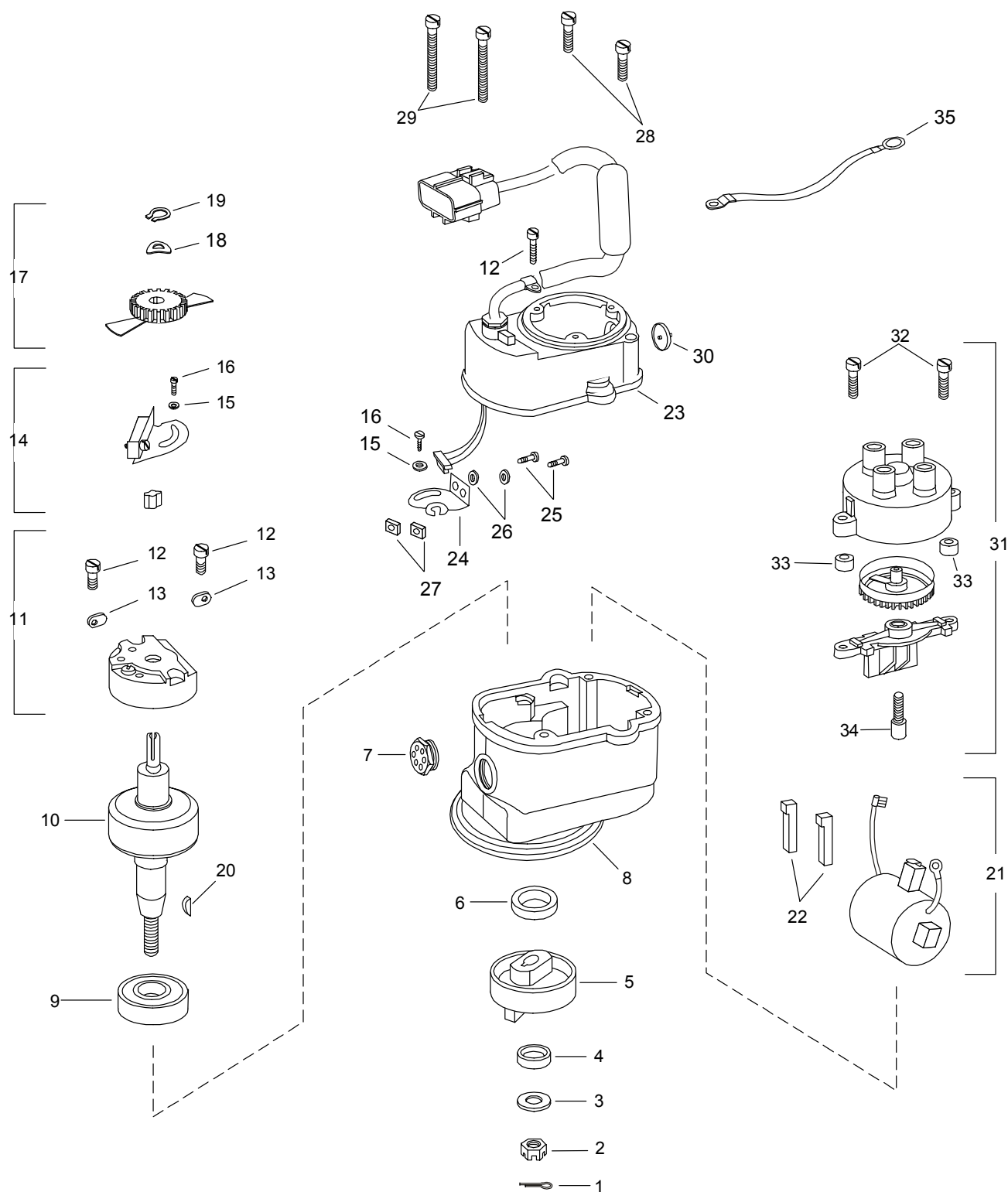


Figure 11-1
Exploded Parts Diagram
(Four Cylinder, Non-Impulse Coupled Magneto Shown)

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
© 2007 Unison Industries

PAGE NO.	REVISION
11-3/(11-4 Blank)	C

12. SERVICE SPECIFICATIONS

Exploded View reference numbers are shown in parentheses, unless otherwise stated.

12.1 SERVICE TORQUE SPECIFICATIONS:

<u>Part No.</u>	<u>Nomenclature</u>	<u>Torque Value</u>
M1077	Air Vent Body (7)	80 - 90 in-lbs
M1553	Harness Cap Screw	18 - 28 in-lbs
M3741	Magneto Mounting Clamp	190 - 220 in-lbs
M3084	Air Vent Hood Screw (30)	5 - 7 in-lbs
M5257	Housing Screw (29)	18 - 28 in-lbs
M3015	Housing Screw (28)	18 - 28 in-lbs
M3019	Drive Nut (2)	120 - 180 in-lbs*
M3021	Distributor Block Screw (32)	18 - 28 in-lbs
M3221	Bearing Cap Screw (12)	20 - 24 in-lbs
M3221	Pigtail Harness Clamp Screw (12)	15 - 18 in-lbs
M5487	Circuit Board Mounting Screws 4-40	6 in-lbs
M5488	Circuit Board Mounting Screws 6-32	10 in-lbs
M5172	Sensor Mounting Screws (25)	6 - 8 in-lbs

NOTE: Torque values apply to magnetos with either drive adapter or impulse coupling assemblies.

12.2 LUBRICATION:

M1827	Cam Grease - For Rotor Cam
M5430	Connector Lubricant - For All Connectors

12.3 CONSUMABLES:

R5003	Loctite 81802 - For Bearing Cap Hold-Down Screws, and - Circuit Board Mounting Screws
R5020	Loctite 290 - For Sensor Mounting Screws

12.4 TOLERANCES:

Primary Coil	White wire to green wire	.50 - 1.2 ohms
Secondary Coil	Coil tab to green wire	13,000 - 20,500 ohms

ISSUED			REVISED		
MO	DAY	YEAR	MO	DAY	YEAR
07	11	97	07	31	07

Unison Industries
 530 Blackhawk Park Avenue
 Rockford, Illinois, U.S.A. 61104
www.unisonindustries.com
 © 2007 Unison Industries

PAGE NO.	REVISION
12-1	C



Unison Industries
530 Blackhawk Park Avenue
Rockford, Illinois, U.S.A. 61104
Telephone: 815-965-4700
FAX: 815-965-2457
www.unisonindustries.com