



INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

AIRCRAFT MANUAL SUPPLEMENT

**INSTRUCTIONS FOR CONTINUED
AIRWORTHINESS**

FOR

PLANE POWER, Ltd.

CONVERSION KIT SAL12-70

for

ALTERNATOR and R1224

ALTERNATOR REGULATOR



INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

NOTE:

Insert these Instructions for Continued Airworthiness into the Instruction for Continued Airworthiness section of the aircraft’s maintenance manual.

Contact Plane Power for revision status of these Instructions for Continued airworthiness.

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Future revisions will be denoted by revision bars at the side of the page.

LIST OF EFFECTIVE PAGES

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**MODEL SAL12-70
ALTERNATOR CONVERSION KIT FOR 12 VOLT SINGLE ENGINE
AIRCRAFT WITH LYCOMING ENGINE**

MANUFACTURER	AIRCRAFT MODEL
Raytheon Aircraft Co.	Beech 23
Revo, Inc.	Colonial C1, Colonial C2, Lake LA-4, LA-4A, LA-4P
Alliance Aircraft Group, LLC.	Helio H-250
Aircraft Parts & Development	Intermountain (Callair) A, A-2, A-4, A-5, A-5T, A-9, A-9B
FS 2003 Corporation	Piper PA-12, PA-12S
The New Piper Aircraft, Inc.	Piper PA-16, PA-16S
The New Piper Aircraft, Inc.	Piper PA-18, PA-18S, PA-18 "105" (Special), PA-18S "105" (Special), PA-19S
The New Piper Aircraft, Inc.	Piper PA-18A, PA-18 "125" (Army L-21A), PA-18S "125", PA-18AS "125", PA-18 "135" (Army L-21B), PA-18A "135", PA-18S "135", PA-18AS "135", PA-18 "150", PA-18A "150", PA-18S "150", PA-18AS "150", PA-19 (Army L-18C), PA-20, PA-20S, PA-20-"135", PA-20S-"135", PA-22, PA-22-135, PA-22S-135, PA-22-150, PA-22S-150, PA-22-160, PA-22S-160. All aircraft models listed in this row require FAA-approved rear mounted oil cooler alteration.
The New Piper Aircraft, Inc.	Piper PA-20-"115", PA-20S-"115"
The New Piper Aircraft, Inc.	Piper PA-22-108
The New Piper Aircraft, Inc.	Piper PA-24, PA-24-250, PA-24-260, PA-24-400
Latinoamerica De Aviacion	Piper PA-25, PA-25-235, PA-25-260
The New Piper Aircraft, Inc.	Piper PA-28-140, PA-28-150, PA-28-160, PA-28-180, PA-28-235, PA-28S-160, PA-28S-180
Mooney	M20, M20A, M20B, M20C, M20D, M20E, M20F, M20G



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INTRODUCTION:

This manual supplement is prepared to provide instructions on the maintenance and adjustment of the Plane Power, Ltd., MODEL SAL12-70 with R1224 Voltage regulator kit: BELT DRIVEN ALTERNATOR CONVERSION FOR SINGLE ENGINE AIRCRAFT WITH LYCOMING ENGINE.

DESCRIPTION:

The Plane-Power, Ltd alternator part number 10-1051 is a light weight alternator with improved power output at lower RPM.

The Plane Power, Ltd., R1224 Voltage Regulator is a solid state electronic alternator voltage regulator with built in over-voltage protection.

MAINTENANCE INSTRUCTIONS:

Maintenance operations will commence when there is a Pilot report that the voltage level on the aircraft does not meet the aircraft manufacturer's requirement. The alternator should be inspected for loose or broken belt, that the alternator shaft moves freely with no unusual noise. If the installation was loose, repair and test for proper operation.

If the alternator output is not satisfactory, the voltage setting should be adjusted by following the instructions given on Plane Power Ltd., document 12-1001. This document is in the voltage regulator Instructions for Continued Airworthiness (37003-06).

If the regulator cannot be adjusted to the manufacturers specification, the regulator must be returned to the factory for repair.

PERIODIC MAINTENANCE:

It is recommended that the operation of the Plane Power, Ltd., 10-1051 alternator be checked every 100 hour inspection or every annual inspection whichever ever comes first.

ANNUAL/100 HOUR INSPECTION-

Remove drive belt and turn alternator rotor to check condition of bearings for abnormal noise or roughness.

5 YEAR OR 1000 HOUR INSPECTION

1. Repeat the Annual/100 hour inspection.
2. Remove field brush assembly and inspect brushes for excess wear. Replace brush assembly if brushes extend less than 0.250 inches from edge of holder case.



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Each annual/100 hour inspection, the alternator and its associated wiring should be checked for secure electrical connections and physical connection to the airframe. The belt drive tension should be re-set to the aircraft manufacturer's specification.

For re-assembly convenience, the installation instructions are listed on pages 6 and 7.

The voltage regulator maintenance instructions are in Plane Power Ltd. document 37003-6, and those inspections should be concurrent with those of the alternator.

No special tools are required.

AIRWORTHINESS LIMITATIONS

There are no mandatory replacement limits. There are no mandatory structural inspection intervals.

THE AIRWORTHINESS LIMITATIONS SECTION IS FAA APPROVED AND SPECIFIES MAINTENANCE REQUIRED UNDER SEC. 43.16 AND 91.403 OF THE FEDERAL AVIATION REGULATIONS UNLESS AN ALTERNATIVE PROGRAM HAS BEEN FAA APPROVED.



INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

Part 1, Installation of Alternator and Regulator

1. Disconnect aircraft battery.
2. Remove Generator and voltage regulator.
3. Install Alternator per drawing on pages 6 and 7. Tension the belt and torque the AN5H-5A adjusting bolts to 200 in/lb and safety wire with 0.032" diameter safety wire. Torque the AN7-42A mounting bolts to 425 in/lb.
4. **Ensure that internal jumper #1 and internal jumper #2 of the R1224 regulator are set for 14V operation** (See data sheet 12-1001 for location of jumpers). Install the R1224 regulator in a convenient location for wiring, preferably in the location of the removed regulator.
5. If original output circuit breaker is rated at less than 70-amperes and you wish to be able to utilize the increased capacity of the alternator, remove the breaker and replace with suitable breaker up to 70amp maximum size. **Ensure wire size from alternator output terminal to output circuit breaker and from output circuit breaker to bus is rated for more than the size of breaker installed per AC43.13-1B.** Note: If aircraft has been equipped with an Amp Meter, ensure that it is of adequate size to handle the increased output capability before increasing the output wire and breaker.
6. Wire the system as follows (refer to page 7 of this document) :
 - a. Connect the GRND terminal of the regulator to the common aircraft ground.
 - b. Leave the ground jumper installed on the F2 terminal of the alternator.
 - c. Connect the existing generator output wire to the alternator's 6mm OUTPUT TERMINAL (or install a new wire in accordance with AC43.13-1B) using a MS25171-2S terminal nipple for insulation (Not Supplied). Torque to 50 in/lb. (See step 5 above)
 - d. Use the original generator field wire or install a new wire, minimum 18AWG, from the alternator F1 terminal to the FLD terminal of the regulator. Torque the alternator's F1 terminal nut to 20 in/lb.
 - e. **ENSURE THAT A 5AMP CIRCUIT PROTECTION DEVICE IS INSTALLED IN SERIES WITH, OR IS PART OF, THE FIELD SWITCH FOR THE ALTERNATOR.** (This is commonly the original generator Field switch & breaker.) Use the existing wire from the switch/breaker or install a new wire, minimum 18AWG, to the ENABLE terminal of the regulator. Install, in view of the pilot, placard ALP-1001 (ALT FIELD) adjacent to the field switch for the alternator.
 - f. Ensure that the other end of the FIELD switch/breaker is connected to the aircraft positive bus.
 - g. If the aircraft has a "Generator Inoperative" indicator lamp, it may be used in this step. If lamp is not currently installed use the supplied lamp P/n 14-1010 Alternator Inoperative Lamp (14 Volt) and install it in pilots clear field of view.

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- h. Connect one wire of the lamp P/n 14-1010 to a 1 amp fuse or circuit breaker and connect the other wire of the lamp to the LAMP terminal of the regulator using minimum #22AWG wire. (Note: If the original generator lamp is used either of the lamp wires may be installed to the fused circuit and lamp terminal.) Install, in view of the pilot, placard ALP-1006 (ALT INOP) adjacent to the indicator for the alternator. Also run a new wire, minimum 18AWG, from the AUX terminal of the alternator to the AUX terminal of the regulator. (See wiring schematic below).

7. Adjust and Test the system:

- a. Set FIELD switch to OFF.
- b. Turn on MASTER switch and start the engine. With FIELD switch in OFF position ensure that ALT INOP indicator is illuminated.
- c. Turn on the FIELD switch. Check proper charging indication. Check ALT INOP indicator is off. Check aircraft maintenance manual for proper bus voltage (typically $14.0V \pm 0.3V$). Adjust the regulator to the desired bus voltage at 1200 engine RPM.
- d. Recheck and inspect the entire installation, and make a log book entry.
- e. For additional troubleshooting information, see the regulator data sheet 12-1001.

Installation & Wiring Diagram

