



1625 Lost Nation Rd. , Willoughby, OH 44094  
PH: 440-951-4744 FAX:440-951-4725

**Installation manual / Service Letter**

Doc # NC-08-030 Rev G  
Issue Date: 8/4/2010

**EFFECTIVITY**

Cessna Aircraft Types: 182S, 182T, T182T.

**REVISION HISTORY**

REV	DESCRIPTION	DATE
D	Added 182S information	8/4/2010
E	See ECN 11-013	4/25/2011
F	See ECN 15-020	12/1/2016
G	See ECN 17-009	4/10/2017

**PURPOSE**

For installation of Standby Alternator system.

**COMPLIANCE**

Not mandatory, shall be complied with at aircraft owner's discretion.

**APPROVAL**

FAA approval has been obtained on all technical data in this Service Letter that affects type design.

**RESOURCES**

40 hours of labor are required to comply with this Service Letter.

**MATERIAL INFORMATION**

The following documents list the materials required for compliance with this Service Letter. Parts can be obtained from Kelly Aerospace Thermal Systems (KATS), or procured locally as indicated on parts list Doc# NC-08-026 (KATS)

**INSTRUCTIONS FOR COMPLIANCE**

1. Preparation.
  - a) Ensure all documentation is the latest revision.
  - b) Conduct a parts inventory to ensure all required items are present.
  - c) Disconnect aircraft battery per Cessna Aircraft Maintenance Manual (AMM).
  - d) Remove the engine cowling per AMM.
  - e) Secure external power receptacle to prevent unwanted power on aircraft busses (e.g. tape over receptacle with non metallic masking tape with label warning of hazard.).
  - f) Remove the following components utilizing the AMM and store securely:
    - i) Forward left and right “kick” panels.
    - ii) Glove box.
    - iii) LH rudder pedal cover.
    - iv) Propeller and starter ring.
    - v) T182T ONLY.
      - (1) Exhaust pipe and waste gate (T182T ONLY).
    - vi) Lamar electrical box cover.
  - g) For all references to wire stripping, crimping and tying procedures refer to AC 43.13-1B chapter 11.
  - h) Torque.

Torque Specifications	
Unless otherwise specified, use the following torque values.	
6-32 UNC	7-9 inch-lbs
8-32 UNC	17-19 inch-lbs
10-24 UNC	20-22 inch-lbs
10-32 UNF	28-31 inch-lbs
1/4-20 UNC	70-75 inch-lbs
1/4-28 UNF	90-94 inch-lbs
5/16-24 UNF	220-230 inch-lbs
3/8-24 UNF	445-455 inch-lbs
7/16-20 UNF	760-780 inch-lbs
<b>Table 1</b>	

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2. Installation of components.
  - a) Drill holes and mount the Voltage Regulator (DGR3-1) using (3) AN525-10R10 screws, (3) AN960-10L washers and (3) AN365C-1032 nuts; one set in the middle hole on the left and two in the top and bottom holes on the right. See Figure 1.



**Figure 1 - Approximate location of DGR3-1 Voltage Regulator**

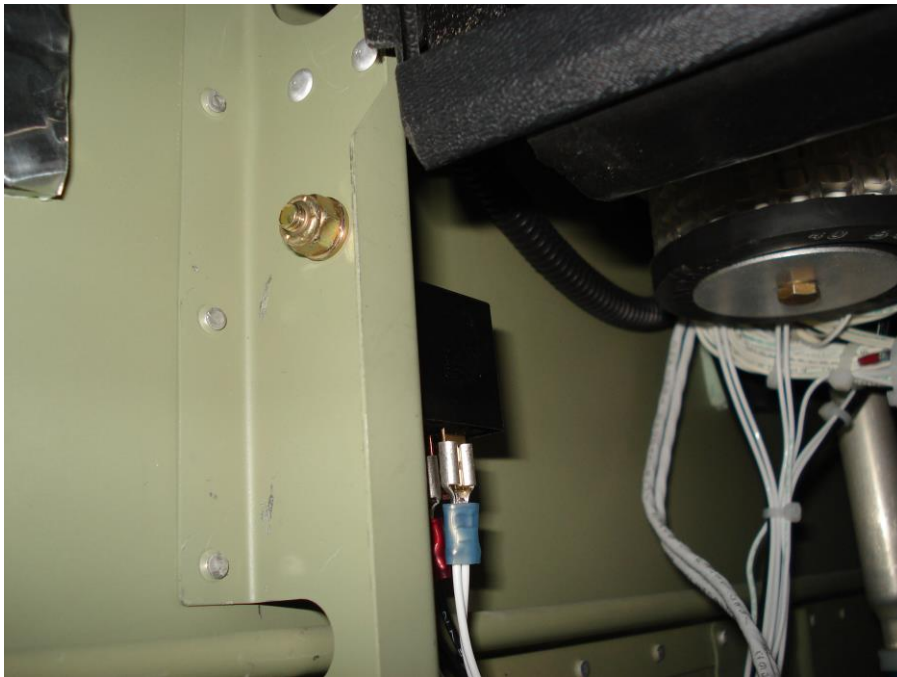
- b) Mount one flange of DC Contactor Relay (P/N 124-902) using top outboard bolt of Lamar box. See Figure 2.



**Figure 2 - Mounting location of DC Contactor Relay**

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- c) You will need to remove an existing washer from under the Lamar box foot typically as the relay flange will replace this spacer in practice.
- d) Rotate the existing wire loom clamp 180 degrees from originally installed orientation to make room for the relay body.
- e) Match drill the remaining flange to the firewall ensuring no equipment, wiring, etc. is located behind where you want to drill inside cockpit behind instrument panel.
  - i) Use the supplied AN3-5A, AN365-1032C, and AN970-3 Large area washers as required to complete mounting of DC Contactor Relay.
- f) Change Over Relay (P/N 896H-1CH-D1-R1) can be mounted where possible or simply built into wiring bundles. See Figure 3.



**Figure 3 - Suggested location of Change Over Relay (under left side of instrument panel)**

- g) Toggle switch, switch guard and placard. See Figure 4.
- h) Fuse holder and bracket AC-00107. See Figure 5.

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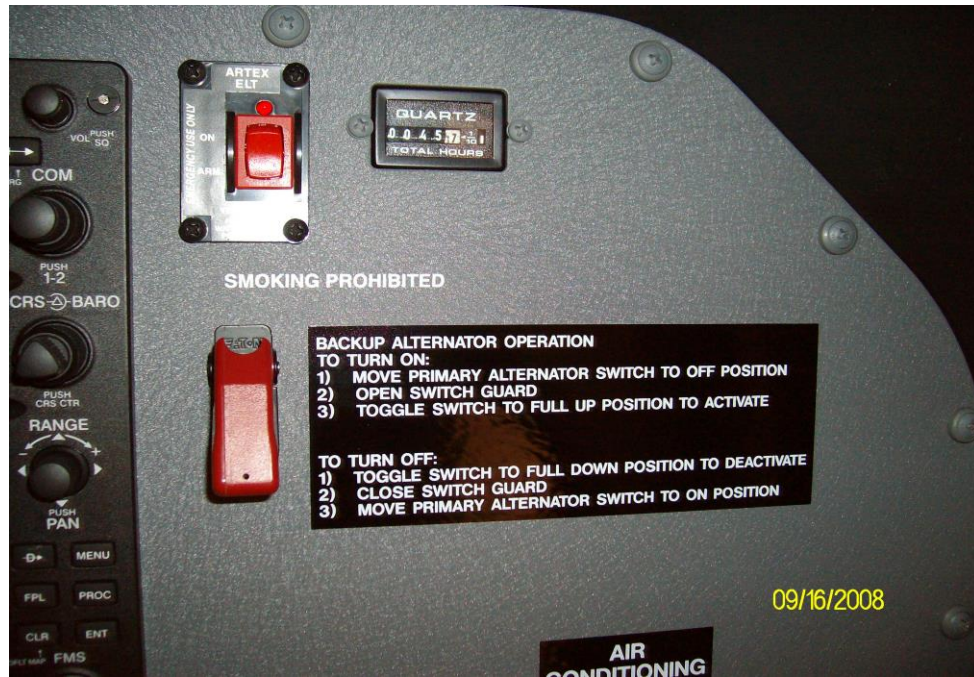


Figure 4 - Toggle switch and Placard location

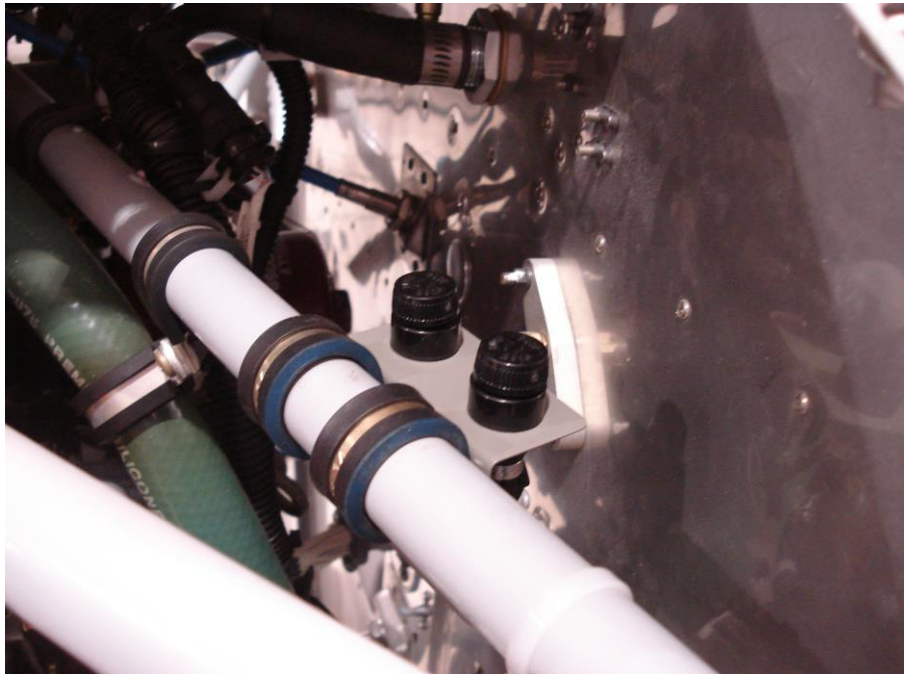
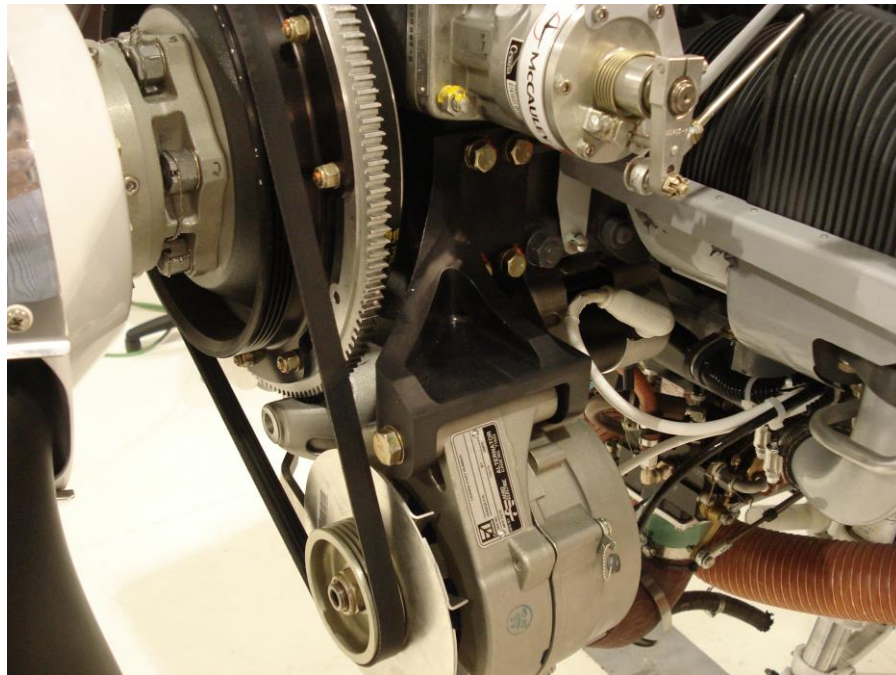


Figure 5 - Suggested installation of AC-00107 Fuse Holder Bracket

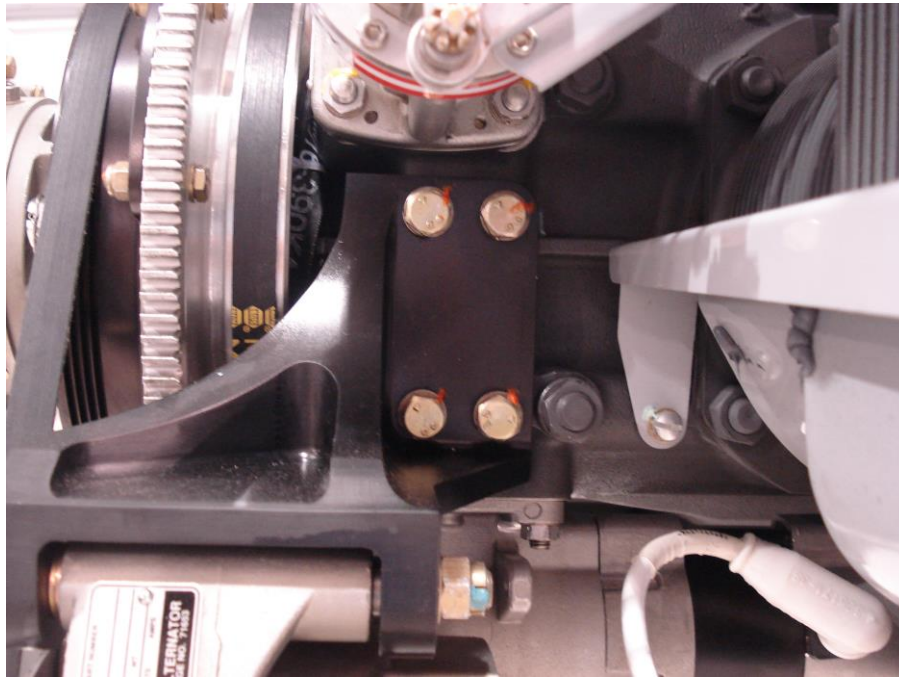
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- i) Alternator installation.
  - i) Reference Dwg# AL-00063, Figures 6-10 and instructions listed below.
  - ii) Tensioning Arm Bracket (AL-00061) installation.
  - iii) Remove aircraft Primary Alternator.
  - iv) Loosen, but do not remove Primary Alternator bracket from engine.
  - v) Loosely install AL-00061 with alternator pivot bolt and starter bolt.
  - vi) Tighten starter bolt verifying Primary Alternator bracket is flush against AL-00061.
  - vii) Tighten Primary Alternator bracket bolts to the engine block.
  - viii) Verify alternator pivot bolt moves freely. Using AL-00061 as a guide, drill an  $\text{\O} .193'' - .199''$  through hole into the Primary Alternator bracket.
  - ix) Loosely install AN3-6A bolt into drilled hole.
  - x) Loosen Starter ear bolt and remove Primary Alternator pivot bolt. Stake Primary Alternator bracket bolts.
  - xi) Install alternator and belt but do not adjust tension until after backup alternator has been installed and belt has been tensioned. This is done to ensure load from AL-00054 is being applied through AL-00061 and not through the ear on the starter.
  - xii) Re-Install prop per AMM.

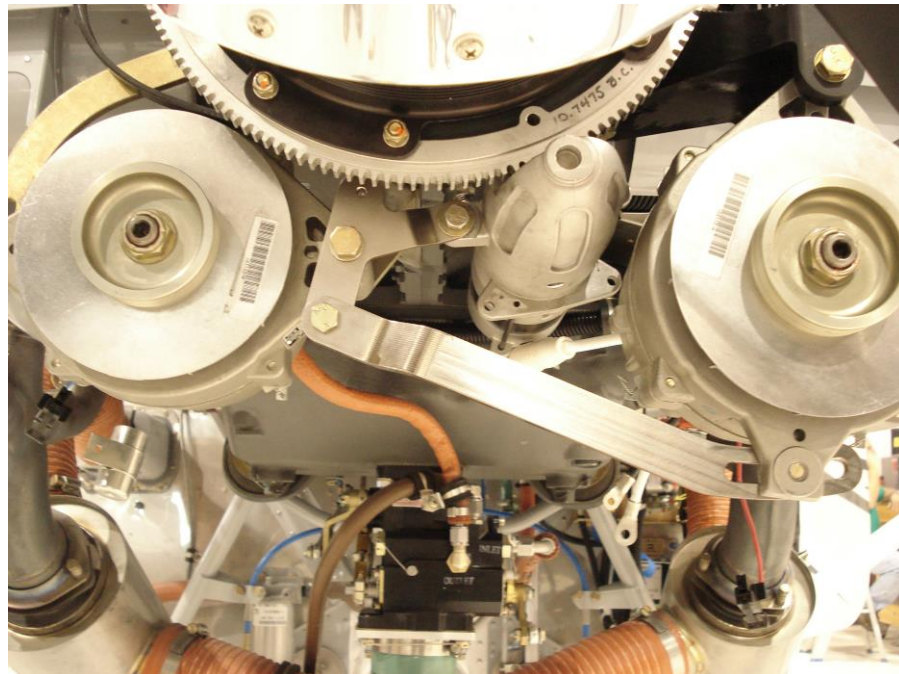


**Figure 6 - Alternator installation**

## NC-08-030 182S, 182T, T182T STANDBY ALTERNATOR INSTALLATION

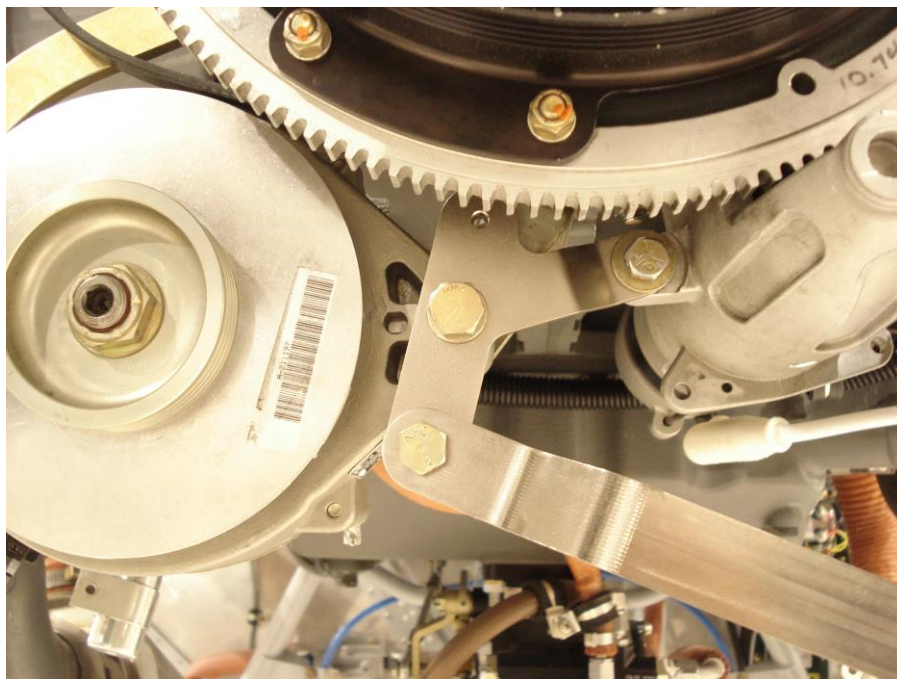


**Figure 7 - Alternator installation**

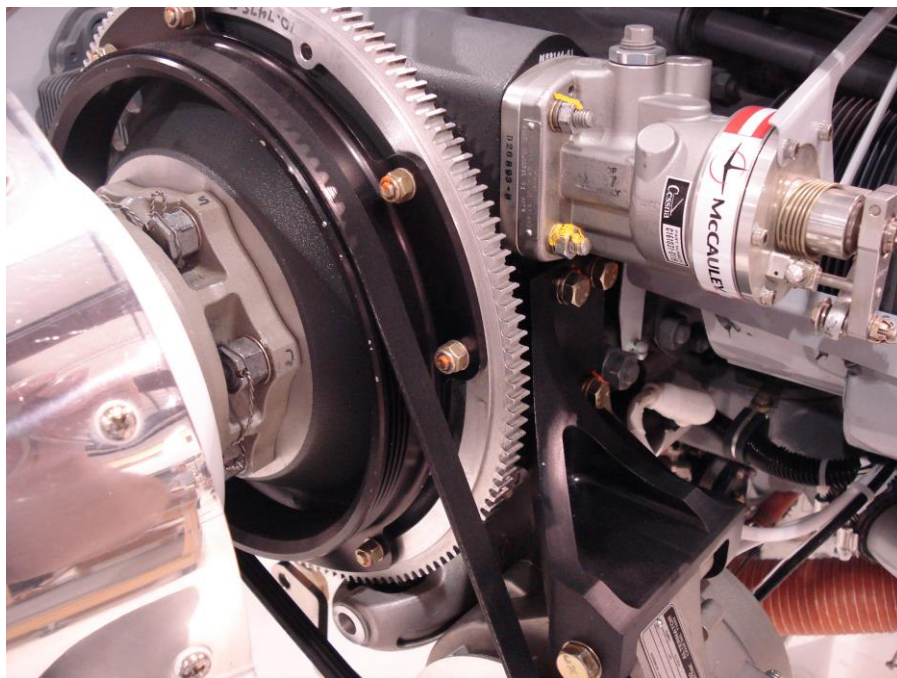


**Figure 8 - Alternator installation**

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**Figure 9 - Alternator installation**

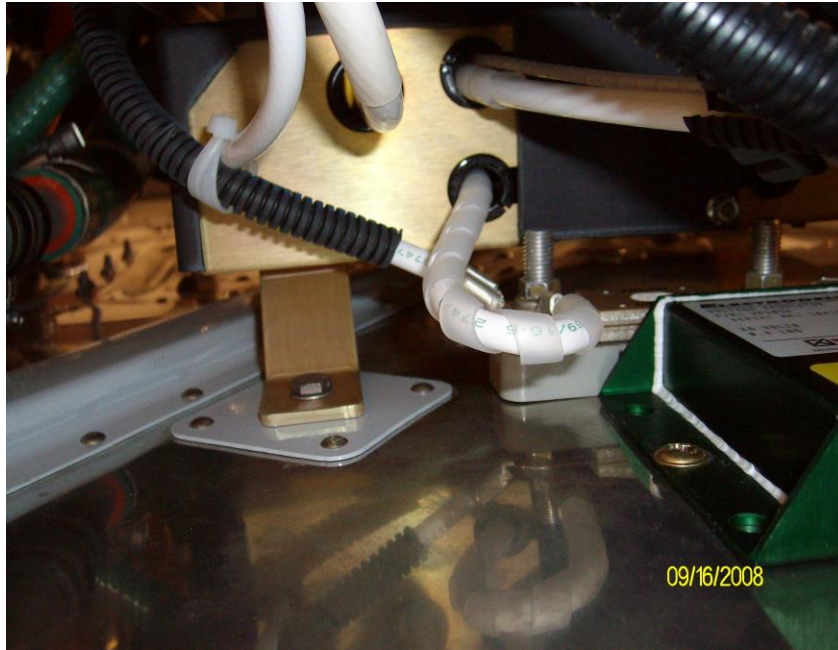


**Figure 10 - Alternator installation**



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3. Modification of existing components
  - a) Lamar box cover will need to be trimmed as required for additional wiring to access the connections inside.
  - b) A snap bushing has been provided to protect wiring into the Lamar box. See Figure 11.



**Figure 11 - Bottom of Lamar box showing snap bushing and cover modification**

- c) T182T only.
    - i) Remove left engine inlet naca scoop and repair per Cessna Structural Repair Manual (SRM).
    - ii) Install flange 10350-12 per Dwg # AC-00136 on lower left cowling.
    - iii) Trim to fit supplied 3" SCAT tubing to route air to the heat muff and secure as required (reuse hose clamps).
    - iv) High Temp RTV may be used to buffer the scat hose from the alternator if rubbing is expected.
  - d) Paint reworked areas per AMM as required.
4. Wiring
    - a) See Dwg# AL-00062 for all wiring details.
    - b) Care should be taken to ensure a neat and tidy wiring installation and adequate additional wire protection (spiral wrap, wire loom, heat shrink, zip ties etc.) where required (e.g. inside the Lamar box where space is very limited).
    - c) All wire runs should be installed as per standard practices and follow existing wire runs where practical.

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5. Reassembly of aircraft
  - a) Reinstall the following components utilizing the AMM.
    - i) Front and rear seats.
    - ii) Cabin carpet.
    - iii) Glove box.
    - iv) LH rudder pedal cover.
    - v) Floor inspection panels when/as required.
    - vi) Propeller and starter ring.
    - vii) Lamar electrical box cover.
    - viii) Exhaust pipe and waste gate (T182T ONLY).
  - b) Reinstall aircraft battery per the Cessna AMM.
  - c) Reinstall the engine cowling per AMM.
6. Perform operational test
  - a) Aircraft will need to be relocated to a run up area to complete this section.
  - b) Utilizing qualified personnel, operate the aircraft engine per the Pilot Operating Handbook.
  - c) Test system by utilizing instructions on placard AL-00064 or AL-00212 located near guarded Red switch for stand by alternator.
  - d) If further assistance is needed contact Kelly Aerospace Thermal Systems Technical support at (440) 951-4744.
7. Return to service
  - a) Perform compass swing deviation check as required by AC 43.13-1B chapter 12 section 3.
  - b) Update aircraft Weight and Balance records.
  - c) Install Approved Flight Manual Supplement.
  - d) Complete FAA form 337.
  - e) Make aircraft log book entry.