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Installation manual / Service Letter

Doc # NC-15-013 Rev B
Issue Date: 4/8/2019

EFFECTIVITY

Cessna Aircraft Types: T206 and T206H

REVISION HISTORY

REV	DESCRIPTION	DATE
A	Initial Release (ECN 16-008)	10/28/16
B	See ECN 19-014	4/8/19

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PURPOSE

For installation of Backup 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 KATS Doc# NC-15-007.

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 Left and Right Upper Cowls per AMM.
    e) Remove the Left and Right Nose Caps per AMM.
    f) 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).
    g) Remove the propeller and Starter Ring per AMM.
    h) Remove the Pilots Side Seat Assembly per AMM.
    i) Remove the Lamar Box Cover per AMM.
    j) For all references to wire stripping, crimping and tying procedures refer to AC 43.13-1B Chapter 11.

k) 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	120-145 inch-lbs
3/8-24 UNF	200-250 inch-lbs
7/16-20 UNF	520-630 inch-lbs

Table 1

2. Alternator Installation.

a) Reference AL-00190 Cessna 206 Backup Alternator Installation Details.

b) Replace existing front engine lift with AL-00173 Engine Lift / Alternator Tension Bracket. Reuse the existing hardware except the lock washers as shown on drawing. See Figure 1.

Figure 1 – Engine Lift / Alternator Tensioner Bracket

c) Replace the existing Lycoming engine studs 38-21 and 38-26 with 38-23 and 28-28 engine studs and mount AL-00165 Alternator Mounting Bracket. Reuse the existing hardware except the studs and the lock washers as shown on the drawing. See Figure 2.

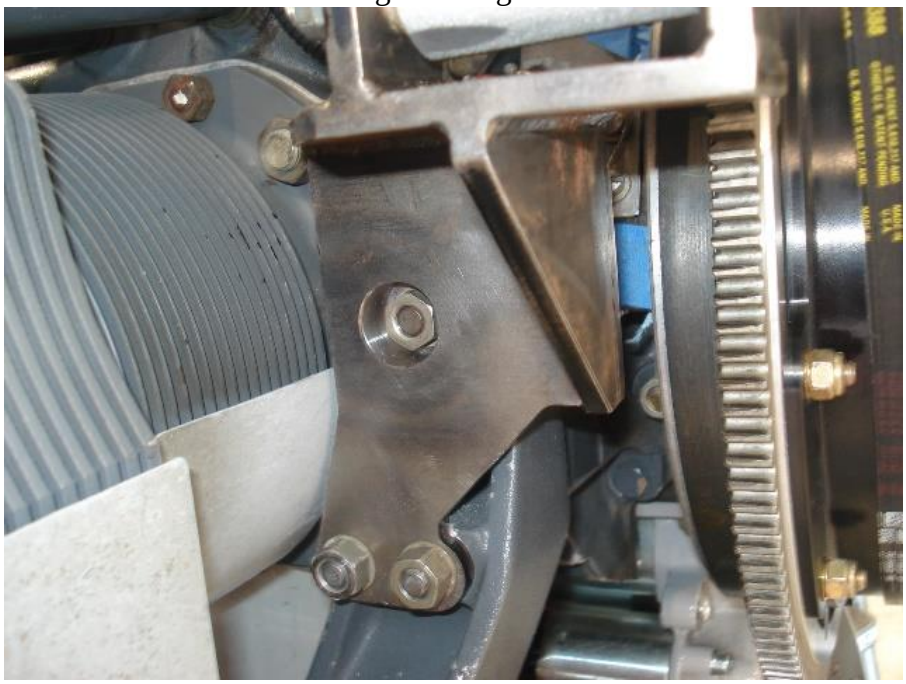

Figure 2 – Alternator Mounting Bracket

d) Install AL-00053 Drive Pulley as shown on the drawing. See Figure 3.

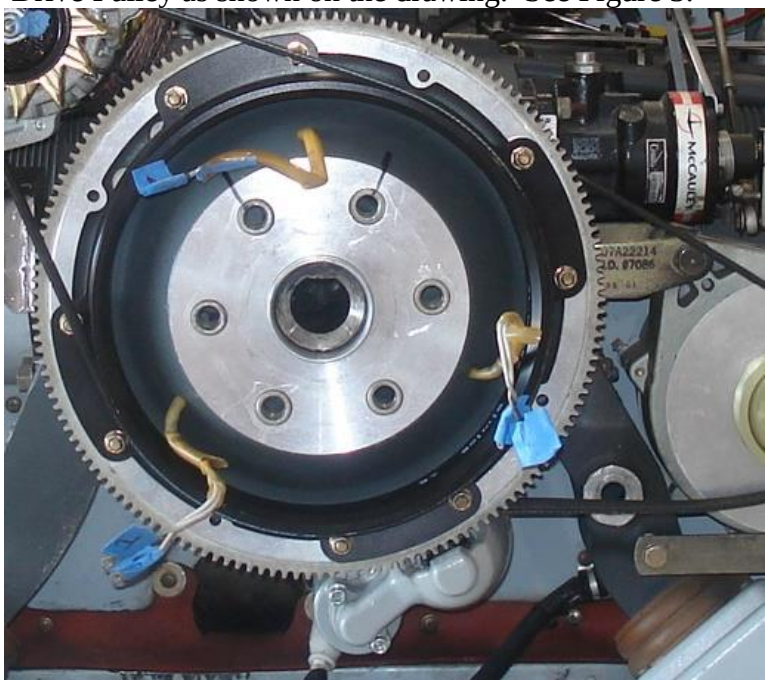

Figure 3 – Drive Pulley Installation

e) Install the ES-7024-13 Alternator and AL-00178 Tensioner to the brackets with the hardware as shown on the drawing and place the AL-00184 belt as shown in Figure 4.

Figure 4 – Alternator Installation and Belt Placement

f) Reinstall the Starter Ring and Propeller per the AMM. Re-tension the Primary Alternator per the AMM. Tension the Backup Alternator Belt per the Drawing and AMM. See Figure 5.

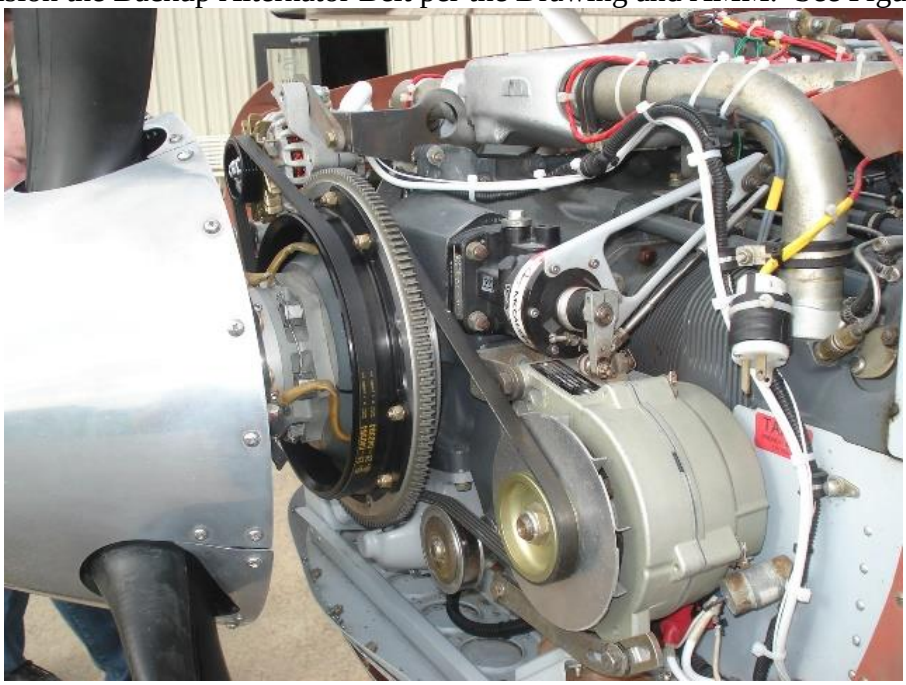

Figure 5 – Reinstall Prop and Tension Belts

3. Installation of Electrical Components and Hardware (Firewall Forward).

   a) Reference AL-00195 206H & T206H Backup Alternator Wiring Diagram.

   b) Remove the 6 AWG wire connected to the regulator. Pull the 8 position connector from the regulator. Remove the (4) #10 Screws on the mounting legs of the junction box. See Figure 6. Pull the junction box out of the way as much as possible for the next step.

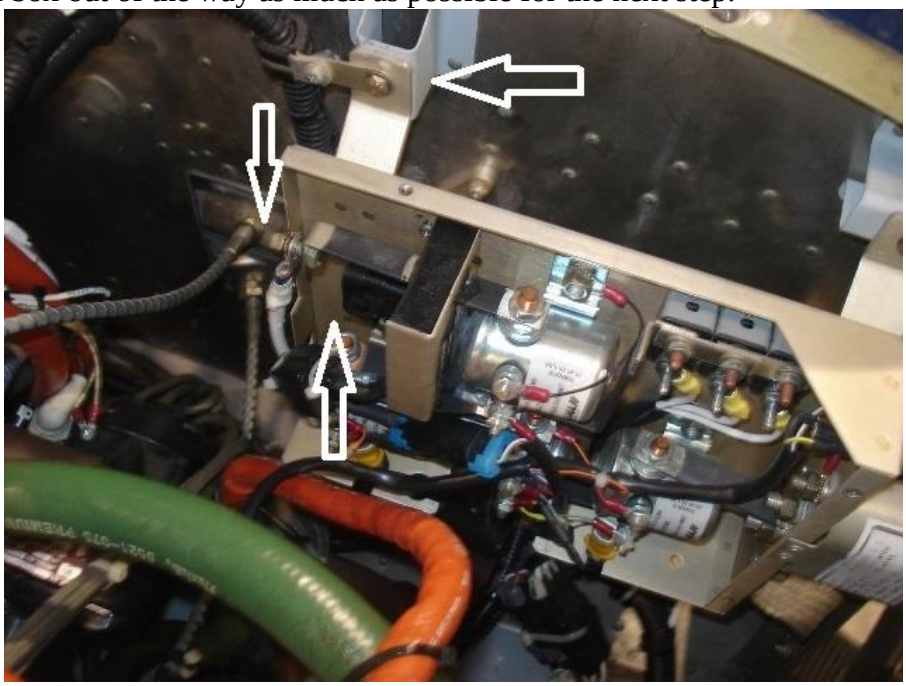

Figure 6 – Junction Box Connections

c) Drill holes and mount the Voltage Regulator (DGR3-1) using (2) AN4-4A bolts, (4) AN960-416L washers and (2) AN365-428A nuts approximately as shown. Check the interior side of the firewall to ensure clearance for the drill bits and screws. Ground the black lead with the ¼" ring terminal to the case and firewall. See Figure 7.

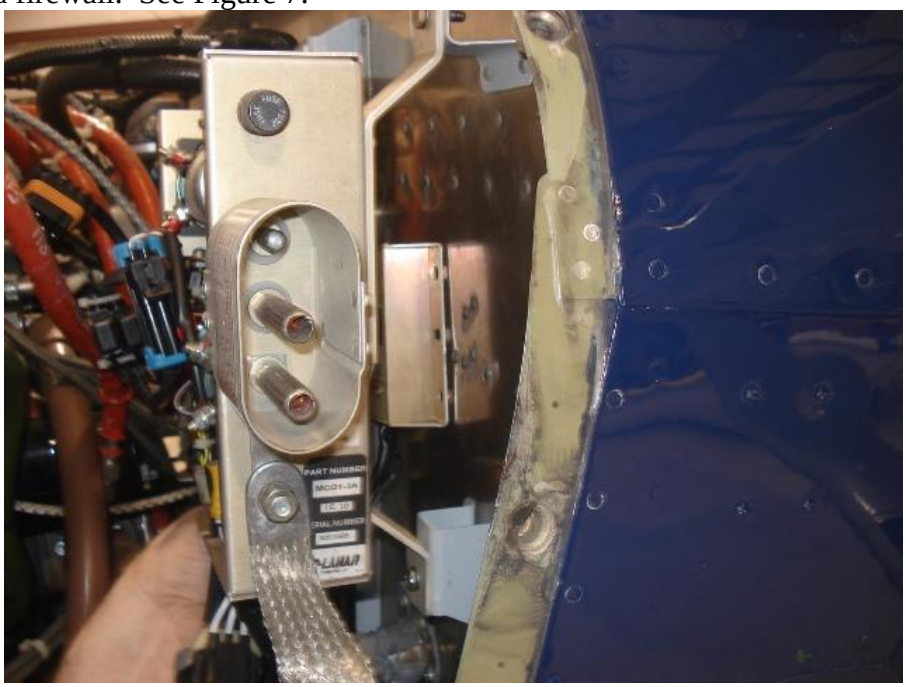

Figure 7 - Approximate location of DGR3-1 Voltage Regulator

d) Re-connect the junction box to the firewall atop the regulator.

e) Locate a clearing between the seams about 6" below the lower inboard leg of the junction box. Locate the corresponding interior clearing, use the AL-00187 Bulkhead Doubler as a template to match drill (12) #31 rivet holes, (4) 1/8" diameter screw holes and (1) 1 ¼" diameter bulkhead hole. Attach the Bulkhead Doubler to the interior firewall with (12) MS20470AD3-4 Rivets. See Figure 8 photos below.

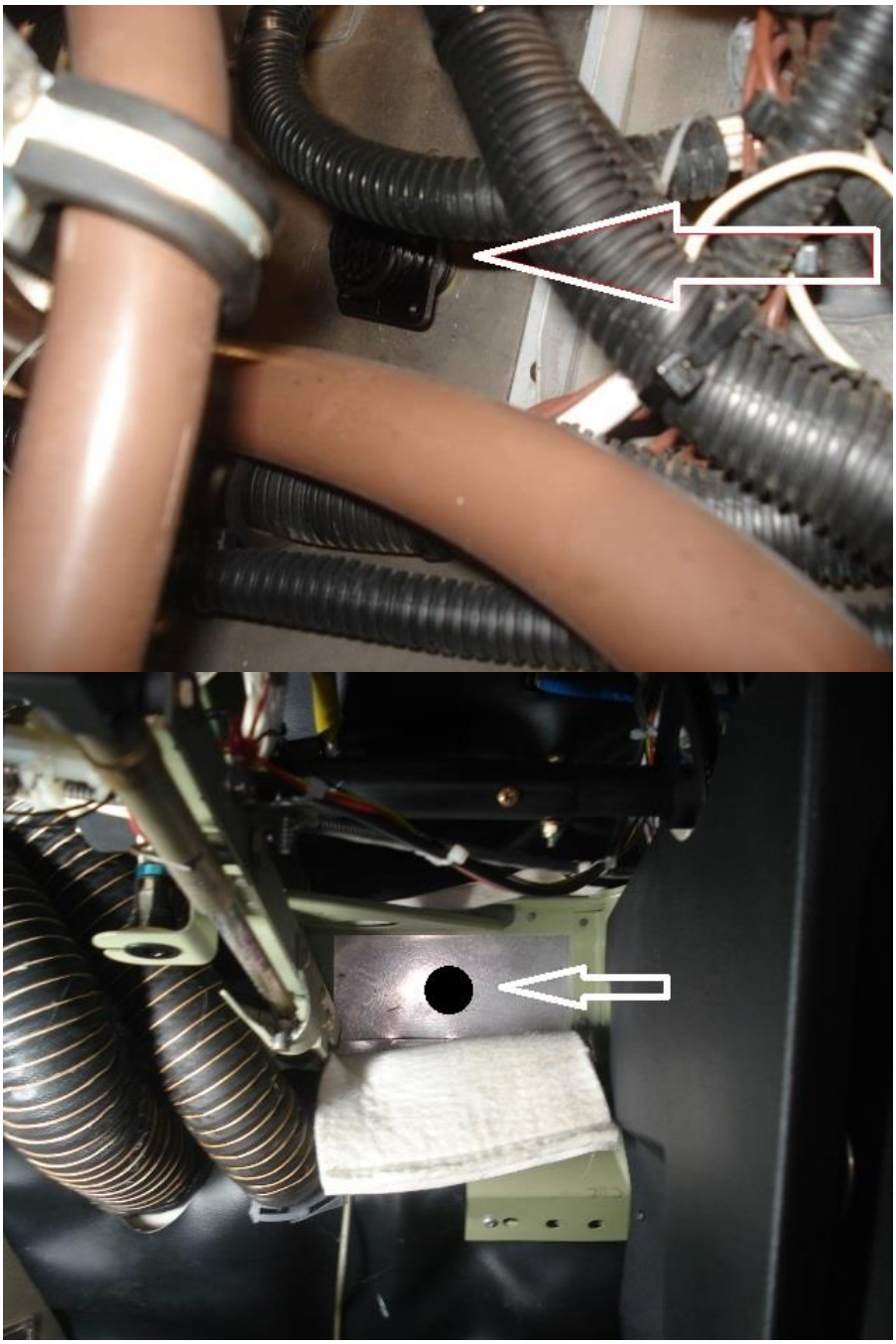

Figure 8 - Approximate Location of the AL-00186 Harness Bulkhead Connector

f) Drill holes and mount the AL-00206 Alternator Relay Mounting Assembly using (2) AN4-5A bolts, (4) AN960-416L washers and (2) AN365-428A nuts approximately as shown in Figure 9 with the normally open side of the relay up. Check for clearance behind the firewall. Ensure electrical clearance on the front side of the firewall.

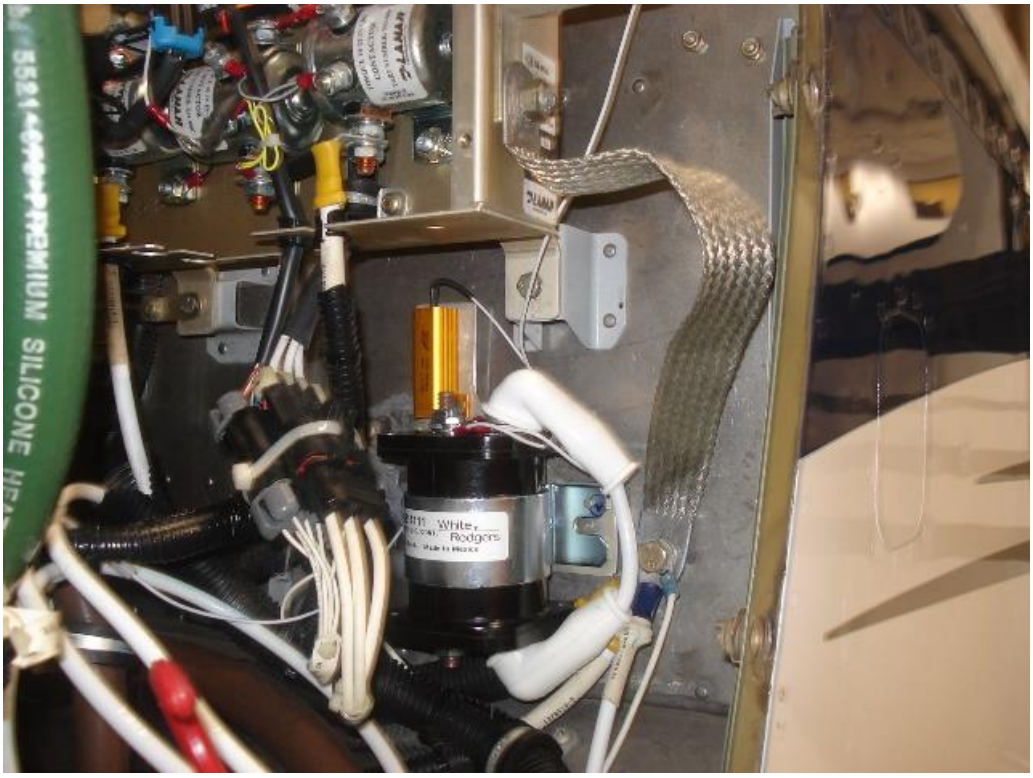

Figure 9 - Approximate location of AL-00206 Alternator Switching Relay

g) Reroute the 6 AWG wire that was previously from the primary alternator to the S-Terminal on the ACU in the J-Box to the normally open side of the alternator relay. Cut off the 1/4" ring terminal and replace with P/N: 33462 5/16" ring terminal. Connect to the relay. Connect AL-00191 wire from the normally open side of the relay to the normally closed side of the relay. Route AL-00188 wire back to the S-Terminal on the ACU from the normally open side of the relay.

h) Route AL-00189 from the backup alternator battery terminal to the normally closed side of the relay along with the existing bundle. See Figure 10. Route AL-00193 from the #10 relay coil wire to the ground cluster.

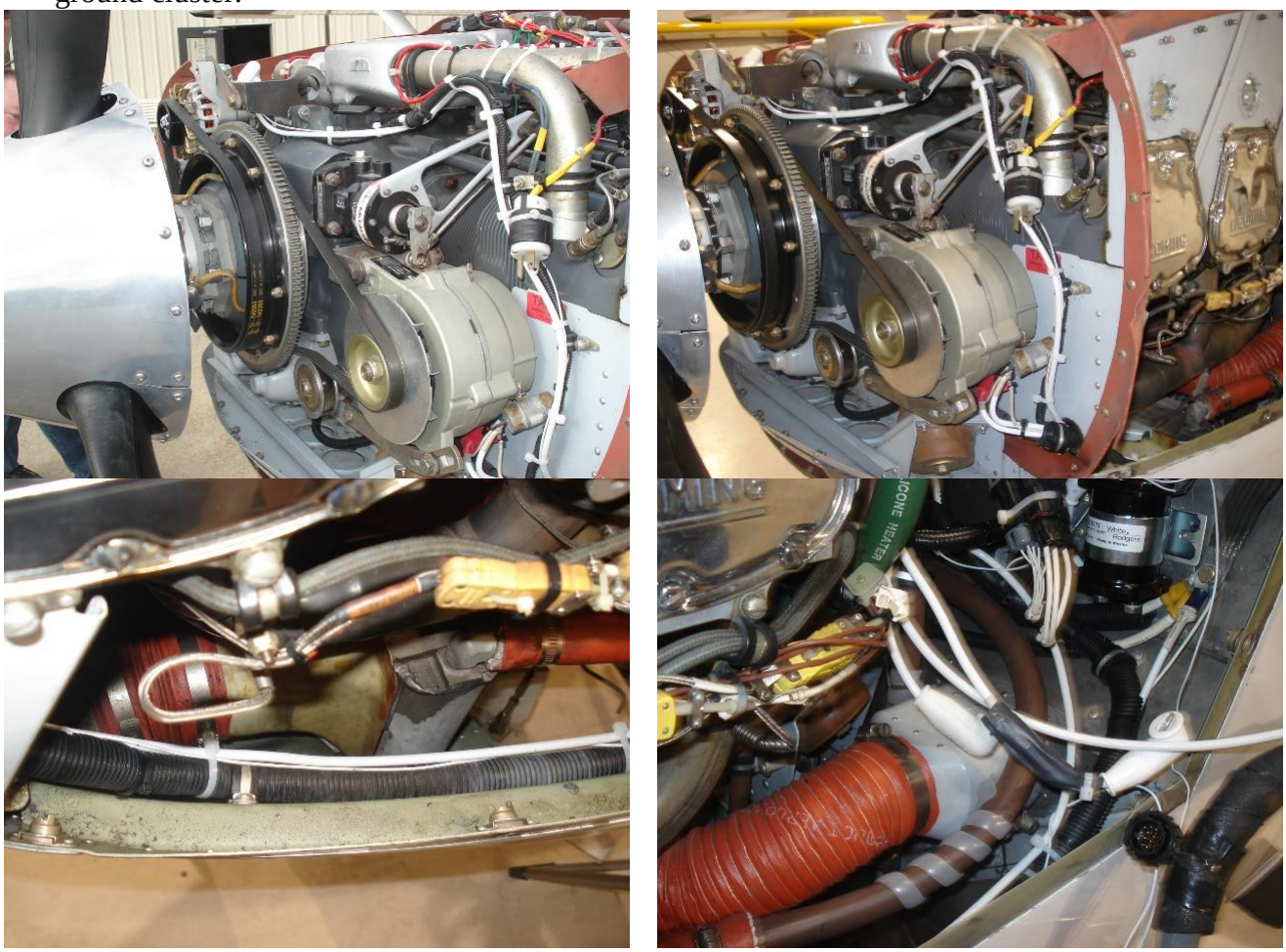

Figure 10 – Wiring of Alternator Switching Relay

i) Remove the 8 position plug from the existing regulator and plug into the receptacle AC-00185 Harness and plug the harness plug into the regulator receptacle. Route the harness out from the bottom of the junction box through RI-PGSB-1316A-10 Snap Bushing. Plug the 6 positon connector into the DGR3-1 regulator. See Figure 11. Route the remaining #20 gage wires to the relay coil and the backup alternator field along with the secondary alternator battery cable as shown in Figure 10. Connect D38999/20WF11SN to D38999/20WF11PN bulkhead connecter once installed.

Figure 11 – Junction Box ACU Harness Addition

j) The plastic on the bottom of the junction box cover will need to be cut back to approximately 3 3/8" from the left edge (looking at firewall from the front). See Figure 12.

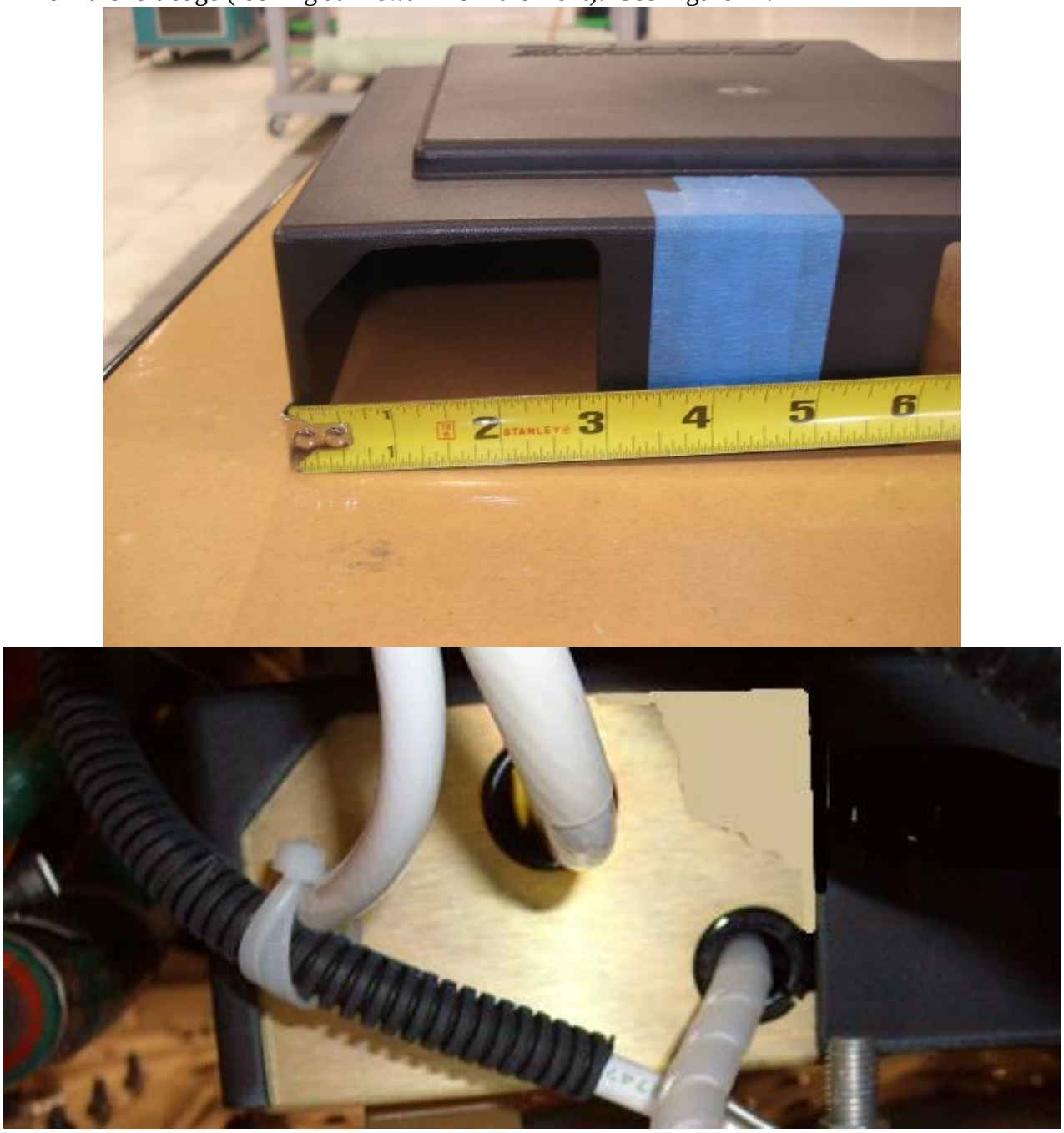

Figure 12 – Junction Box Cover Modification

4. Installation of Electrical Components and Hardware (Cabin).

   a) Connect D38999/20F11PN Bulkhead Connector from AL-00186 harness to the bulkhead cutout shown in Figure 8. Using (4) MS35206-215 #4-40 X .375 Lg Screws, (4) AN960-4L Washers and (1) M854049/95-20A Mounting Flange.
   b) Connect the ground lead to the aircraft ground block with the socket provided.
   c) Mount AL-00211 Harness & Relay Bracket Assembly to interior fuselage where room is available. See Figure 14 for recommended location under the left front lower panel. Use MS35206-245 #8-32 x ½" long screw and AN960-8L flat washer to attach to existing nut plate. Use a 92115A228 self-tapping #8 x ½" long sheet metal screw with an AN960-8L flat washer.
   d) Be careful that existing screws on the side panel don't touch the electrical wiring. Grind off or insulate if required. See Figure 13.

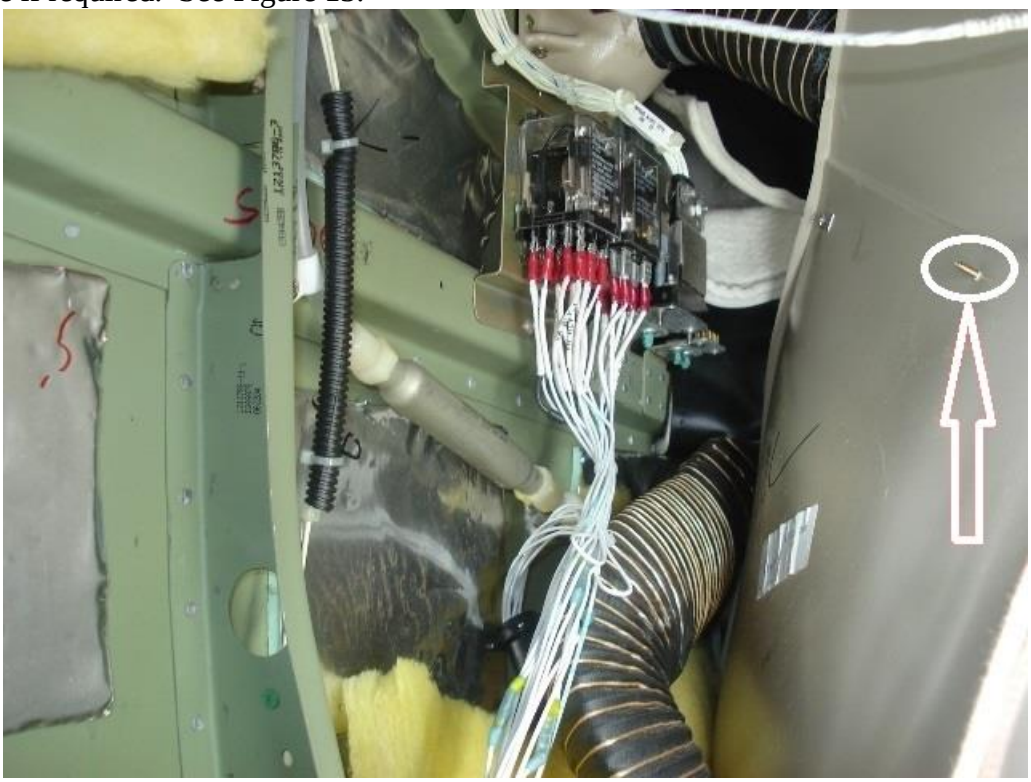

Figure 13 – Relay Mounting Bracket Location

e) Reference AL-00207 to mount AL-00208 Alt Controller Harness Assembly and toggle switches in the instrument panel cover if possible, otherwise use the included panel as a cutout template. See Figure 14.

Figure 14 –Toggle Switches

f) Place AL-00199 Warning Placard near the toggle switches shown above. See Figure 15.

Figure 15 –Warning Placard

5. Wiring.
   a) See KATS Dwg# AL-00195 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.

6. Reassembly of aircraft.
   a) Reinstall the following components utilizing the AMM.
   b) Reinstall the Lamar Electrical Box Cover per AMM.
   c) Reinstall the Pilots Side Seat Assembly per AMM.
   d) Reinstall the Propeller and Starter Ring per AMM.
   e) Reinstall aircraft battery per the AMM.
   f) Reinstall the Left and Right Nose Caps per AMM.
   g) Reinstall the Left and Right Upper Cowls per AMM. Check the clearance between the cowl and the alternator. If required, trim the cowl approximately where shown to give a minimum of ¼" clearance between the cowl and the alternator.

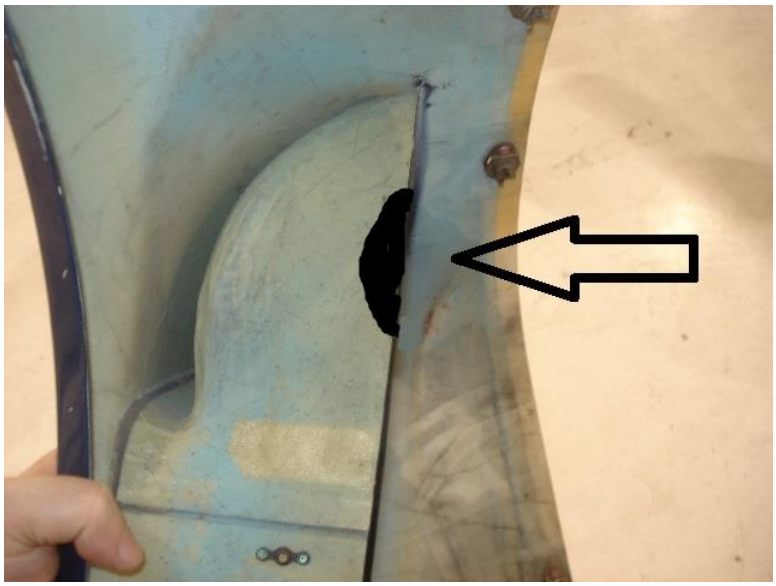

Figure 16 –Possible Upper Cowl Modification

7. 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 starting the engine with both the Backup Alternator Switch and the Backup Regulator Switch in the Up position. Toggle the switches in all four combinations of up and down and monitor the system voltage. All combinations should work with less than 70 amps load.
   d) If further assistance is needed contact Kelly Aerospace Thermal Systems Technical support at (440) 951-4744.

8. 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.