

NC-13-024
206H & T206 AIR CONDITIONING INSTALLATION



Thermal Systems

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Install manual/Service Letter

Doc No: NC-13-024
Rev L

EFFECTIVITY

Cessna Aircraft Types: 206H & T206H

REVISION HISTORY

REV	DESCRIPTION	DATE
A	Initial Release, See ECN 13-009	7/12/2013
B	See ECN 14-007	2/18/2014
C	See ECN 14-014	6/09/2014
D	See ECN 15-008	7/22/2015
E	See ECN 14-022	6/23/2016
F	See ECN 17-016	6/07/2017
G	See ECN 17-034	11/30/2017
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J	See ECN 19-004	1/17/2019
K	See ECN 19-012	2/13/2019
L	See ECN 20-030	3/24/2022

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PURPOSE

For installation of air conditioning 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

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

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SYSTEM OVERVIEW

The Cessna 206H/T206H is a single alternator, single bus electrical system. Most of the existing systems use an ASG12000-3 / 9910592-3, 95 amp alternator, which is mounted on the left front side of the engine. The Air Conditioning System is powered by the primary alternator. Some load shedding is required when running the air conditioning system. Refer to the AFMS for the electrical load limitations.

Some Cessna 206H models use a 9910591-12, 60 amp alternator. The alternator must be upgraded to an ASG12000-3 / 9910592-3 95 amp alternator as shown in the Cessna Aircraft Company MODEL 206 Illustrated Parts Catalog. The required alternator and mounting parts are included in the Kit.

The air conditioning system consists of an electric hermetically sealed compressor, condenser and evaporator all located in the tail cone. The system is operated through temperature selection and a climate controller located on the instrument panel. There is both a fan only mode and a cooling mode. R-134a is used as a refrigerant for the system. Power is run from the alternator under the floor to the components in the rear of the aircraft.

An electrical load analysis was done for this STC; the analysis assumes that both the Landing Lights and Taxi Lights are both 35 Watt HID lights. If the aircraft doesn't have the HID lights, an STC upgrading the Landing and Taxi Lights to HID may be required.

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)

NC-13-027 (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. Remove aircraft battery per the 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).

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2. Remove the following components utilizing the AMM and store securely:

- A. All seats
- B. Cup Holder
- C. Curtain Assembly, baggage net
- D. Right and Left rear window covers
- E. Upper Rear Moldings
- F. Headliner
- G. Cabin Carpet
- H. Aft black plastic closeout
- I. Floor inspection panels when/as required
- J. Lamar electrical box cover

3. General Instructions

- A. For all references to wire stripping, crimping and tying procedures refer to AC 43.13-1B chapter 11.
- B. For all references to riveting procedures refer to AC 43.13-1B chapter 4.
- C. Consumables to be procured locally
 - 1) Paint, as required for touch up and re-coloring N numbers
 - 2) Masking tape
 - 3) Assorted sizes of tie wraps
 - 4) M22759/16 wire or equivalent in the sizes of AWG 8, 10, 16 and 18.
- D. 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 – Torque Specifications

4. Alternator Upgrade (when required)

- A. Reference Cessna Aircraft Company Illustrated Parts Catalog Section 24-20-00
- B. Some 206H models come equipped with alternator and components as shown on Detail A, 60 AMP.
- C. Parts are provided in the kit to upgrade the alternator and components to those shown on Detail A; 95 AMP.
 - 1) Use 40024 Plug, Alternator Field and attach field and ground wires as required.
 - 2) Electrical power should be disconnected from the aircraft to reduce the risk of electrical shock or spark induced fire.

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5. Sidewall Cutout and Installation of Reinforcement

A. Make sidewall cutout and install sidewall reinforcement as shown on Drawing AC-00869.

1) Figure 1 shows masking tape used for marking alignment of existing rivet holes



Figure 1 – Port Side Cutout Location

2) Use lines on tape to align template holes. See Figure 2 and Figure 3.



Figure 2 – 206 Port Reinforcement Template

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Figure 3 – 206 Port Reinforcement Template

B. Use templates to locate sidewall cutout.

WARNING:
Do not cut through any stringer or bulkhead when making sidewall cutout.

C. Install outlet flange on the port side of the plane as shown on Drawing AC-00869.

1) Figure 4 shows the location of the outlet flange on the port side of the plane.



Figure 4 – Location of Outlet Flange Assembly

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6. Installation of components

- A. Install and rivet the compressor support legs to the stringers as shown on Drawing AC-00812. See Figure 5.

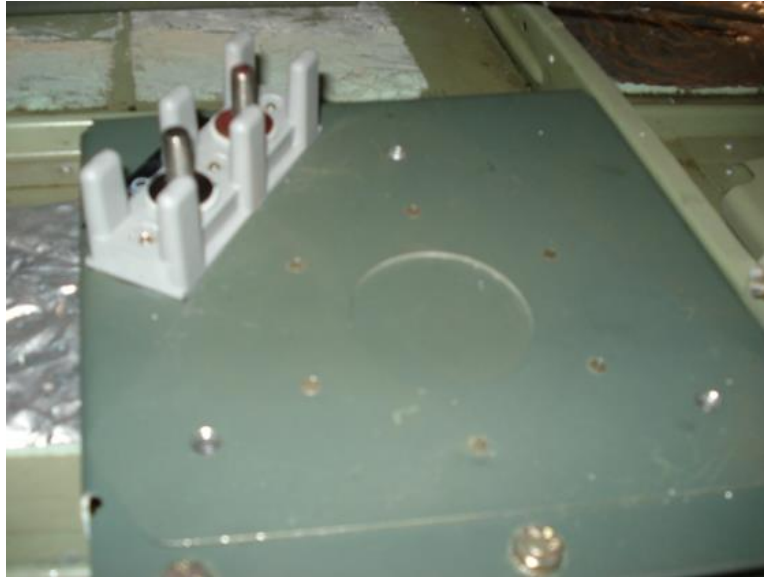


Figure 5 - Compressor Support Installation

- B. If the aircraft is equipped with a Stormscope, then install the Stormscope Relocation Kit per AC-01559.
- C. Install condenser assembly as shown on Drawing AC-00862.
- 1) Attach the condenser assembly to the outlet flange.
 - 2) Align the support bracket assembly with the condenser assembly as shown on drawing.
 - 3) Remove the rivets below the support bracket in the seam, and anywhere else below the bracket.
 - 4) Mark the location of the bracket.
 - 5) Remove the condenser assembly.
 - 6) Match drill the bracket and rivet the bracket to the stringer as required.
 - 7) Replace the condenser assembly, attach to outlet plenum and support brackets as shown on drawing. See Figure 6, Figure 7 and Figure 8.

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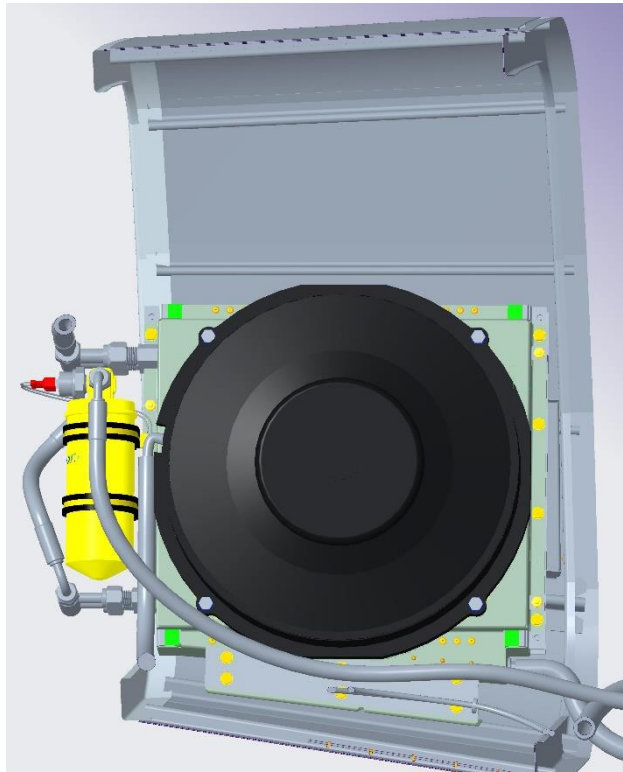


Figure 6 – Internal Condenser Installation

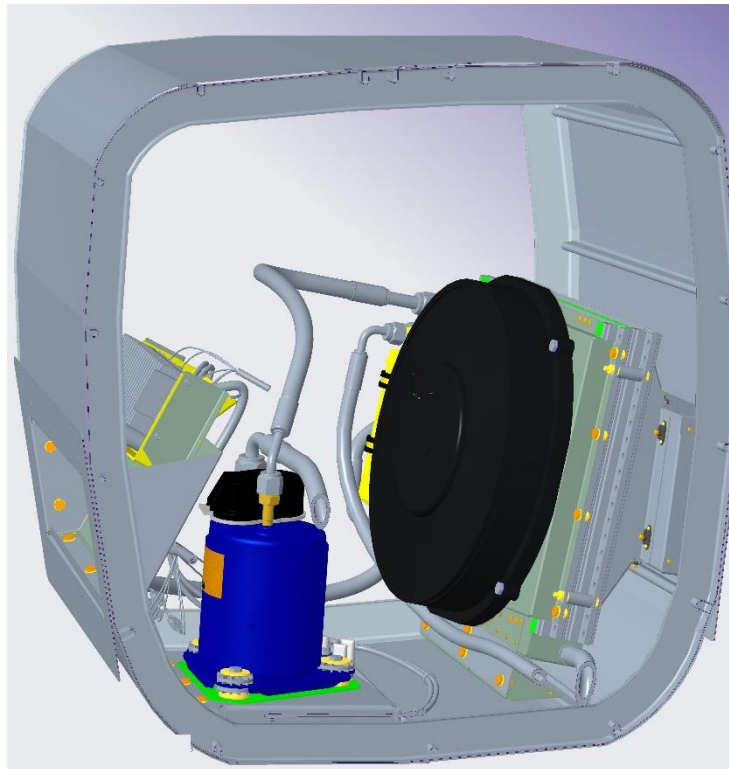


Figure 7 – Internal Condenser Installation

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Figure 8 – External Condenser Installation

D. Install the compressor assembly as shown on Drawing AC-00812. See Figure 9.

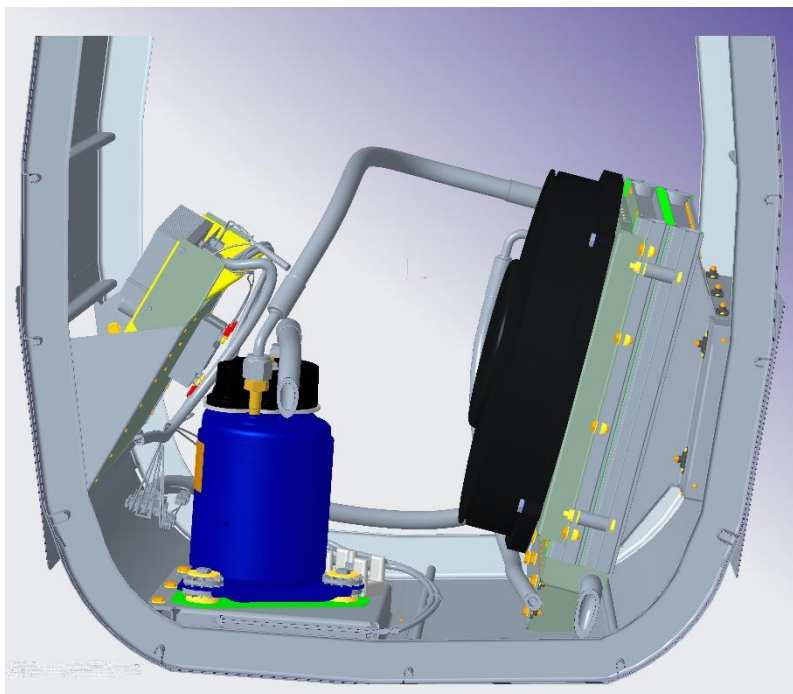


Figure 9 - Compressor Installation

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- E. Install waterdam/controller assembly as shown on Drawing AC-00862. Ensure that the installation of the waterdam/controller assembly does not catch on the control cables when fitting it in the aircraft. Make electrical connections between the compressor, controller, terminal block and fan assembly referencing AC-01290.

ENSURE ALL WIRING HARNESSSES ARE ROUTED AWAY AND OUTBOARD FROM CONTROL CABLES, SECURING WITH CABLE TIES AS NECESSARY.

See Figure 10.

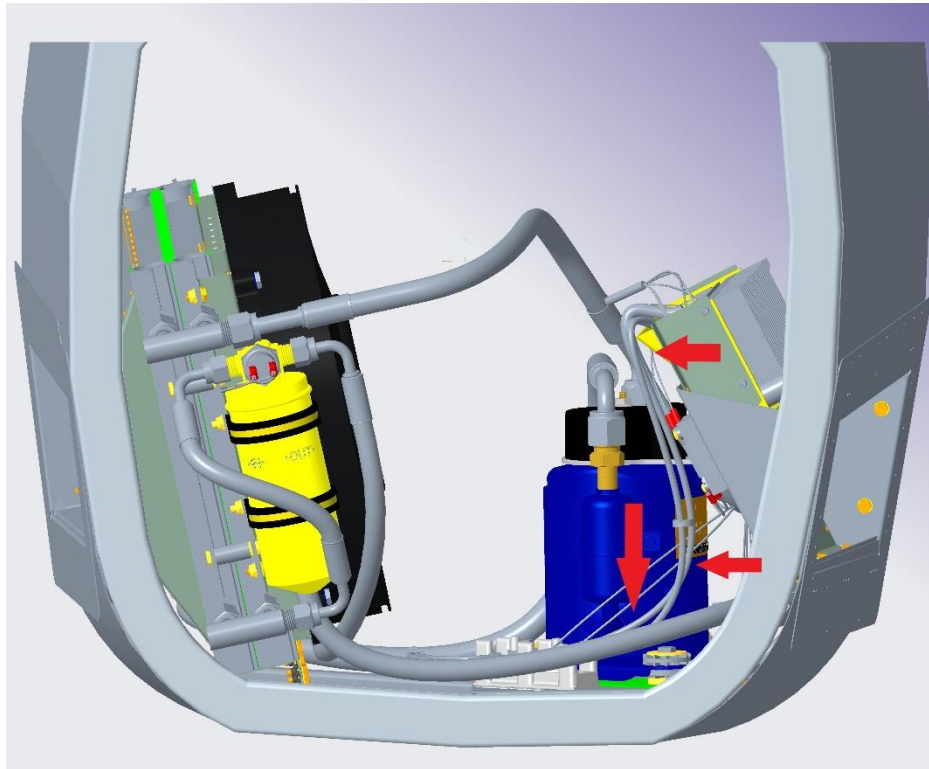


Figure 10 – Water Dam / Controller Installation

- F. Install screen assemblies per Drawing AC-00869.

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- G. The drain line tee drains both the condenser assembly and the rear evaporator assembly. Drill hole for evaporator drain line tee where required. Figure 11 and Figure 12 show typical installation behind bulkhead 152.20.



Figure 11 – Aft Evaporator Drain Location



Figure 12 – Aft Evaporator Drain Line

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- H. Drill hole for external piezo electric switch where required. Figure 13 shows the typical installation.

NOTE:

Installation of external power harness and piezo electric switch is OPTIONAL.



Figure 13 – Typical Piezo Electric Switch Installation

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- I. Drill holes and mount the current limiter holder (Lee air P/N 76655-1) on the firewall with MS24694S55, AN525-10R6, AN960-10L and AN3651032A. Reference Figure 14 below for location details.

NOTE:

Be sure selected locations for installation of components on firewall have adequate clearance for installation tools on both sides of firewall.



Figure 14 – 70 Amp Fuse
Approximate location of 70 Amp fuse located below Lamar Electrical Junction Box on Firewall

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- J. Locate and install 4200-260-047-260 Firewall Pass-Thru shown on Figure 15 in the approximate location shown on Figure 16.

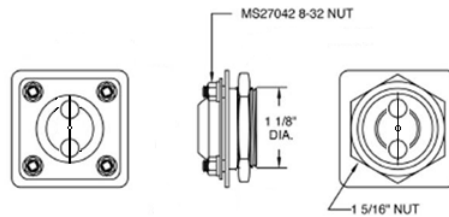


Figure 15 - Firewall Pass-Thru

- K. Route AWG 6 power and ground cables through the Firewall Pass-Thru along with the optional AWG 22 External Power Lead from the AC-00125 Piezo harness.
- L. Ground AWG 6 negative cable on firewall as shown in Figure 16.

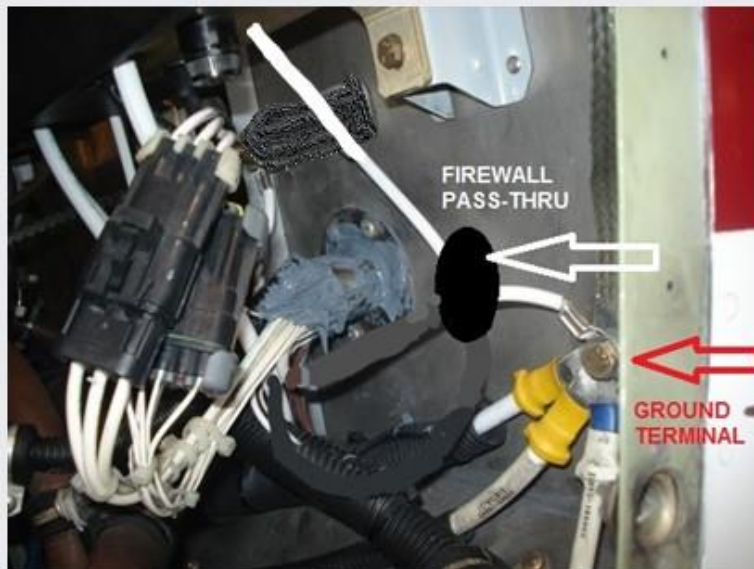


Figure 16 - Firewall Pass-Thru Location & Ground

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M. Install Rear Evaporator per Drawing AC-00814. See Figure 17 and Figure 18.



Figure 17 – Rear Evaporator Installation

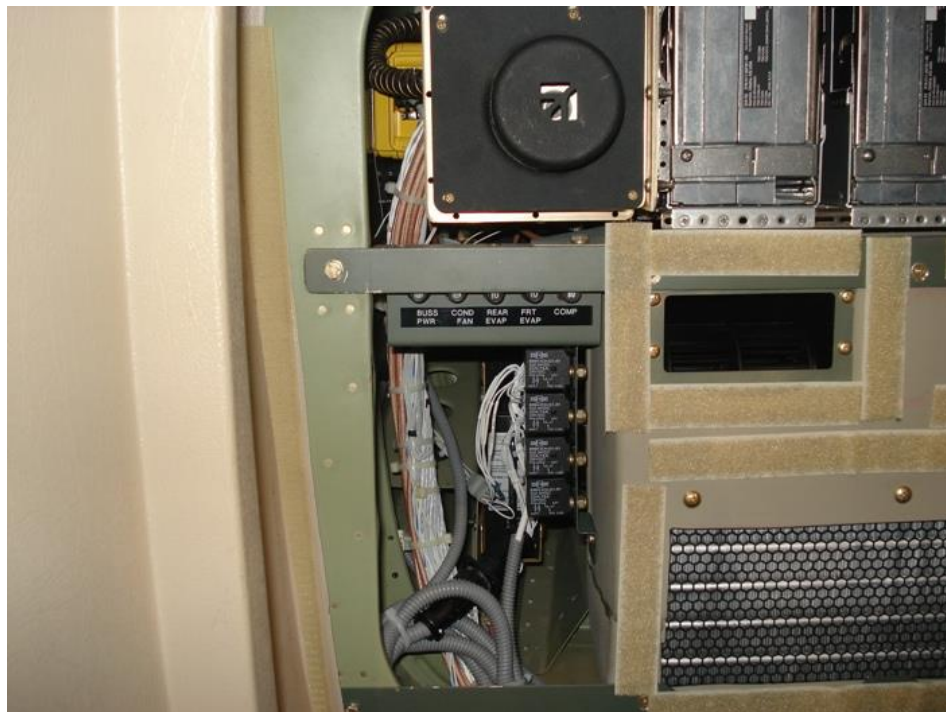


Figure 18 – Rear Evaporator Installation

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- N. Install CB-1 or CB-2 Climate Controller in instrument panel or pedestal where space permits. Reference Figure 19 below for cutout dimensions.

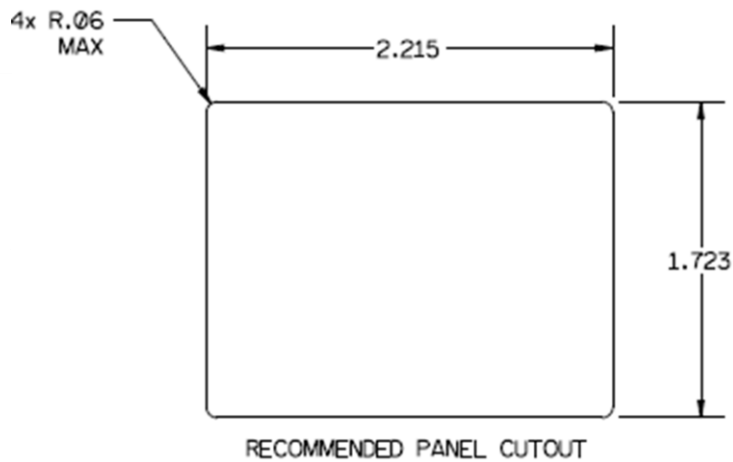


Figure 19 - CB-1 or CB-2 Panel Cutout Dimensions

7. Modification of existing components

- A. Paint reworked areas per AMM as required.

8. Wiring

- A. Reference AC-01290 and AC-00891.
- 1) All harness runs below the cabin floor should be inside conduit.
 - 2) CB-1 harness runs from copilot's instrument panel to the left aft tailcone by following the existing wiring bundles and crossing over the center line of the aircraft under the avionics/hat rack area.
 - 3) ENSURE NO CONTROL CABLE INTERFERENCE
 - 4) Reference AC-00812 for suggested routing of AC-00887 and AC-00889 power wires. Route the wires as far away from the Stormscope as possible to minimize interference.
 - 5) Sufficient wire bundle length has been provided to accommodate variations in wire routing.

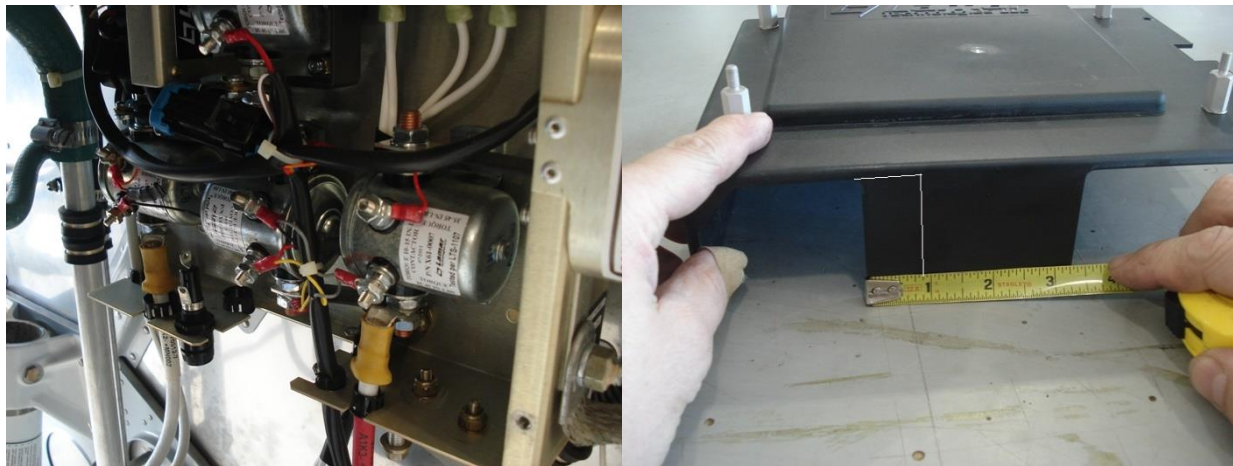
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B. Lamar box interface, see Drawing AC-01290 for wiring details

CAUTION:

All wiring added inside Lamar box will be wrapped with spiral wrap and secured where required to insure wires are protected from chaffing, sharp bends etc. Wires exiting the Lamar box will be protected with snap bushings in open spaces. Care is to be taken in routing wires so as to avoid overcrowding; this may require wiring to be routed behind relays etc.

- 1) See Drawing AC-01290 for wiring details.
- 2) See Figure 20 for modifications of the Lamar box and cover.



Trim approximately 7/8" from the inboard side of the bottom cover to expose the holes for the wire run.

Figure 20 – Junction Box Modification

- C. Make electrical connections between Rear Evaporator Assembly and Climate Controller Harness and between Rear Evaporator Assembly and Compressor Controller Harness.
 - D. External power harness AC-00125 (Optional).
 - E. See applicable Dwg# AC-01290 for all other wiring details
- 9. Installation of headliner (Optional)**
- A. Reference NC-14-013 Cessna 206 Headliner, Window Surround & Block-off Installation Instructions.

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10. Servicing

- A. Only qualified personnel with proper equipment may service this air conditioning system.
- B. Connect condenser, evaporator, and compressor hoses per Figure 21 below:

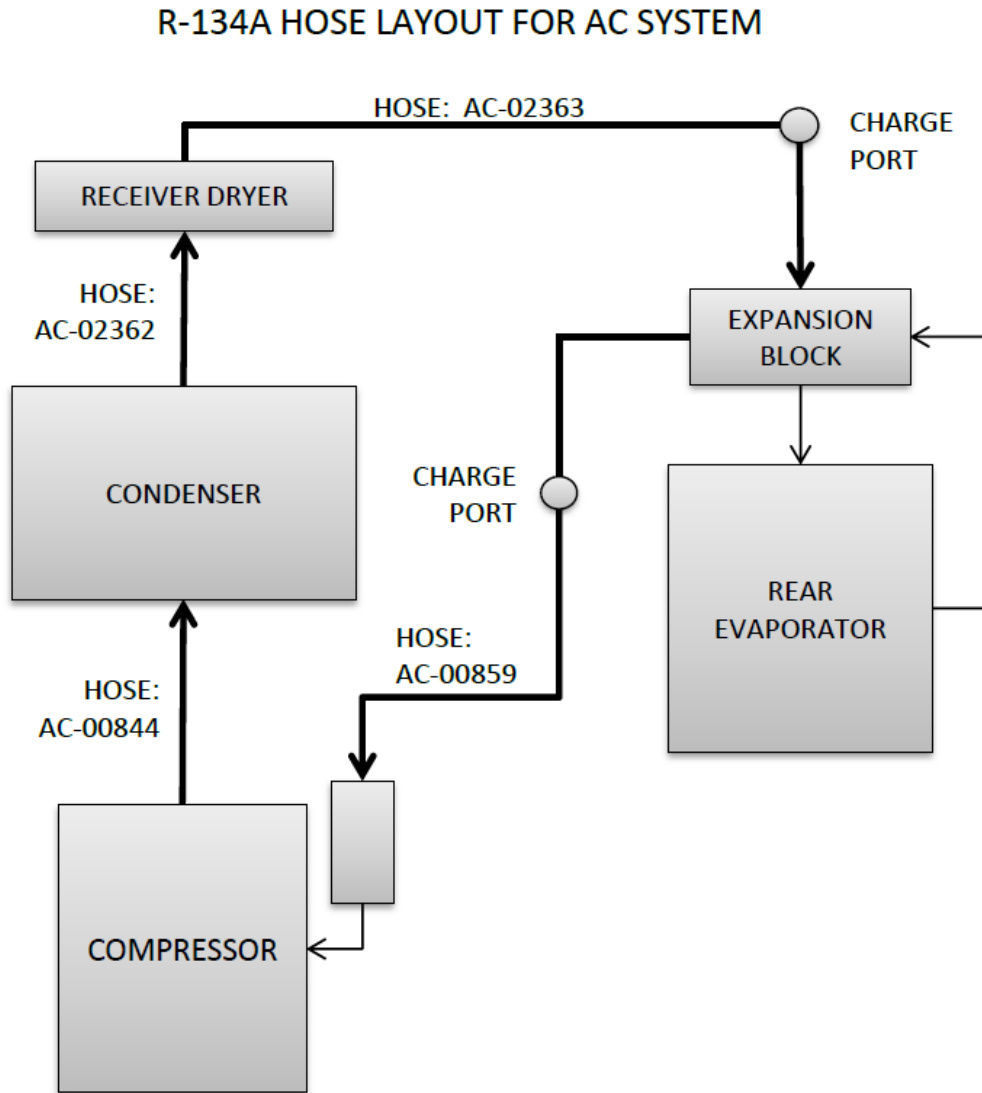


Figure 21 - R134a Hose Layout

- C. Wrap lines where required to prevent sweating with cork insulation tape P/N 4217-W3.
- D. Evacuate system and ensure no system leakage prior to charging with R-134a.
- E. Charge system with 34oz +/- 2 oz. of R-134a.

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11. Reassembly of aircraft

- A. Reinstall the following components utilizing the AMM.
 - 1) All seats
 - 2) Cup holder
 - 3) Curtain assembly, baggage net
 - 4) Right and left rear window covers
 - 5) Upper rear moldings
 - 6) Cabin carpet
 - 7) Aft black plastic close out
 - 8) Floor inspection panels when/as required
 - 9) Lamar electrical box cover
- B. Reinstall aircraft battery per the Cessna Aircraft Maintenance Manual (AMM)
- C. Reinstall the engine cowling per (AMM)

12. Special inspection for cable routing

- A. A safety check **MUST** be performed to ensure the installation of the Waterdam/Controller Assembly has not interfered with the control cables.
 - 1) Remove access panel number 310AB (P/N: 1212439-1) from the bottom of the tailcone.
 - 2) Inspect the rudder cable routing to verify that the rudder cable is routed properly and is not caught any components. There should be approximately 1” or more clearance between the any KATS components and the rudder control cable at the narrowest point. See **Error! Reference source not found.**
 - 3) If the cable is found to be routed incorrectly, the cable routing must be corrected and the cable inspected for damage by a licensed airframe mechanic before flight.

13. Perform operational tests of air conditioning system.

- A. Plug in external power and energize.
- B. Turn Master switch on.
- C. Turn Climate Controller on.
- D. Cabin temp should be displayed.
- E. Select fans up and fan speed should correspond.
- F. Drive cabin temp requested below ambient temp by at least 10 degrees F.
- G. Outlets should flow air 20-30 degrees cooler than ambient.
- H. Turn climate controller off.
- J. Cycle external power.
- K. Rub piezo electric switch located near the external power plug (if installed).
- L. Air conditioning should come on full cold and full fan.
- M. Again outlets should be 20-30 degrees cooler than ambient.
- N. Unplug external power and air conditioning will turn off.
- O. Check that water is coming from evaporator drain line, water will not be present only if atmosphere is extremely dry, so if no water is flowing check for hose continuity to evaporator plenum.
- P. If any items do not operate as described, troubleshoot system and correct discrepancies.
- Q. Aircraft will need to be located in a run up area to complete this section
- R. Utilizing qualified personnel operate the aircraft engine per the Pilot Operating Handbook
- S. If further assistance is needed contact Kelly Aerospace Thermal Systems technical support at (440) 951-4744.

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14. Return to service

- A. Update aircraft Weight and Balance records.
- B. Install Approved Flight Manual Supplement.
- C. Complete FAA form 337.
- D. Make aircraft log book entry.