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**Baron & Bonanza Air Conditioning
Short Duct Installation Manual**

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REVISION HISTORY

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A	Initial release, ref ECN 19-028	1/9/20
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EFFECTIVITY

Beechcraft Baron and Bonanza aircraft types with an overhead panel plenum (P/N: 550014-3). Reference the following serial numbers and Figure 1...

Baron models 58 and 58A, serials TH-175 thru TH-1079 (except TH-1027, TH-1062 and TH-1067).

Baron models 95-B55 and 95-B55A, serials TC-1403 thru TC-2339 (except TC-2335).

Baron models E55 and E55A, serials TE-847 thru TE-1180.

Bonanza model A36, serials TE-238 thru TE-1370.

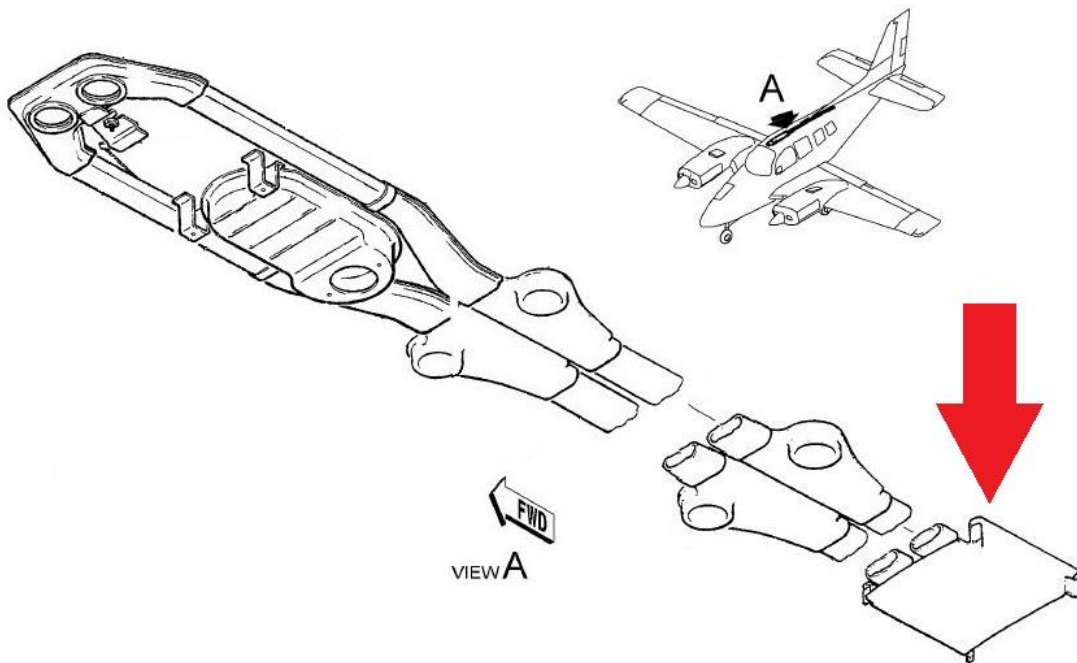


Figure 1 - Beechcraft P/N: 550014-3 Plenum

PURPOSE

This document provides instructions for the installation of a Kelly Aerospace Thermal Systems (KATS) Air Conditioning System Short Duct for various Baron and Bonanza aircraft serial numbers.

OVERVIEW

For effective aircraft, fresh air is supplied from the dorsal inlet to the overhead ducts via the 58-550014-3 plenum. The KATS Air Conditioning System makes use of this existing cabin air ducting system by connecting to the plenum just forward of the rear cabin bulkhead.

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SHORT DUCT INSTALLATION

Read through these instructions in their entirety before beginning so as to familiarize yourself with the installation before work begins.

- A. Remove interior trim, panels and upholstery and set aside for re-use.
- B. Trim the protruding outlet of AC-02560 Evaporator Outlet Assembly as necessary so that it only extends just past the bulkhead (and through the hat shelf if present) by about an inch. Seal any gaps at the bulkhead with RTV or equivalent. See Figure 2.



Figure 2 – AC-02560 Evaporator Outlet Trimmed Down

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- C. Carefully cut a 5" x 5" square window centered in the ceiling plenum (Beechcraft P/N: 58-550014-3) between FS 170 and FS 179. The forward edge of the window should be 1.5" aft of the two mounting holes. Ensure stringers or other support structures are not damaged behind the plate when cutting the window. See Figure 3. If the two mounting holes are not present, add them by installing (2) MS21059L08 #8-32 nutplates centered to the fuselage, approximately 2" apart and 1-14/32" back from the front of the plenum (reference circled mounting holes in Figure 4).

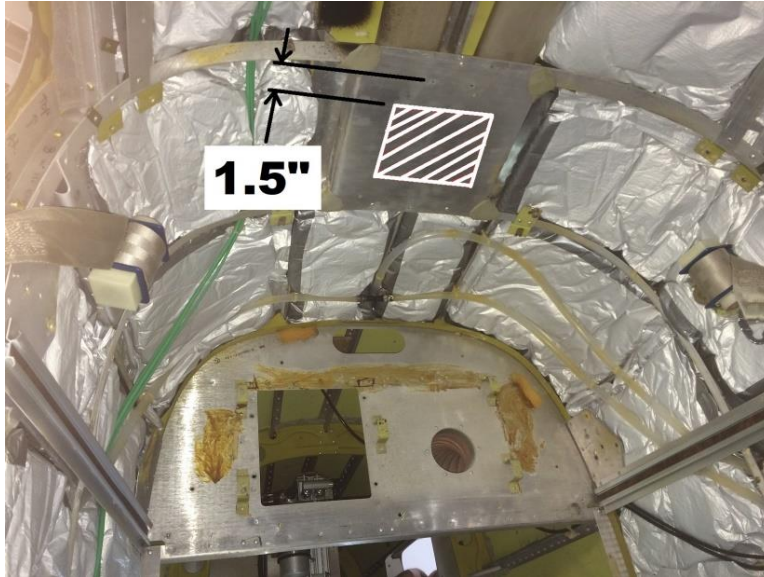


Figure 3 - Ceiling Cut Out

- D. Add (4) MS21059L08 #8-32 nutplates around the perimeter of the window as shown with arrows in Figure 4.

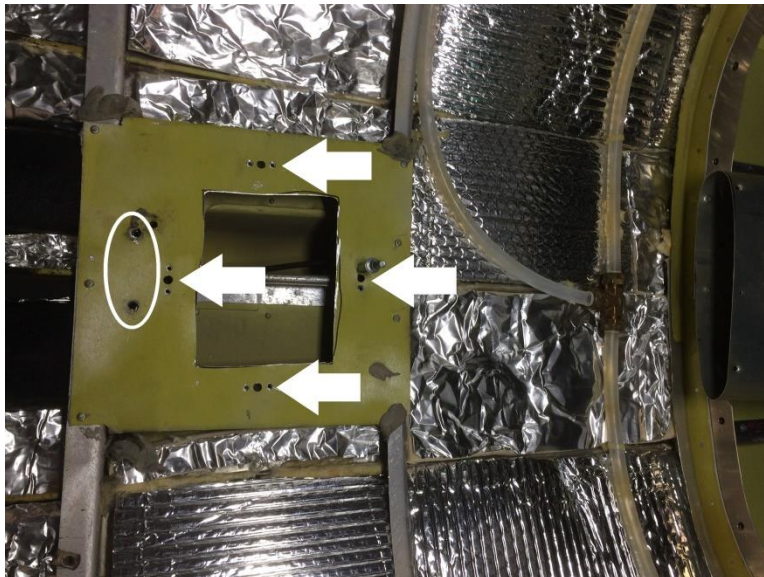


Figure 4 - Nutplates and Attachment Points

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- E. Frame the newly cut window with 4218-W3 Foam, cutting holes where necessary for clearance for nutplate and attachment holes. See Figure 5.

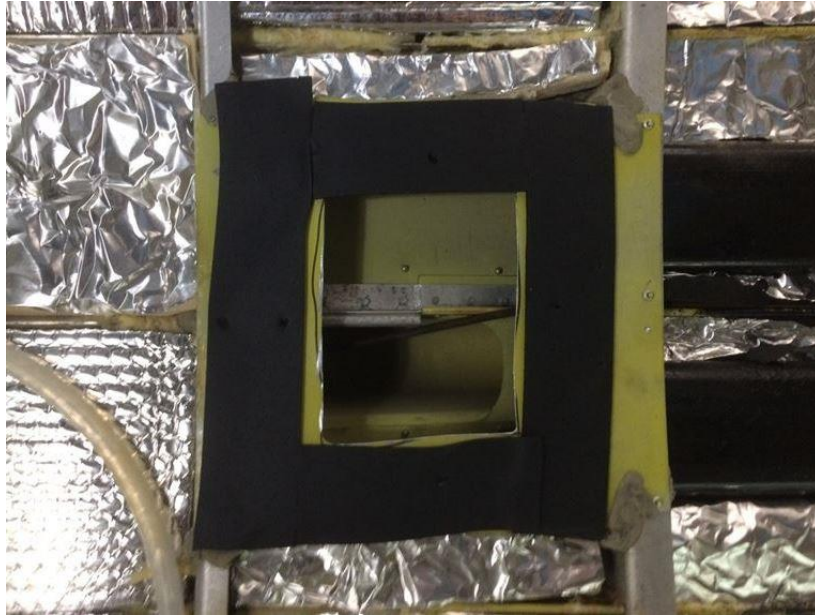


Figure 5 - Frame Cutout with Foam

- F. For most aircraft, a (Beechcraft P/N: 58-530137-79, -81, -82, -87, -89 or -90) aft headliner panel is installed over the cargo area (see Figure 6). For aircraft with this configuration, proceed to step “G”. Some aircraft will have a single-piece hat shelf (Beechcraft P/N: 96-534011-5) installed over a closed-off section of the cargo area (see Figure 7). For aircraft with this configuration, skip step “G” and proceed to step “H”.



Figure 6 - Headliner Panel

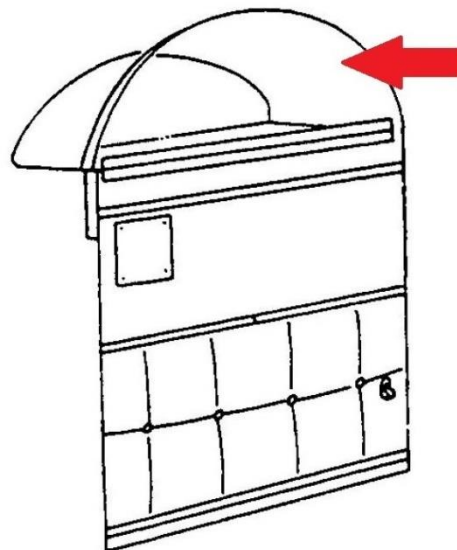


Figure 7 - Hat Shelf over Cargo Area

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G. For aircraft with an aft headliner panel installed over the cargo area, complete the following steps.

- 1) Cut a 5" x 5" window into the ceiling trim piece that aligns with the window cut in step "C". Rivet AC-02218 and AC-02219 Rear Duct Brackets to the trim piece using (18) 97447A015 Rivets. The brackets should straddle the window cutout so that they sit against the bulkhead and are centered 7.15" apart. See Figure 8.



Figure 8 - Cut Window and Attach Brackets

- 2) Trim the AC-02040 Duct Cover to size by locating it over the brackets and evaporator outlet. Match drill two holes to align with the forward mounting holes (reference step C) and temporarily affix the Duct Cover into place with (2) MS35206-245 Screws. Keep in mind while trimming the Duct Cover that the bulkhead trim piece will be in place during final installation. Match drill into the Duct Cover the attachment holes on each side for the brackets. Remove the two attachment screws and Duct Cover and set aside for re-use. At this point, the Duct Cover may be finished in one of three options per the installer or customer discretion.
 - a) No finish, the Duct Cover will be installed in an "AS IS" condition.
 - b) Finish by applying Bulldog Adhesion Promoter or equivalent, and then spray paint desired color using Krylon Paint+Primer Gloss (for plastics) or equivalent.
 - c) Finish by wrapping Duct Cover with aircraft grade upholstery.

- 3) Seal all edges and gaps with 4218-W3 foam. Attach the ceiling trim piece 4 places around the window cutout with (4) MS35206-245 Screws. See Figure 9.



Figure 9 - Seal All Edges

- 4) *For aircraft with a cabin air exhaust grill (Beechcraft P/N: 35-534445-5) only*; remove the two upper middle screws from the vent screen. Slip AC-02092 Hatrack Duct Hanger Rear behind the screen and re-attach the screws so that it sits just below the Evaporator Outlet Assembly. See Figure 10.

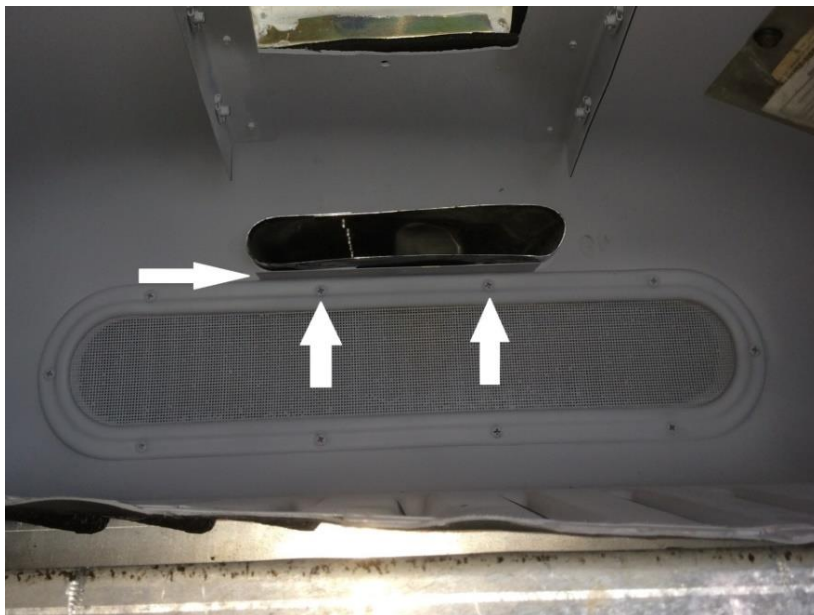


Figure 10 - Install Duct Hanger Rear

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- 5) Attach the Duct Cover with (6) MS35206-245 Screws and (6) 39110C Washers along the sides and front. Install (1) 90190A192 Screw aft if AC-02092 (reference step 4) was installed. Re-attach any other hangers or hardware to the ceiling trim. See Figure 11.



Figure 11 - Installed Duct Cover with Headliner Panel

- H. For aircraft with a single-piece hat shelf (Beechcraft P/N: 96-534011-5) installed over a closed-off section of the cargo area, complete the following steps.

- 1) Affix the AC-02075 Cabin Inlet Duct Assembly to the front of the Evaporator Assembly with (5) AN3-4A Bolts, (5) AN960-10L Washers and (5) AN365-1032A Nuts and re-using the two AN Bolts on the face of the Evaporator. Use caution when removing the bolts on the Evaporator face for re-use as they are the main attachment hardware for the front of the Evaporator to the Support Assembly. See Figure 12.



Figure 12 - Cabin Inlet Duct

- 2) Take the hat shelf trim piece and cut a 5" x 5" square hole that will align with the previously cut hole in the plenum (ref. step "C"). Cut an oval window in the hat shelf trim piece that will align with the Evaporator Outlet Assembly. Fasten AC-02088 and AC-02089 Hatrack Duct Hanger Assemblies centered to the cutouts and 7.15" apart with (6) MS20470AD3-4 rivets. Seal any gaps between the hat shelf trim piece and the square cut out or Evaporator Outlet Assembly with foam and/or RTV caulk. Attach the hat shelf piece 4 places around the window cutout with (4) MS35206-245 Screws. See Figure 13.



Figure 13 - Hat Shelf Trim Piece Alteration

- 3) *For aircraft with a cabin air exhaust grill (Beechcraft P/N: 35-534445-5) only;* remove the two upper middle screws from the vent screen. Slip AC-02092 Hatrack Duct Hanger Rear behind the screen and re-attach the screws so that it sits just below the Evaporator Outlet Assembly. See previous Figure 10.
- 4) Trim the AC-02040 Duct Cover to size by locating it over the brackets and evaporator outlet. Match drill two holes to align with the forward mounting holes (reference step C) and temporarily affix the Duct Cover into place with (2) MS35206-245 Screws. Match drill into the Duct Cover the attachment holes on each side for the brackets. Remove the two attachment screws and Duct Cover and set aside for re-use. At this point, the Duct Cover may be finished in one of three options per the installer or customer discretion.
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 - c) Finish by wrapping Duct Cover with aircraft grade upholstery.

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- 5) Line the Duct Hangers and other areas as require with 8694K16 Foam to create an airtight seal when the Duct Cover is fit into place. Attach the Duct Cover to the hangers and hat shelf trim with (2) MS35206-245 Screws fore, (4) MS35206-245 Screws through the sides into the nutplates and (6) 39110C Washers. Install (1) 90190A192 Screw aft if AC-02092 (ref. step H3) was installed. See Figure 14.



Figure 14 - Installed Duct Cover in Hat Shelf

- I. Test Air Conditioning System air flow and check for leaks, sealing with foam or caulk as necessary. Short Duct installation is now complete.