TOTAL PERFORMANCE
VAN'S AIRCRAFT
14401 Keil Road NE, Aurora, Oregon, USA 97002
PHONE 503-678-6545 • FAX 503-678-6560 • www.vansaircraft.com • info@vansaircraft.com
Service Letters and Bulletins: www.vansaircraft.com/public/service.htm

REVISION DESCRIPTION:

Since all the KAI pages regarding W&B and the Installed Equipment list are similar, only a general description of the two types of changes made to various sections is provided below. These changes resulted from relocating the Weight and Balance Worksheet and the Installed Equipment List.

a. The Installed Equipment List was moved to the Maintenance Manual from the POH.
b. The Weight and Balance Worksheet and W&B-2 (the blank page that followed) were moved to the Maintenance Manual (Rev 9) from the Production Acceptance Procedure. The "WEIGHT AND BALANCE RECORD" page was page W&B-2 of the RV-12 Production Acceptance Procedures.

Example: Following is an example of how this change affected S*ection 44A Skyview Autopilot Servos*.
"Step 6: In the RV-12 Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, mark the "DYNON AUTOPILOT SERVO" as installed in the "INSTALLED" column.
Enter 4.6 lb for "Weight" , 101.5 in for "Location/Arm" and 467 in-lb "Moment" onto the same line as "DYNON AUTOPILOT SERVO".

NOTE: The remaining steps on this page are only applicable to a flying aircraft.
Step 7: In the RV-12 Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.
Step 8: In the RV-12 POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.
Step 9: Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12 Maintenance Manual as follows:
As of this date: ___/___/___"
was
"Step 6: On Page 4-2 SkyView and 4-4 of the RV-12 Pilot Operating Handbook: Enter the text "AUTOPILOT" onto a blank line under the "ITEM" column in both tables.
Enter 4.6 lb for "Weight" , 101.5 in for "Location/Arm" and 467 in-lb "Moment" onto the same line as "AUTOPILOT" in both tables.
Recalculate and enter new values for the Empty Weight, Empty Moment and Empty Arm on Page 4-4 of the POH.
Step 7: Make an entry on page W&B-2 of the RV-12 Production Acceptance Procedures as follows:
As of this date: ___/___/___"

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The changes described above were applied to the following pages. The updated Rev level is listed:
40-15 (Rev 2)
43-11 (Rev 2)
43B-08 (Rev 2)
43C-07 (Rev 1)
44A-05 (Rev 4)
44B-10 (Rev 1)
53-12 (Rev 3)
53B-06 (Rev 1)
58-06 (Rev 1)
61-08 (Rev 1)

Additional changes were also made and are described below in the usual manner.

Page 44A-04 REV 3: Add “(WITH FLAPS UP AND WITH FLAPS DOWN)” to the WARNING.

Page: 44B-03 REV 1: Add: "Step 4: Insert the bolt that will attach the Pitch Servo Pushrod Assembly to the arm of the Garmin GSA 28 Autopilot Servo. See Figure 2." Repaginate remaining steps.

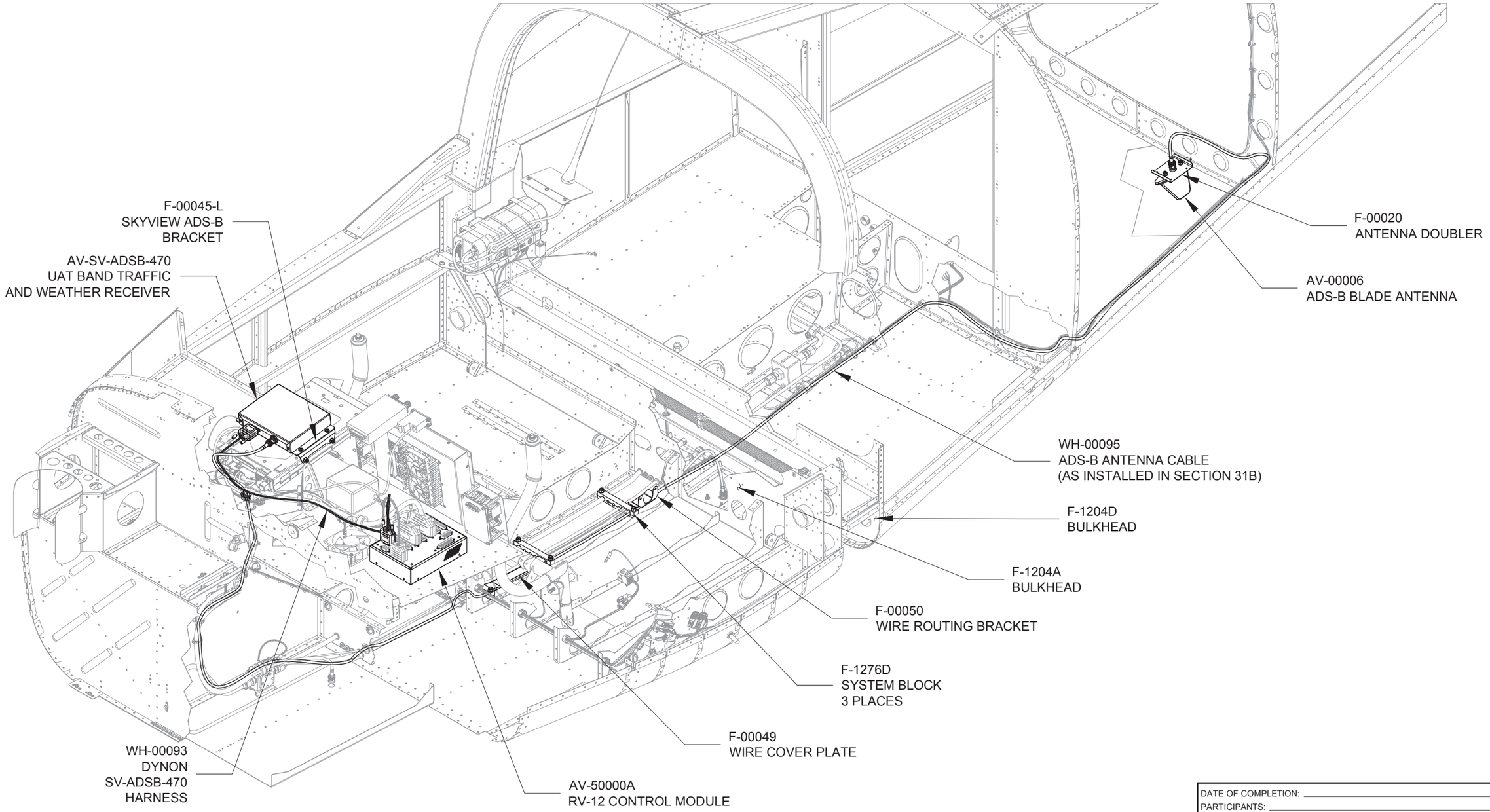
Page 44B-06 REV 1: Add “(WITH FLAPS UP AND WITH FLAPS DOWN)” to the WARNING.

Page 44B-07 REV 2: Show additional cut lines for GMC 307 in Figure 2.
Add “**(GMC 305)**” after hardware callouts in Figure 2.

Page: 53-10 REV 2: Deleted fuse amperage values shown in Figure 2, except for GPS ADSB, "2" AMP.

Page: 53B-05 REV 1: Deleted AMP values from fuses in Figure 2, except for GPS ADSB, "2" AMP.

SECTION 53:
SKYVIEW ADS-B



DATE OF COMPLETION: _____
PARTICIPANTS: _____

NOTE: If performing this installation on a completed aircraft refer to the Maintenance Manual Chapter 13 for instructions on draining the fuel tank.

Step 1: Remove the wings (if installed).

Remove the Top Cowl per Section 38.

Remove the F-1240 Upper Forward Fuselage Skin per Section 29A.

Remove the WH-P149 (WHT) Battery Ground Cable from the negative battery terminal per Section 45A.

Remove the Seats and Seat Backs.

Remove the F-1276B Cover Plates and Fuel Tank Assembly per Section 37.

Remove the F-1207F Baggage Bulkhead Corrugation per Section 26 and Section 33.

NOTE: The remaining steps on this page only apply if the WH-00095 ADS-B Antenna Cable is not yet installed. See Section 31B.

Step 2: Remove the F-1230 Tunnel Cover, Detent Bracket Assembly, F-1228 Seat Floor Cover, F-1229 Baggage Floor Cover and F-1206E Baggage Cover per Section 33.

Remove both Flaperon Pushrod Assemblies per Section 32.

Remove the Flap Handle/Pushrod Assembly and both F-1262 Flap Handle Blocks per Section 32.

Remove the upper F-1276C Systems Blocks per section 31B. Discard the blocks as they will be replaced with F-1276D Upper System Blocks.

Step 3: Move aside electrical, brake and control cable system routings on the upper and lower side of the F-1202B Panel Base in the area near the hole shown in Figure 1 that will be added to the panel base.

From the lower side drill #30 a pilot hole using the dimensions given in Figure 1.

If your drill / bit combination is too long to allow drilling normal to the surface of the panel base, temporarily remove the AV GARMIN SL40 Com Radio and tray then drill from the upper side. See Page 42C-07. Reinstall just the tray when finished.

Use a step drill to enlarge the #30 hole to 3/4. Check that the edges of the hole are deburred.

Step 4: Install a snap bushing into the hole made in Step 3.

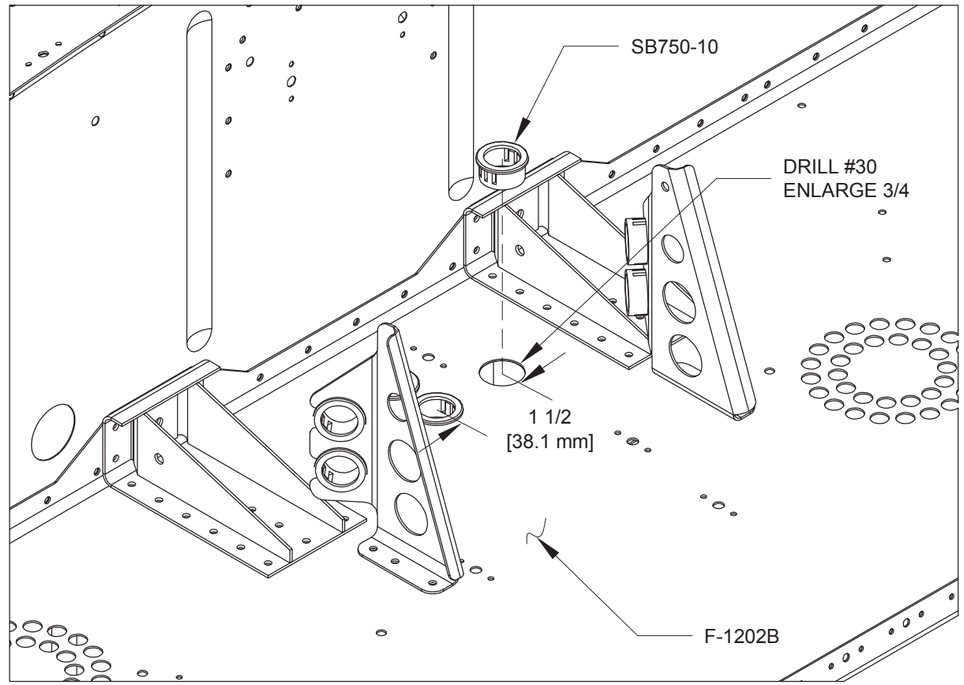


FIGURE 1: ADDING A WIRING HOLE TO THE PANEL BASE
(SOME PARTS NOT SHOWN FOR CLARITY)

NOTE: Steps 1 and 2 on this page only apply if the WH-00095 ADS-B Antenna Cable is not yet installed.

Step 1: Drill 3/4 and deburr a new wiring hole in the F-1204A Bulkhead as shown in Figure 1.

Install a snap bushing in the hole as shown in Figure 1.

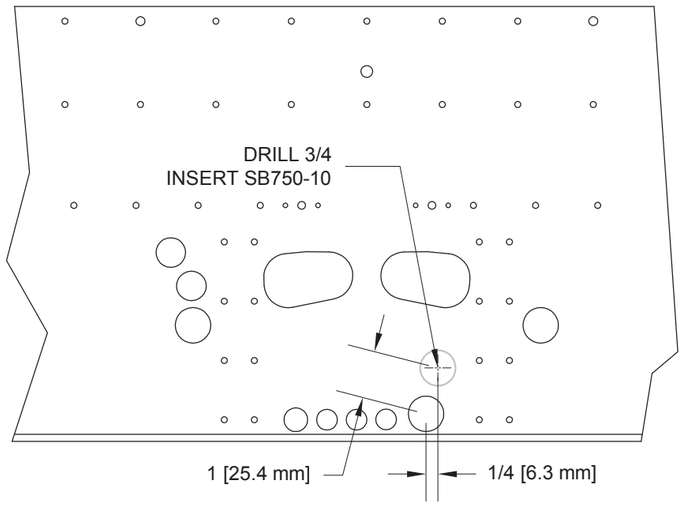


FIGURE 1: MODIFYING F-1204A
(FRONT CUTAWAY VIEW)

Step 2: Drill 3/4 and deburr a new wiring hole in the F-1204D Bulkhead as shown in Figure 2.

Install a snap bushing in the hole as shown in Figure 2.

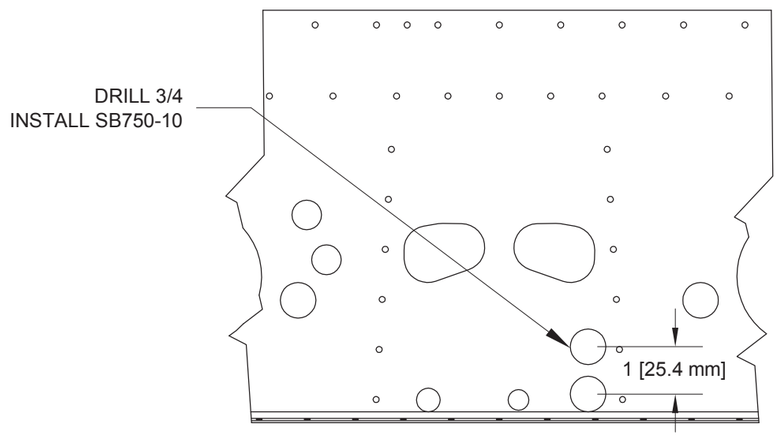


FIGURE 2: MODIFYING F-1204D
(FRONT CUTAWAY VIEW)

NOTE: Skip Step 3 and Step 4 if installing the Garmin GTR-200.

Step 3: Label and separate the F-00045-L & -R SkyView ADS-B Brackets as shown in Figure 3 by removing the hatched areas.

Deburr the edges of both parts.

Step 4: Machine countersink the nutplate attach holes in the F-00045-L & -R SkyView ADS-B Brackets as shown in Figure 3.

Rivet nutplates to the brackets using the hardware called out in Figure 3.

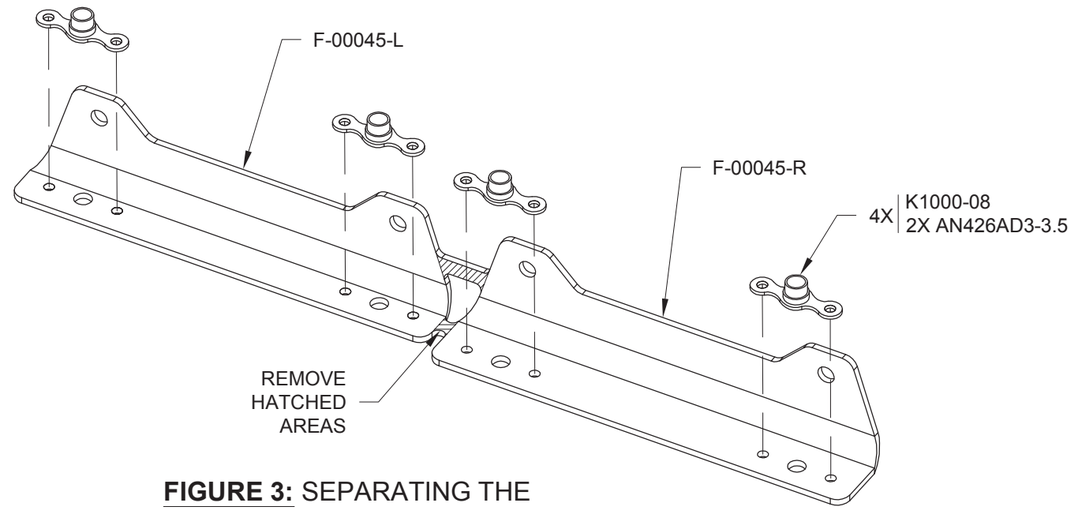


FIGURE 3: SEPARATING THE
ADS-B BRACKETS

Step 5: Separate the F-00020 Antenna Doublers by removing the hatched area shown in Figure 4. Discard one part.

Deburr the edges of the remaining doubler.

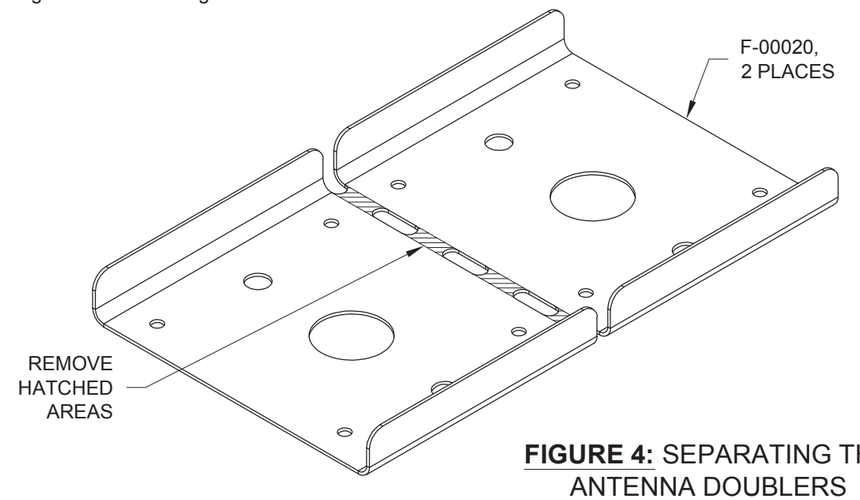


FIGURE 4: SEPARATING THE
ANTENNA DOUBLERS

NOTE: This page covers the Garmin SL-40 installation. For Garmin GTR-200 installation skip to Page 53-05.

Step 1: Remove the AV GARMIN SL40 Com Radio from its tray. See Page 42C-07 and Figure 1.

Step 2: Install the F-00045-L & -R SkyView ADS-B Brackets to the AV GARMIN SL40 Com Radio Tray using the hardware called out in Figure 1.

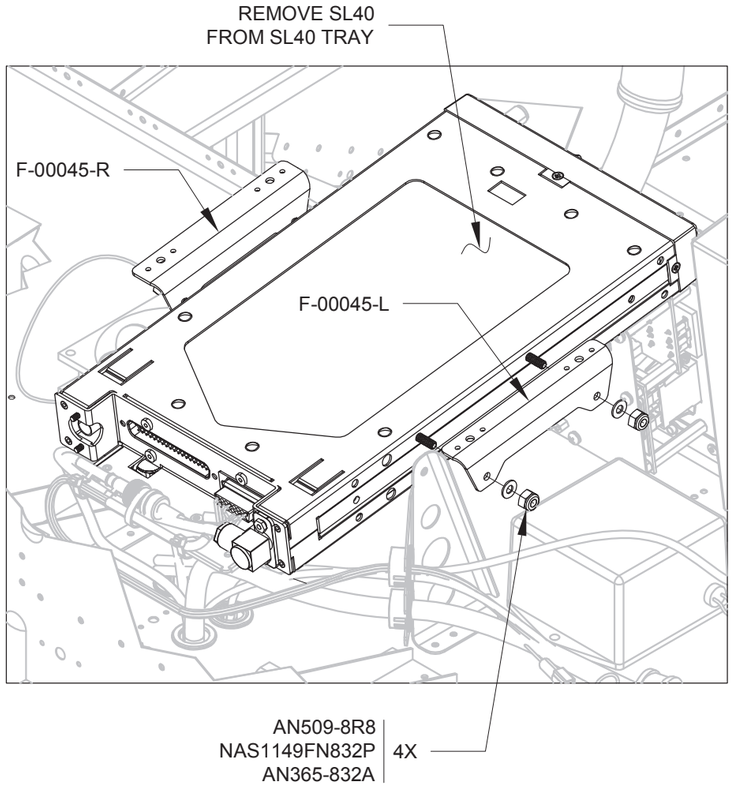


FIGURE 1: INSTALLING THE ADS-B BRACKETS

Step 3: Install the SV-ADSB-470 UAT Band Traffic and Weather Receiver to the F-00045-L & -R SkyView ADS-B Brackets using the hardware called out in Figure 2.

Step 4: Connect the WH-00093 SV-ADSB-470 Harness 9-pin d-sub with a WHT label to the SV-ADSB-470 UAT Band Traffic and Weather Receiver. See Figure 2.

Route the harness through a snap bushing in the F-00027-L Com Support and Cushioned Clamp near the left ES CPU FAN.

Connect the remaining 9-pin d-sub with a BLU label to the ADS-B Connector location on the AV-50000A RV-12 Control Module.

Step 5: Connect the end of the WH-00095 ADS-B Antenna Cable with the red band of heatshrink to the AV-SV-ADSB-470 UAT Band Traffic and Weather Receiver as shown in Figure 2.

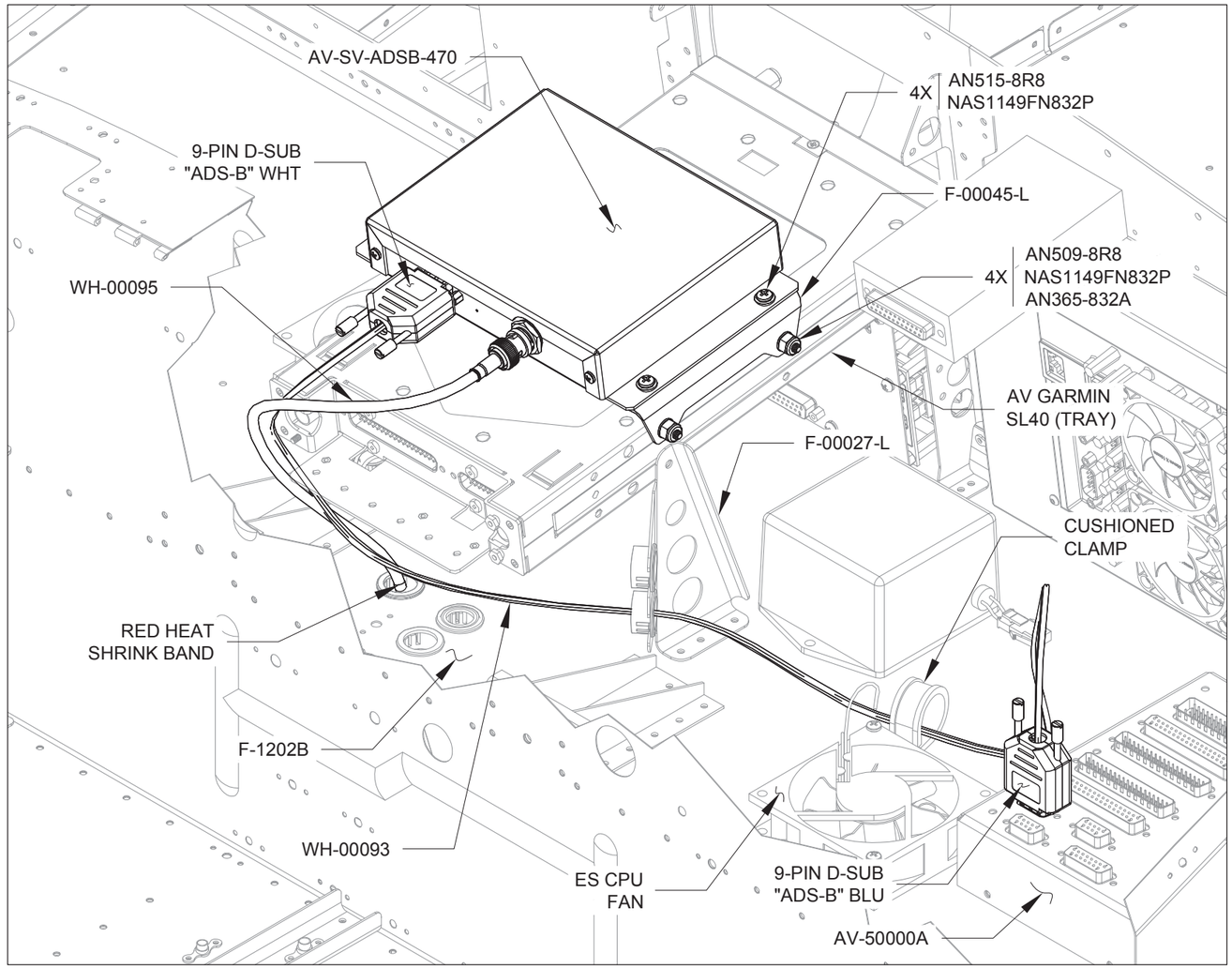


FIGURE 2: INSTALLING THE UAT RECEIVER

NOTE: This page covers the Garmin GTR-200 installation. For Garmin SL-40 installation skip to Page 53-07.

Step 1: Label and separate the F-00045B-L & -R Garmin ADS-B Brackets as shown in Figure 1 by removing the hatched areas.

Deburr the edges of both parts.

Step 2: Machine countersink the nutplate attach holes in the F-00045B-L & -R Garmin ADS-B Brackets as shown in Figure 1.

Rivet nutplates to the brackets using the hardware called out in Figure 1.

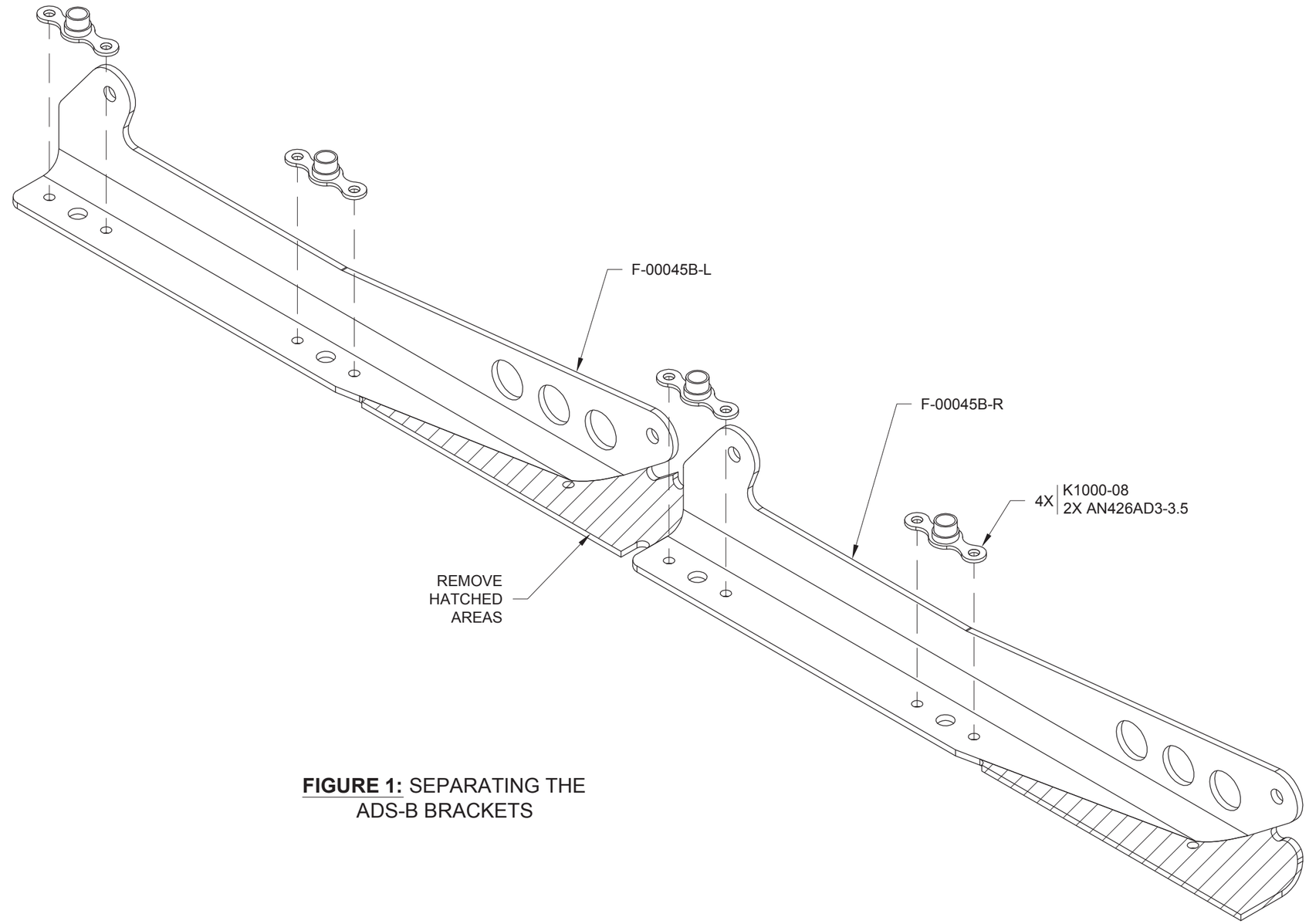


FIGURE 1: SEPARATING THE ADS-B BRACKETS

NOTE: This page covers the Garmin GTR-200 installation.

Step 1: Remove the AV GARMIN GTR200 Com Radio from its tray. See Page 42G-03 and Figure 1.

Step 2: Install the F-00045B-L & -R GARMIN ADS-B Brackets to the AV GARMIN GTR200 Com Radio Tray using the hardware called out in Figure 1.

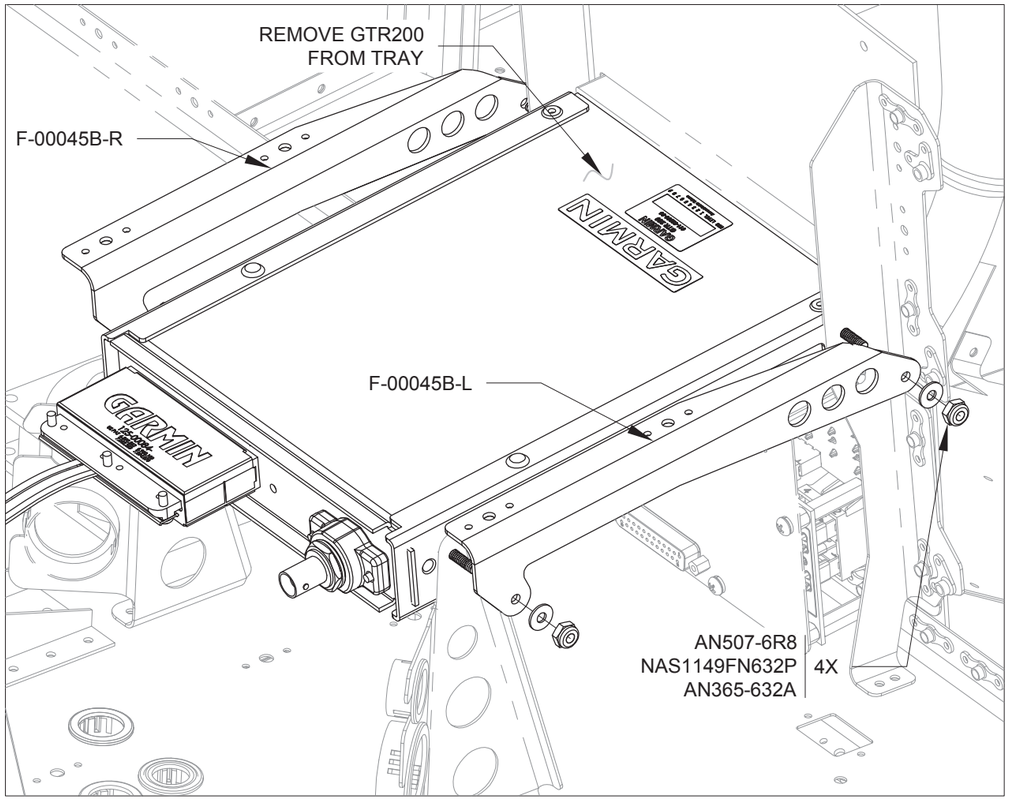


FIGURE 1: INSTALLING THE ADS-B BRACKETS

Step 3: Install the SV-ADSB-470 UAT Band Traffic and Weather Receiver to the F-00045B-L & -R GARMIN ADS-B Brackets using the hardware called out in Figure 2.

Step 4: Connect the WH-00093 SV-ADSB-470 Harness 9-pin d-sub with a WHT label to the SV-ADSB-470 UAT Band Traffic and Weather Receiver. See Figure 2.

Route the harness through a snap bushing in the F-00055-L Com Support GTR-200 and Cushioned Clamp near the left ES CPU FAN.

Connect the remaining 9-pin d-sub with a BLU label to the ADS-B Connector location on the AV-50000A RV-12 Control Module.

Step 5: Connect the end of the WH-00095 ADS-B Antenna Cable with the red band of heatshrink to the AV-SV-ADSB-470 UAT Band Traffic and Weather Receiver as shown in Figure 2.

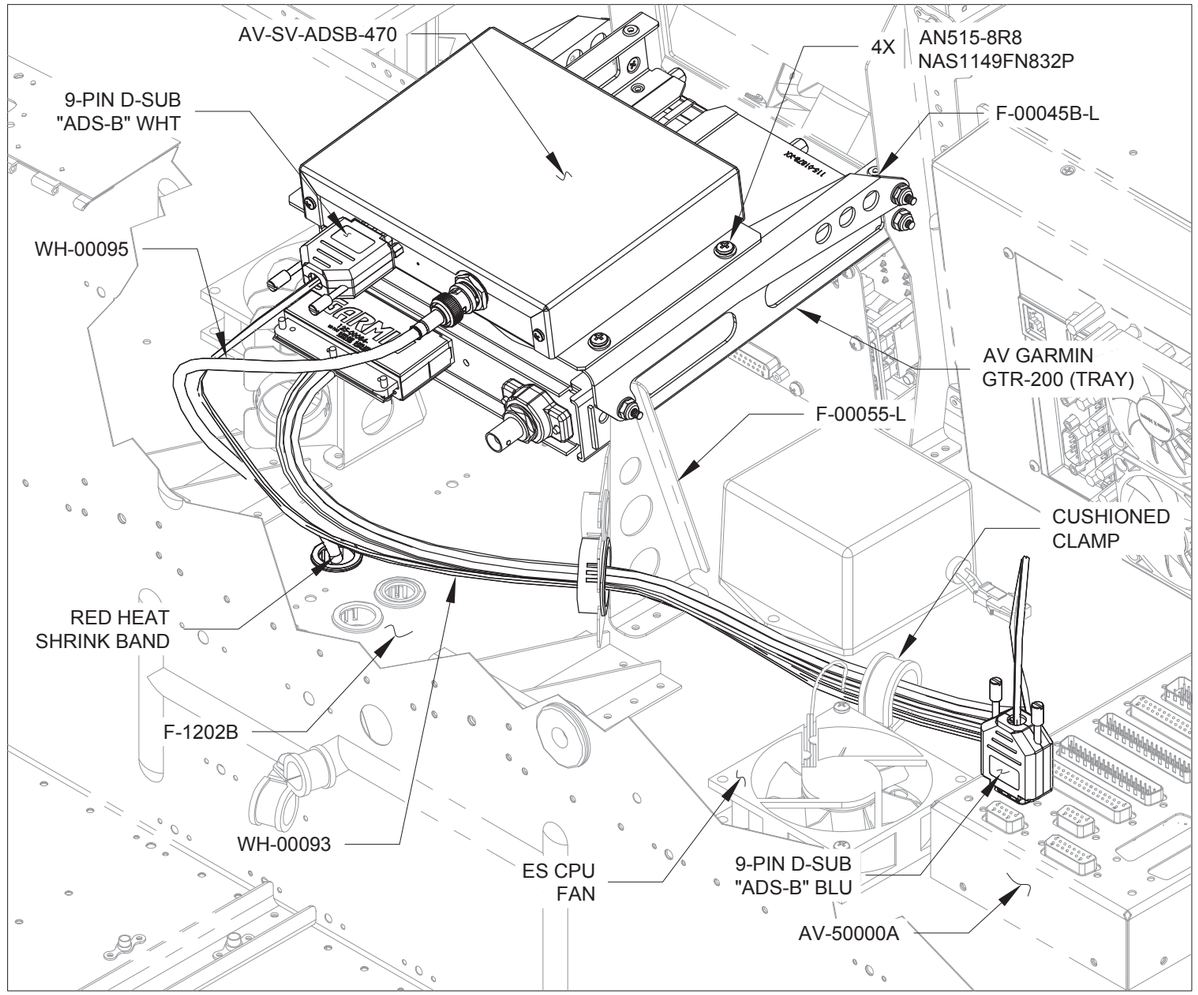


FIGURE 2: INSTALLING THE UAT RECEIVER

NOTE: The steps on this page only apply if the WH-00095 ADS-B Antenna Cable is not yet installed. See Section 31B.

Step 1: Use a bench vice and plastic hammer to bend the F-00049 Wire Cover Plate flanges as shown in Figure 1.

Bend the wire cover plate by hand as necessary to cover the wires as shown in Figures 1 and 2.

Step 2: Route the free end of the WH-00095 ADS-B Antenna Cable through the snap bushing added to the F-1202B Panel Base on Page 53-02. Align the red band of heat shrink with the snap bushing. Tie-wrap the cable to the WH-00050 Transponder Antenna Cable (see Page 42C-09).

Step 3: Loosen the fasteners holding the rudder pedals and wire way, lowering them slightly to allow room for a BNC connector to pass between the pedals and the firewall through the F-12125 Over Rudder Wireway (see Page 31B-25). Pass the WH-00095 ADS-B Antenna Cable through the space then tighten the rudder pedals and wireway back into place.

Step 4: Route WH-00095 ADS-B Antenna Cable through the cushioned clamp next to the fuel flow sender as shown in Figure 3.

Using Figure 2 and Section 31B as reference route the cable through the upper snap bushings for wire routing in the F-1202F and F-1203A Bulkheads.

Route the cable through the F-1276C Systems Blocks then install the F-00049 Wire Cover Plate and the F-1276D System Blocks. Adjust the wire cover plate to avoid any interference with adjacent parts.

Step 5: Route WH-00095 ADS-B Antenna Cable aft through the upper snap bushings just added to the F-1204A and F-1204D Bulkheads, through the cushioned clamp near the fuel pump, and through the openings in the F-1206A and F-1207B Bulkheads as shown in Figure 3.

Secure the ADS-B Antenna Cable to the F-1206F Bearing Bracket Brace and other wires as shown in Figure 3.

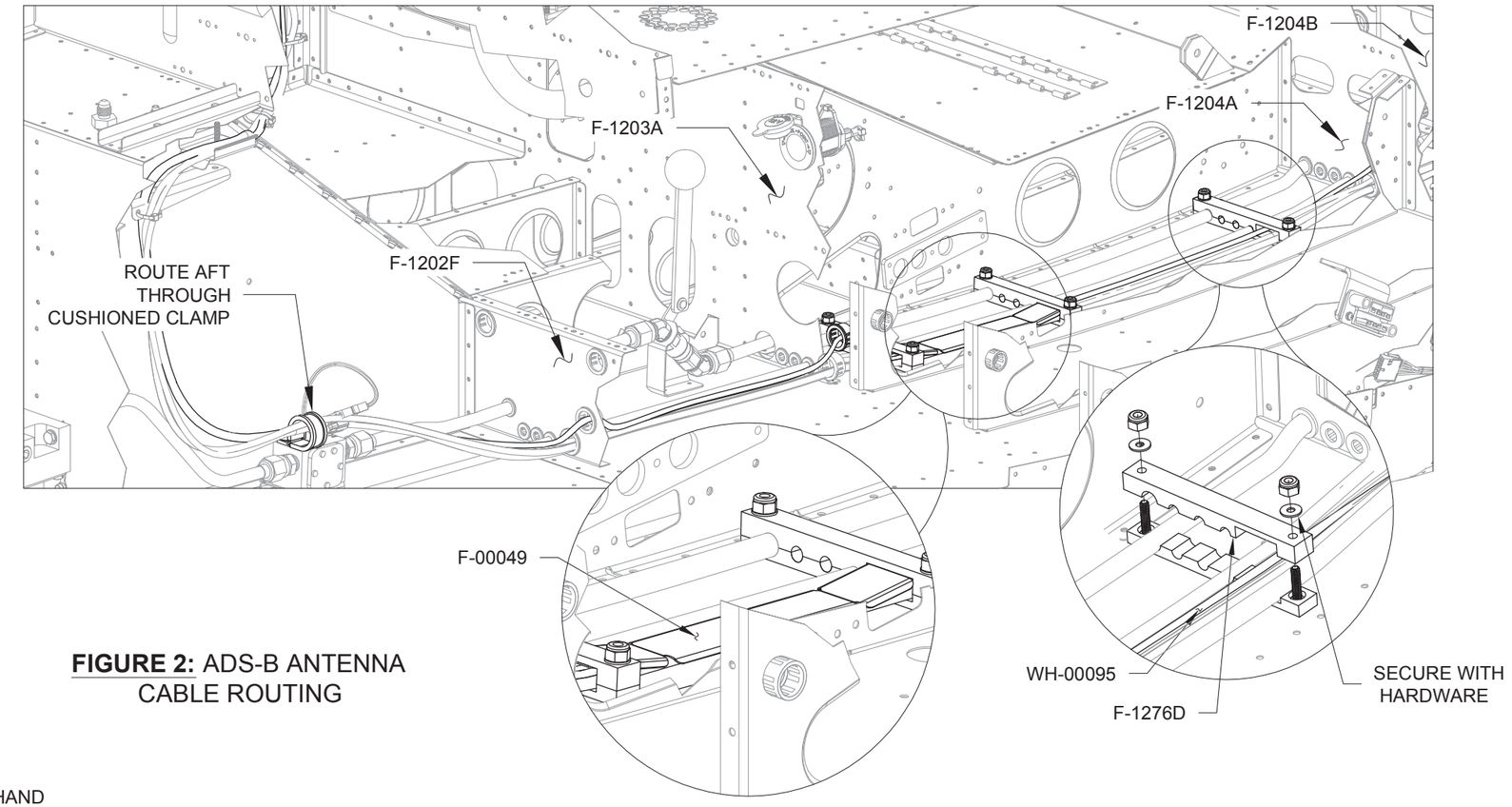


FIGURE 2: ADS-B ANTENNA CABLE ROUTING

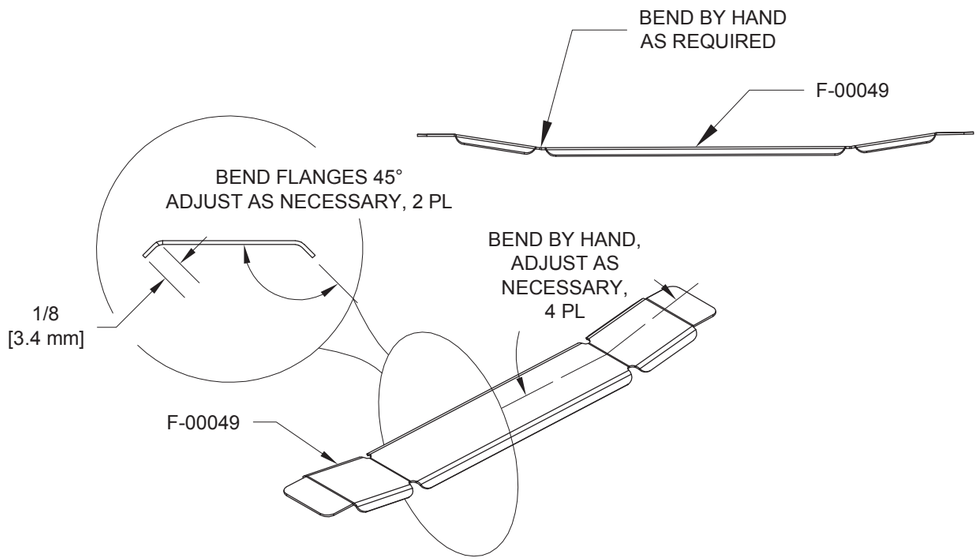


FIGURE 1: BENDING WIRE COVER PLATE

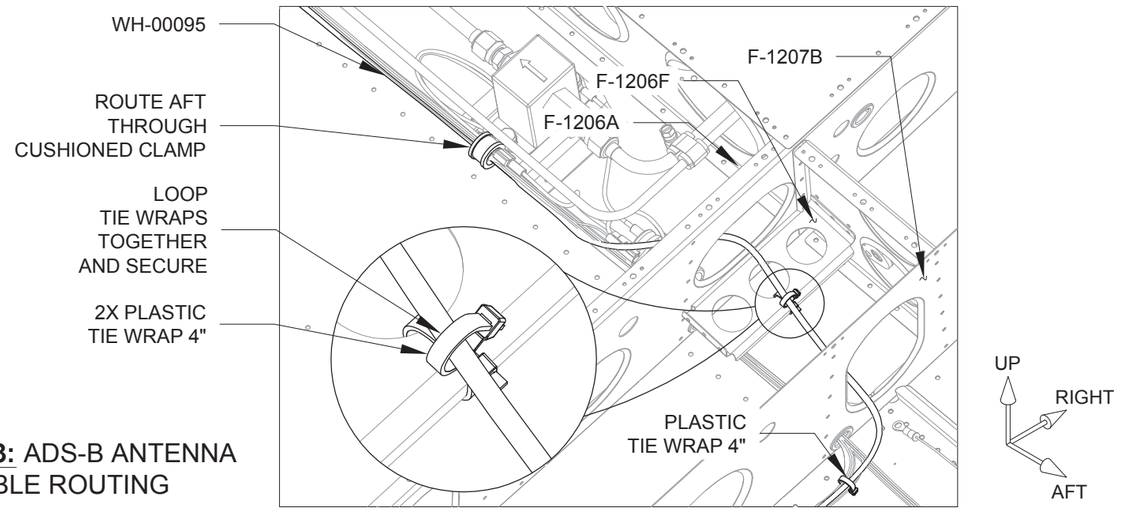


FIGURE 3: ADS-B ANTENNA CABLE ROUTING

NOTE: The steps on this page only apply if the WH-00095 ADS-B Antenna Cable is not yet installed. See Section 31B.

Step 1: Remove the hatched area as shown in Figure 1 to leave one F-1016HX Guide Bracket.

Step 2: Position F-1016HX Guide Bracket on the inboard flange of the F-1207D-L Baggage Bulkhead Channel with the forward edge of the bracket even with the start of the bend in the flange of the channel. See Figure 2.

Position guide bracket vertically approximately as shown in Figure 2 (exact position is not critical).

Step 3: Use a 12" long #30 drill to match-drill #30 both holes in the F-1016HX Guide Bracket into the flange of the F-1207D-L Baggage Bulkhead Channel.

Step 4: Remove the F-1016HX Guide Bracket.

Deburr the holes in the bracket and channel.

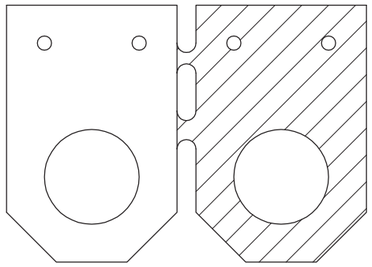


FIGURE 1: SPLITTING APART THE GUIDE BRACKETS

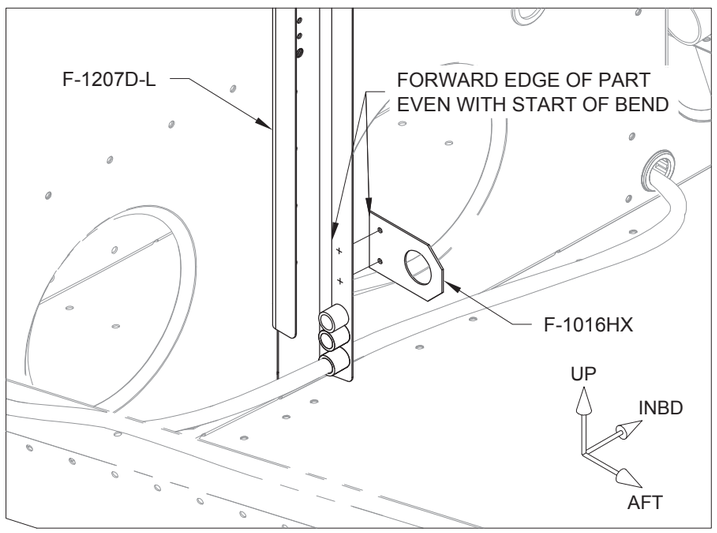


FIGURE 2: MATCH-DRILLING THE GUIDE BRACKET

Step 5: Rivet F-1016HX Guide Bracket to F-1207D-L Baggage Bulkhead Channel per the callouts in Figure 3.

Step 6: Route the WH-00095 ADS-B Antenna Cable through the hole in the bracket. Make a slit in the snap bushing, wrap it around the ADS-B antenna cable, and insert in the guide bracket as shown in Figure 3.

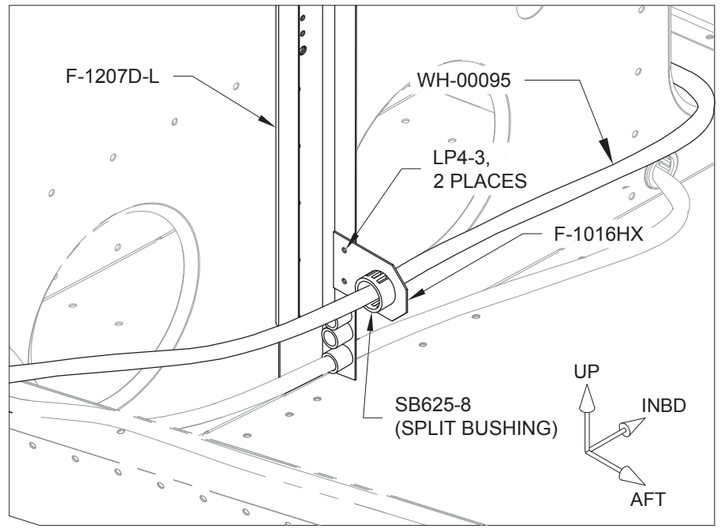


FIGURE 3: INSTALLING THE GUIDE BRACKET

Step 1: Position the F-00020 Antenna Doubler on the F-1282-L Bottom Left Skin as shown in Figure 1.

Match-Drill #30 and cleco the four .098 holes in the doubler into the skin.

Match-Drill 3/16 the two holes in the doubler into the skin.

Drill #30 the center of the middle hole as shown in Figure 1. Final-Drill 9/16 the center hole in the skin.

Remove the doubler and deburr the holes in both the doubler and skin.

Step 2: Rivet the F-00020 Antenna Doubler to the F-1282-L Bottom Left Skin using the rivets called out in Figure 1.

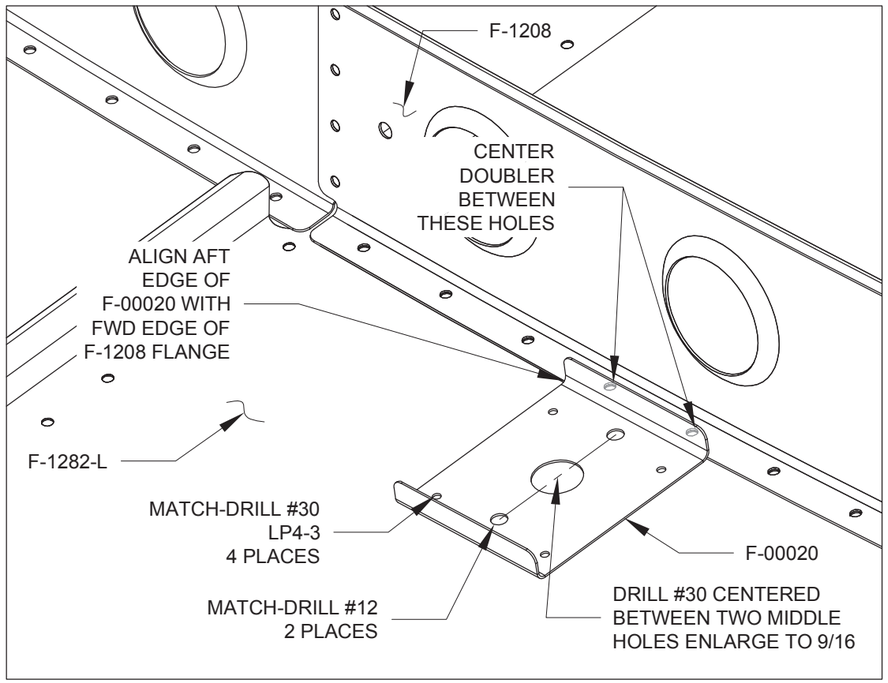


FIGURE 1: INSTALLING THE ANTENNA DOUBLER

Step 3: Drill #30 three holes in the web of the F-1208 Fuselage Frame for tie wraps (if not already punched in part). See Figures 2 and 4.

Deburr the three holes just drilled.

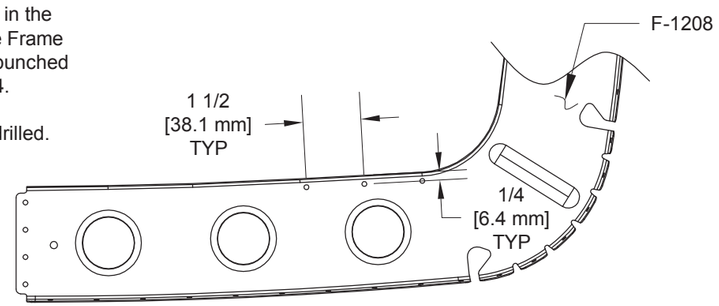


FIGURE 2: FUSELAGE FRAME TIE WRAP LOCATIONS

Step 4: Install the AV-00006 Blade ADS-B Antenna to the F-00020 Antenna Doubler and F-1282-L Bottom Left Skin using the instructions and hardware supplied with the antenna. See Figure 3.

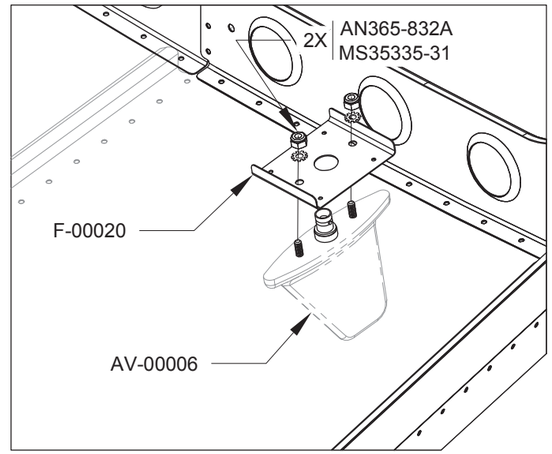


FIGURE 3: INSTALLING THE UAT ANTENNA
(BOTTOM SKIN SHOWN TRANSPARENT)

Step 5: Connect the WH-00095 ADS-B Antenna Cable to the AV-00006 Blade ADS-B Antenna as shown in Figure 4.

Tie-wrap the cable to the F-1208 Fuselage Frame as shown in Figure 4.

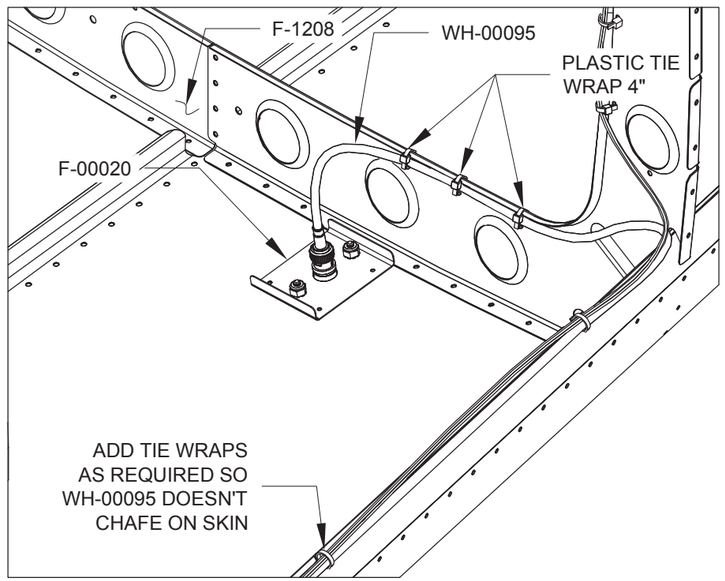


FIGURE 4: ROUTING THE ANTENNA CABLE

Step 1: Install fuse called out in the AV-50001 Power & Switch Module as shown in Figure 1.

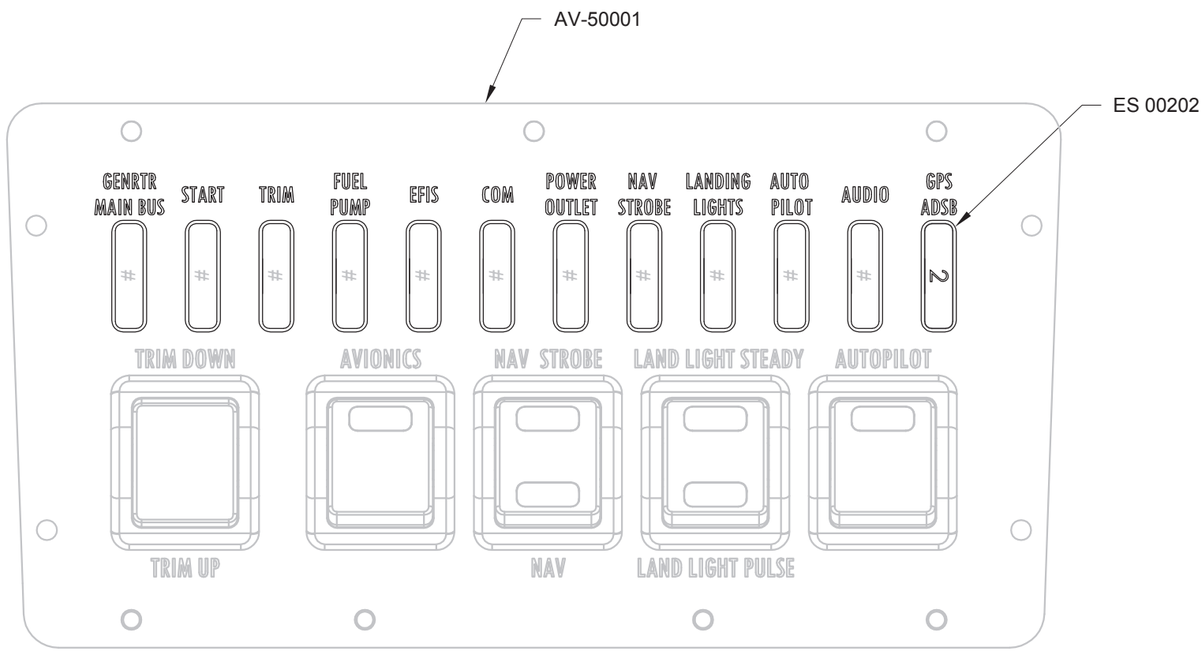


FIGURE 1: INSTALLING FUSE

Step 2: Install a second fuse in the F-12123 Fuse Holder Assembly pertaining to the same fuse value shown in Figure 2.

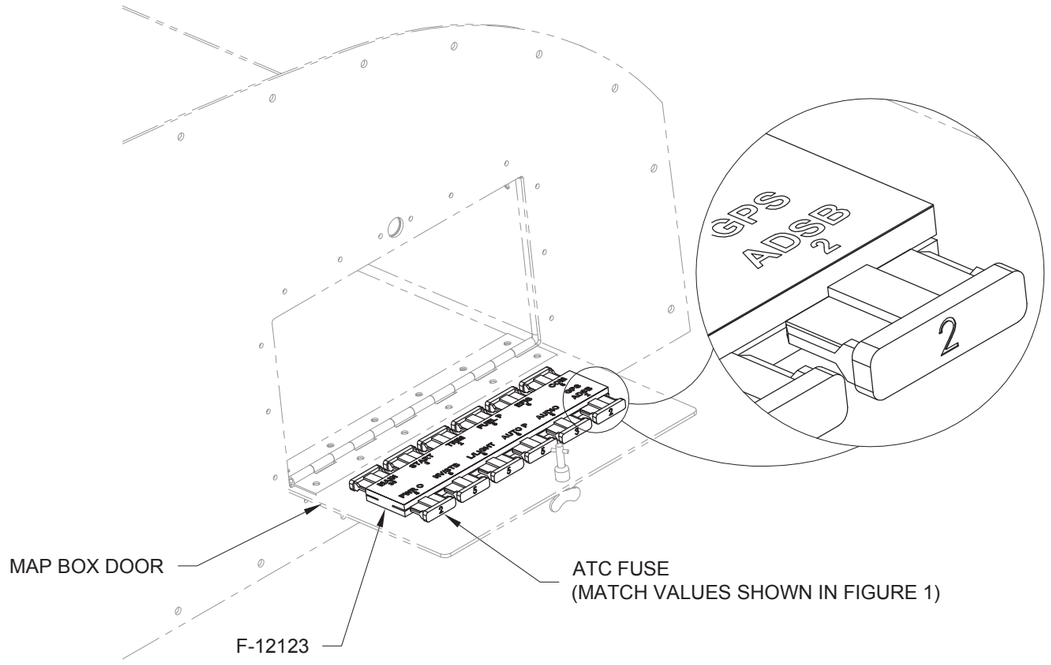


FIGURE 2: ADDING TO THE FUSE HOLDER

NOTE: The remaining steps on this page apply only if the WH-00049 ADS-B Antenna Cable was not previously installed. See Section 31B.

Step 1: The bend near the radius cut on the F-00050 Wire Routing Bracket may need to be adjusted using a vice and a plastic hammer or with a hand seamer as called out in Figure 1. This bend affects the placement of the attachment holes.

Use a bench vice or hand seamer to bend up the Wire Routing Bracket flanges as shown in Figure 1.

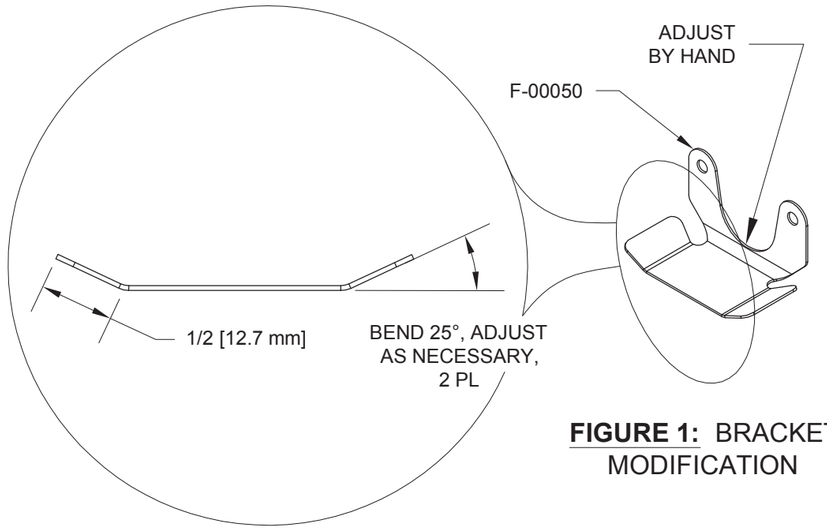


FIGURE 1: BRACKET MODIFICATION

Step 2: Secure the Flap Handle/ Pushrod Assembly and F-00050 Wire Routing Bracket to the inboard F-1215-L & -R Seat Ribs as shown in Figure 2. Use the F-1262 Flap Handle Blocks and the hardware called out in Section 32.

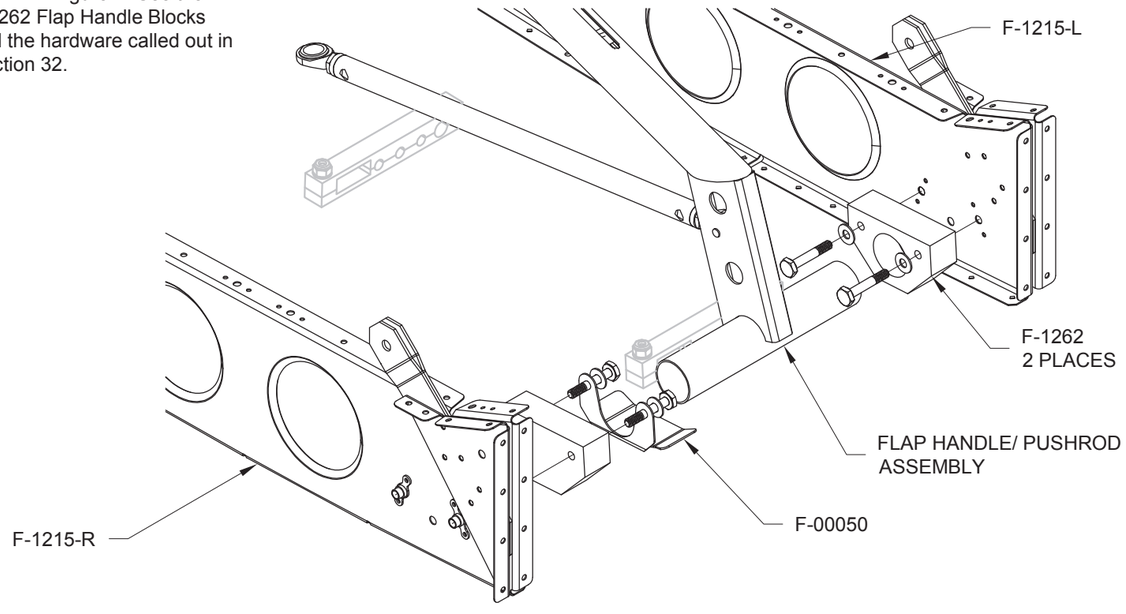


FIGURE 2: INSTALLING THE FLAP HANDLE/ PUSHROD ASSEMBLY

Step 3: Attach the Flaperon Pushrod Assemblies per Section 32, and install the F-1230 Tunnel Cover, Detent Bracket Assembly, and F-1206E Baggage Cover per Section 33.

Step 4: Re-Install the F-1207F Baggage Bulkhead Corrugation per Section 33.

Re-Install the F-1276B Cover Plates and Fuel Tank Assembly per Section 37.

Re-Install the Seats and Seat Backs per Section 33 and Section 26.

Connect the WH-P149 (WHT) Battery Ground Cable to the negative battery terminal per Section 45A.

Install the F-1240 Upper Forward Fuselage Skin per Section 29A.

Attach the Top Cowl per Section 38.

Step 1: Download and install the latest firmware and settings file from the downloads page of the Van's Aircraft web site.

Download and install from the same location the RV-12 ADS-B pre-sets file.

Step 2 (Updating Transponder Firmware): This step applies if the aircraft already received an avionics kit before October 2012 or has a transponder with a firmware version before 2.02.

When updating the Transponder Firmware, you must add an updated TSO label to the Transponder box to maintain airworthy status. Go to the SkyView support section of the Dynon web site and download the label document appropriate for your transponder model. Follow the instructions contained in that document for installing the label.

Enter the main Setup Menu screen (hold buttons 7 & 8)

Select transponder Setup

If transponder status line is colored white, the transponder is up to date and you can move on to configuring the serial port for the ADSB-470. If the status line is colored yellow, the firmware needs to be updated.

To update the transponder firmware, toggle right to highlight the transponder status line.

Press button 8 to load the firmware.

Press Yes to confirm that you have the appropriate transponder label available for installation.

When the load process is complete, a Power Cycle status window will be displayed. Turn the avionics switch off and then back on, to recycle the transponder.

Return to the main Setup Menu screen.

Scroll down to Transponder Setup.

Confirm that the Transponder status line is now displayed white (indicates firmware correctly loaded and is up to date).

Step 3: Enter the main Setup Menu Screen.

Scroll down to Local Display Setup.

Toggle right, and then scroll down to Serial Port Setup

Toggle right, and then scroll down to Serial Port 2 Setup

Verify that the Tx and Rx counters on the status page are changing, to confirm that serial data is being transmitted and received to and from the ADSB unit, and then press exit to leave the Setup Menu.

Remaining information on Setup and functionality of the SV-ADSB-470 UAT Band Traffic and Weather Receiver may be found through the Dynon web site.

Step 4: Download the latest RV-12 overall electrical schematic from the Van's Aircraft web site.

NOTE: Any weight and balance information recorded for the aircraft must be updated. Depending on the state of your kit some steps may not be applicable.

Step 5: In the RV-12 Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, add "ADS-B" to the "ITEM" column. On the same line add a checkmark to the "INSTALLED" column.

Enter 1.89 lb for "Weight", 76.07 in for "Location/Arm" and 143.78 in-lb "Moment" onto the same line as "ADS-B".

NOTE: Steps 6-8 on this page are only applicable if a final weight and balance as specified in the PAP has been completed.

Step 6: In the RV-12 Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.

Step 7: In the RV-12 POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.

Step 8: Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12 Maintenance Manual as follows:

As of this date: ___/___/___ the following values represent current Weight and Balance calculations resulting from the installation of the ADS-B Optional Kit.

Revised Empty Weight: _____ lbs
Revised Empty Moment: _____ in-lbs
Revised Empty Arm: _____ in

Signed: _____

NOTE: The remaining steps on this page are only applicable for aircraft which have passed a final airworthiness inspection.

Step 9 (ELSA): Make an appropriate entry in the airframe logbook. See example below:

Installed the ADS-B option in accordanc e with Van's Aircraft KAI Section 53 and confirmed proper operation.

Signature _____ Certificate # _____

Step 9 (SLSA): Complete the notification N 16-07-28 (available from the Van's Aircraft web site) corresponding to the ADS-B installation.

Step 10: Section complete.