



## SERVICE LETTER 00100

<b>Date Released:</b>	June 17, 2024
<b>Date Effective:</b>	June 17, 2024
<b>Subject:</b>	RV-14 Fuselage Laser-Cut Parts Remediation
<b>Affected Models:</b>	RV-14 fuselages constructed with a laser-cut F-01405A  RV-14A fuselages constructed with a laser-cut F-01405A, and/or F-01451-L/R, and/or F-01448A and/or F-01448C-L/R
<b>Required Action:</b>	Inspect the aforementioned parts for fatigue cracks propagated from fastener holes. In many places, cracks will not be visible until they have propagated beyond the flanges of overlapping parts. If cracks are present, replace the laser-cut parts with a punched part. If cracks are not present, install the alternate fix detailed below.
<b>Time of Compliance:</b>	Inspect within 200 flight hours or at the next annual inspection, whichever is earlier.  If fatigue cracking is not present, you may continue to comply with this Service Letter via ongoing inspection no less than every 12 months or 200 flight hours, whichever is first.  Upon or before reaching 1000 flight hours, the alternate fixes must be conducted as outlined in this Service Letter, at which point compliance has been met without need for ongoing inspection.  If fatigue cracking is present, replace the laser-cut parts before further flight, or contact Van's Aircraft to discuss alternative methods of repair.
<b>Supersedes Notice:</b>	None
<b>Labor Required:</b>	Times listed are for remediation of a QuickBuild Fuselage, as delivered. Fuselages progressed past this point may require additional time. Section 1 (F-01405A): 4 Hours Section 2 (F-01451-L/R): 2 Hours

### Section 3 (F-01448A and/or F-01448C-L/R): 2 Hours

**Level of Certification:** Check the rules of the local controlling agency and the operating limitations for your aircraft.

#### **Synopsis:**

Following reports from the field of irregular holes and cracked dimples in laser-cut sheet metal parts, an investigation was conducted to review the prevalence of these defects and the effect they have on the structure of aircraft parts and assemblies. The service-life of laser-cut structures has been evaluated through conservative analysis, computer simulations and mechanical testing of representative structural joints, sub-assembly details, and full assemblies. Based on the results of analysis and testing, Van's Aircraft has classified each part that was manufactured via the laser-cutting process into two categories: Parts that are Recommended for Replacement and parts that are Acceptable for Use. These classifications have been made out of an abundance of caution, and all parts classified as Acceptable for Use are functionally equivalent to punched parts. For more information about the use of laser cut parts in RV Kit Aircraft, please see <https://www.vansaircraft.com/lasercutpartsreference>.

In the RV-14 and RV-14A, the F-01405 Bulkhead Assembly is a highly-loaded section of the fuselage structure built upon the F-01405A Bulkhead Bottom Channel; classified as Recommended for Replacement. Replacement of the F-01405A would be very involved on a flying aircraft, a QuickBuild Kit, or a Standard Kit that has progressed past Section 25 of the KAI (Kit Assembly Instruction). However, an alternate fix has been developed, restoring the structure to as-good or better structural strength and durability in service, with a drastically reduced workload. Installation of the alternate fix is outlined in Section 1 of this Service Letter, with an overview shown in Figure 1.

In the RV-14A, the Tunnel is a highly-loaded section of the fuselage structure built upon the F-01451-L & -R Tunnel Side; classified as Recommended for Replacement. Select rivets in the Firewall Assembly which attach the F-01451-L/R Tunnel Side, F-01401E-L/R Firewall Angles, and F-01483-L/R Forward Bottom Skin see particularly high loads and are the area of concern for the assembly with regards to laser cut part fatigue. Replacement of the F-01451-L/R would be very involved on a flying aircraft, a QuickBuild Kit, or a Standard Kit that has completed Section 28 of the KAI (Kit Assembly Instruction). However, an alternate fix has been developed, restoring the structure to as-good or better structural strength and durability in service, with a drastically reduced workload. Installation of the alternate fix is outlined in Section 2 of this Service Letter.

In the RV-14A, the Aft Gear Brace Assembly is a highly-loaded section of the fuselage structure, tied into the surrounding structure by the flanges of the F-01448A Gear Brace Angle and F-01448C-L/R Gear Brace Bracket; classified as Recommended for Replacement. Replacement of the F-01448A and/or the F-01448C-L/R would be very involved on a flying aircraft, a QuickBuild Kit, or a Standard Kit that has progressed past Section 26 of the KAI. However, an alternate fix has been developed, restoring the structure to as-good or better structural strength and durability in service, with a drastically reduced workload. Installation of the alternate fix is outlined in Section 3 of this service letter.

Installation of all three alternate fixes adds less than 1.5 lb to the aircraft empty weight, with negligible visible change to the airframe. The following service information is representative of a fuselage assembly that has been completed and contains laser cut instances of the component listed above. Where applicable, in-process steps may be omitted to represent the level of completion found in each individual case.

**Materials Required:**

The following materials are required to complete the steps necessary to achieve compliance with this Service Letter 00100.

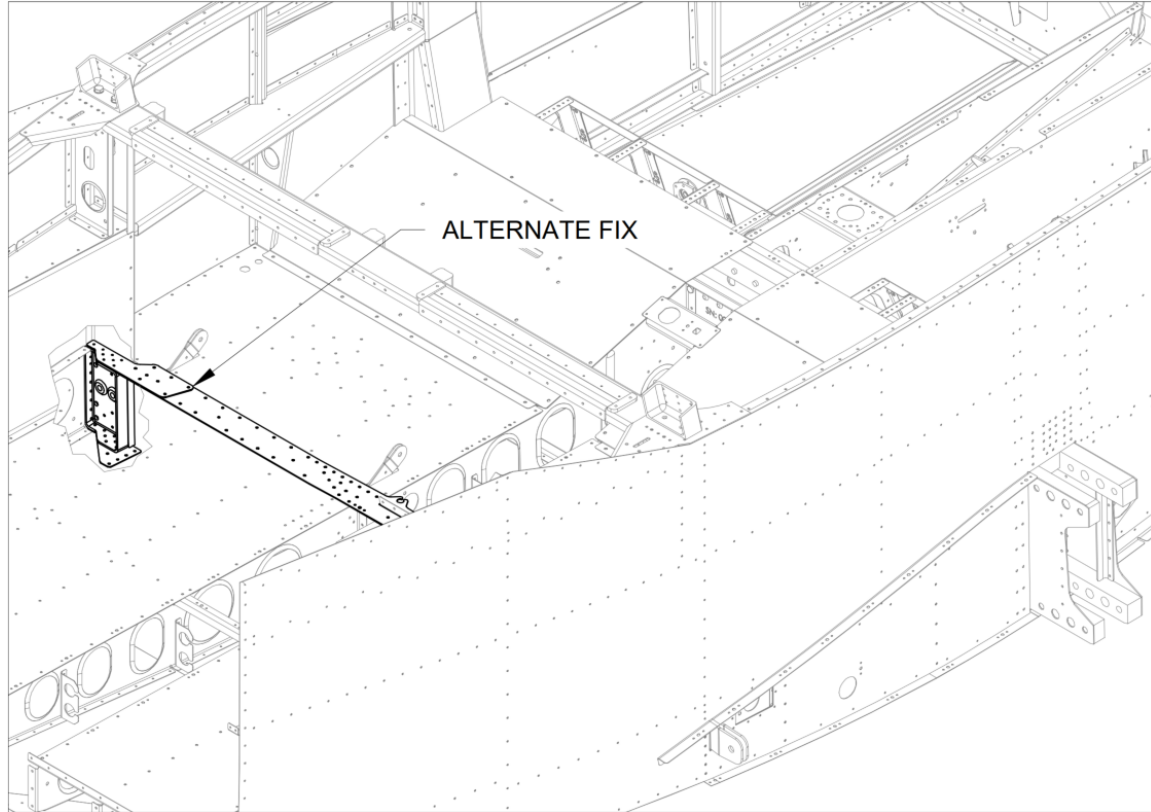
Purchase: SL-00100 KIT

**Method of Compliance:**

**NOTE:** When removing the rivets specified in this Service Letter, please refer to [KAI Section 5](#) and the Van's Aircraft YouTube [video about rivet removal techniques](#).

**NOTE:** See "Parts Identification Guide" at <https://www.vansaircraft.com/lasercutpartsreference> to aid in identification of laser-cut parts.

## Section 1: Remediation of a laser-cut F-01405A



**FIGURE 1:** F-01405A ALTERNATE FIX OVERVIEW

Step 1: Inspect the fuselage and confirm the F-01405A is laser-cut.

Step 2: Remove the following parts from the aircraft, referencing Section 42:

- Both of the F-01447A or F-01447A-1 Step Access Cover
- The F-01446 Baggage Floor Cover
- The F-01445B-L/R-1 Flap Motor Side Cover
- The F-01445A-1 Flap Motor Front Cover
- The F-01439 Seat Ramp Cover
- The F-01440-L/R Seat Ramp
- Both of the Lap Belts

Step 3: Remove both wings. Reference Section 41.

Step 4: Remove both Seat Back Assemblies. Reference Section 39.

Step 5: Remove the ES-FA-PA-270-12-5 Flap Motor, WD-1013A Flap Crank, and both CS-00010 Flap Torque Arms. Reference Section 34.

**Note:** The following cover and floor panels are attached with a variety of hardware, including many solid and blind rivets. Removal of these components will require

**patience and care while removing the rivets. Reference Section 32 for the following steps.**

Step 6: Remove the F-01481-L/R Fwd Baggage Side Cover.

Step 7: Remove the F-01482-L/R Aft Baggage Side Cover.

Step 8: Remove the F-01405G-1 Flap Motor Channel.

Step 9: Remove the F-014141 Baggage Floor Splice

Step 10: Remove the F-01447-L/R Baggage Floor.

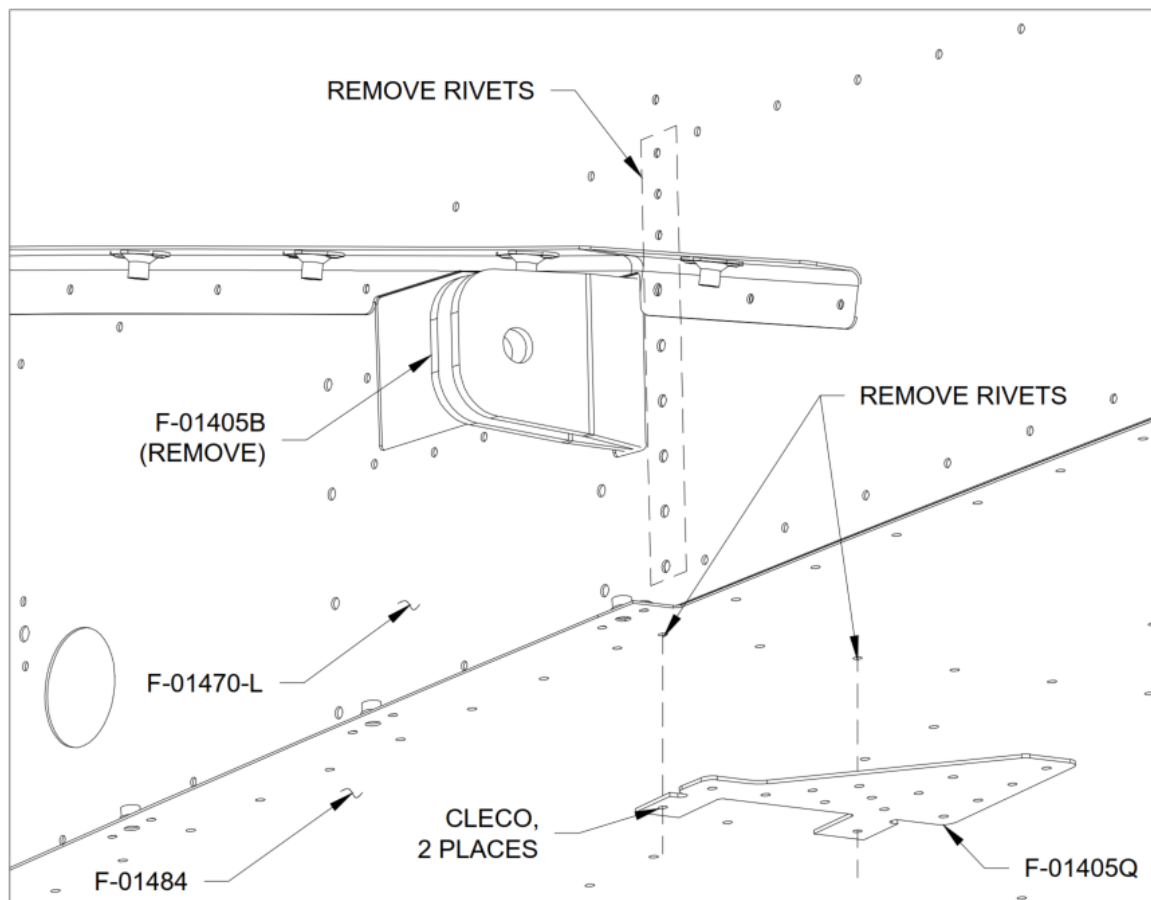
**NOTE: The following steps detail procedures for the left side of the fuselage. Unless otherwise noted, mirror all steps shown below for the right side.**

Step 11: Remove the F-01405B Bulkhead Bar as called out in Figure 2.

Step 12: Remove the rivets common with the F-01470-L Fuselage Side Skin and underlying structure as called out in Figure 2.

Step 13: Remove the two rivets in the F-01484 Center Bottom Skin, which are common with the F-01405A, as called out in Figure 2. See Figure 3 for additional clarity.

Step 14: Dimple the two locating holes in the F-01405Q Doubler, then cleco to the F-01484. Reference Figure 2.



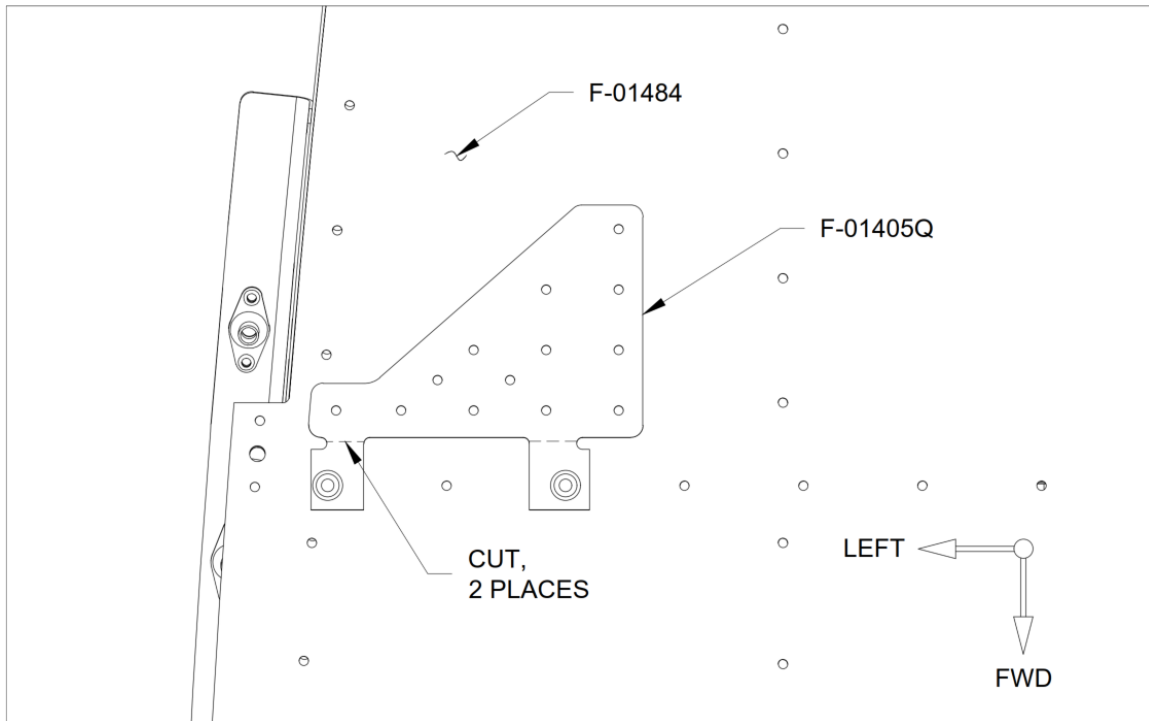
**FIGURE 2: REMOVING SIDE SKIN AND BOTTOM SKIN RIVETS (VIEWED FROM BEHIND AND BELOW REAR SPAR ATTACH)**

Step 15: Match-Drill #40 the 13 holes in the F-01405Q into the F-01484. See Figure 3.

Step 16: Remove the F-01405Q and cut the locating tabs off as called out in Figure 3.

Deburr any sharp edges on the F-01405Q.

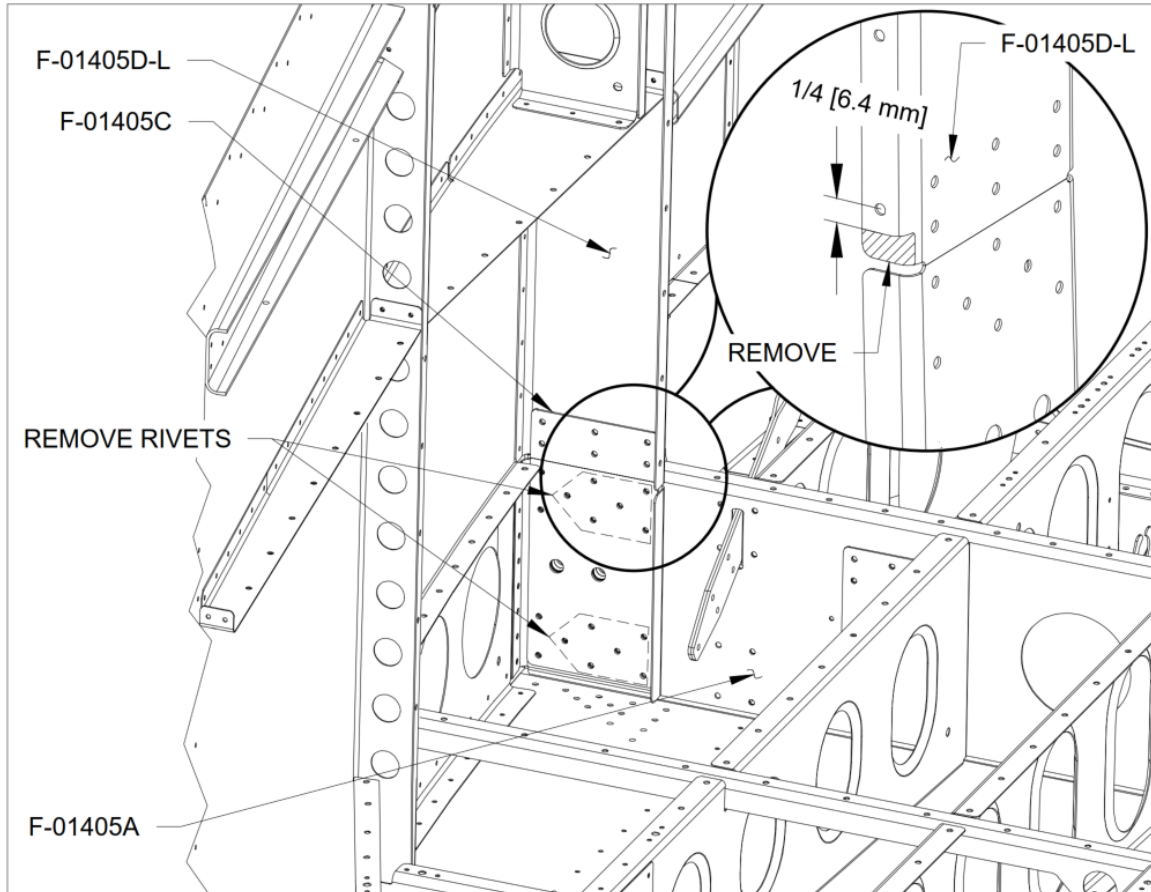
Step 17: Replace and rivet the two rivets previously removed with AN426AD3-3.5.



**FIGURE 3:** MATCH-DRILLING BOTTOM SKIN  
(VIEWED FROM THE BOTTOM OF THE FUSELAGE)

Step 18: Remove the rivets common to the F-01405A, F-01405D-L Bulkhead Side Chanel, and F-01405C Bulkhead Doubler as called out in Figure 4.

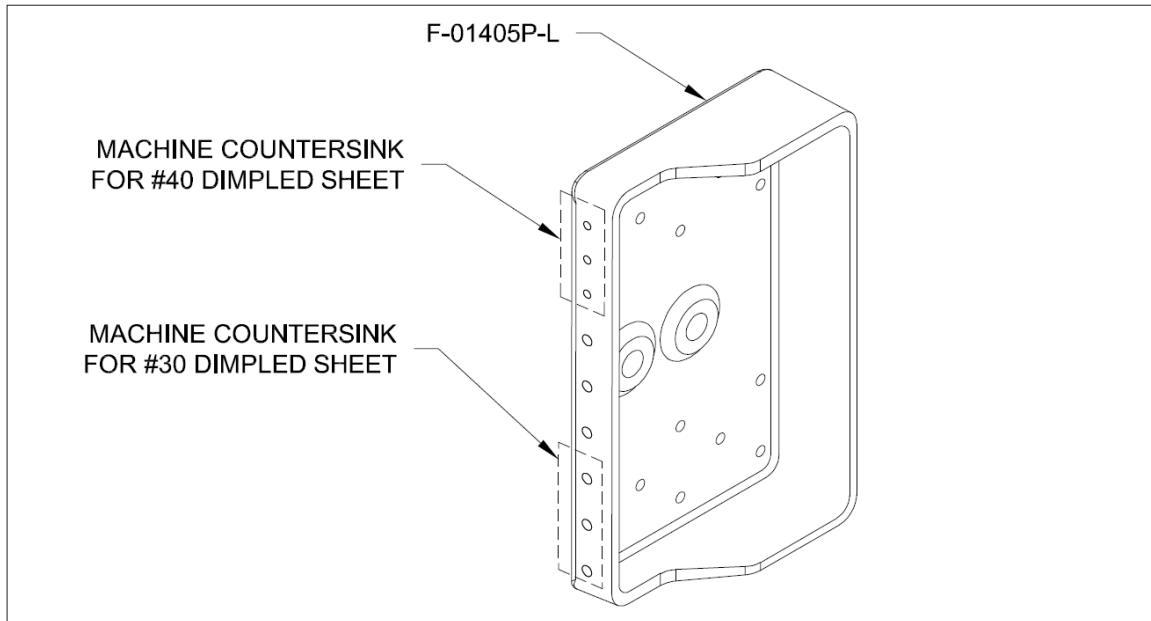
Step 19: Remove the hatched area of the F-01405D-L as called out in the detail view of Figure 4.



**FIGURE 4: REMOVING BULKHEAD RIVETS  
(SOME PARTS NOT SHOWN FOR CLARITY)**



**Step 20:** Machine countersink the holes in the flange of the F-01405P-L Lug Fitting as called out in Figure 5.

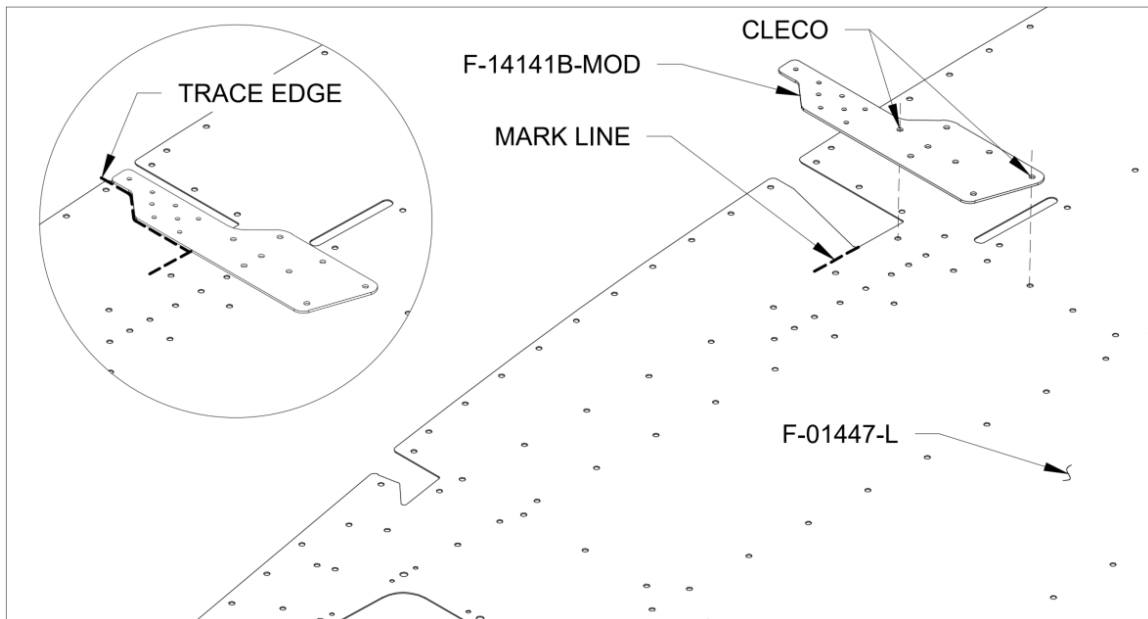


**FIGURE 5: LUG FITTING PREP**

**Step 21:** Mark a line on the F-01447-L Baggage Floor collinear with the inside edge of the notch. See Figure 6.

**Step 22:** Cleco the F-14141B-MOD Doubler to the F-01447-L. See Figure 6.

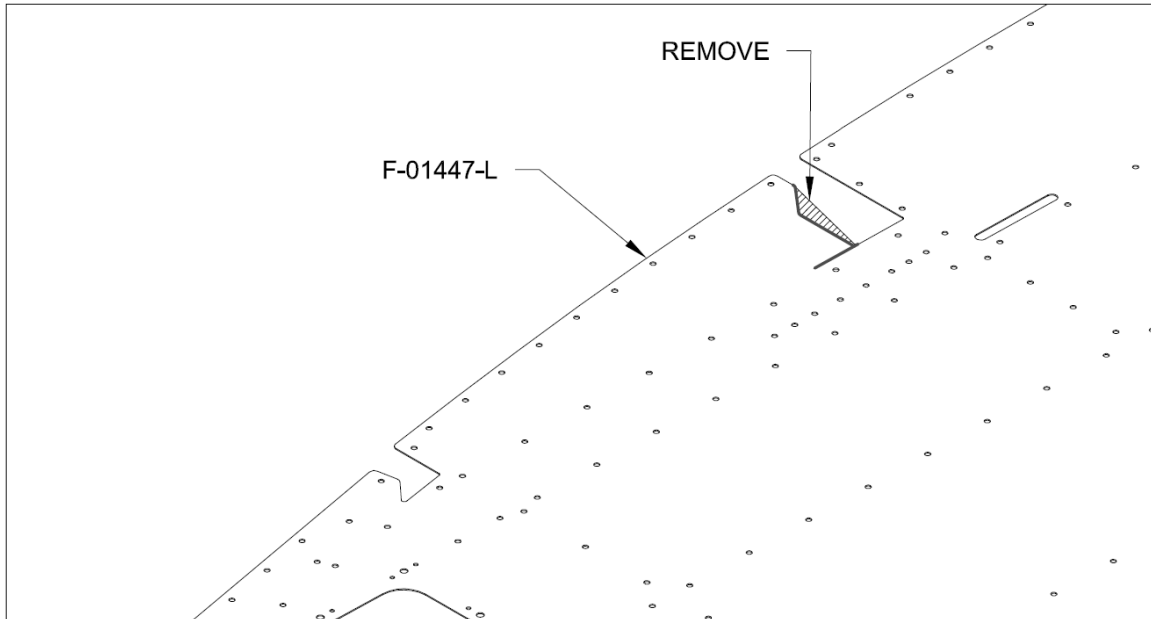
**Step 23:** Trace the edge of the F-14141B-MOD from the line previously marked, to the outboard edge of the F-01447-L. See the detail view of Figure 6.



**FIGURE 6: MARKING THE F-01447-L**

Step 24: Remove the F-14141B-MOD From the F-01447-L.

Trim away the hatched area of the F-01447-L as shown in Figure 7 (within the boundary of traced and marked lines).



**FIGURE 7:** TRIMMING THE F-01447-L

Step 25: Cleco the F-01405Q-L to the F-01484, this time inside the fuselage. See Figure 8.

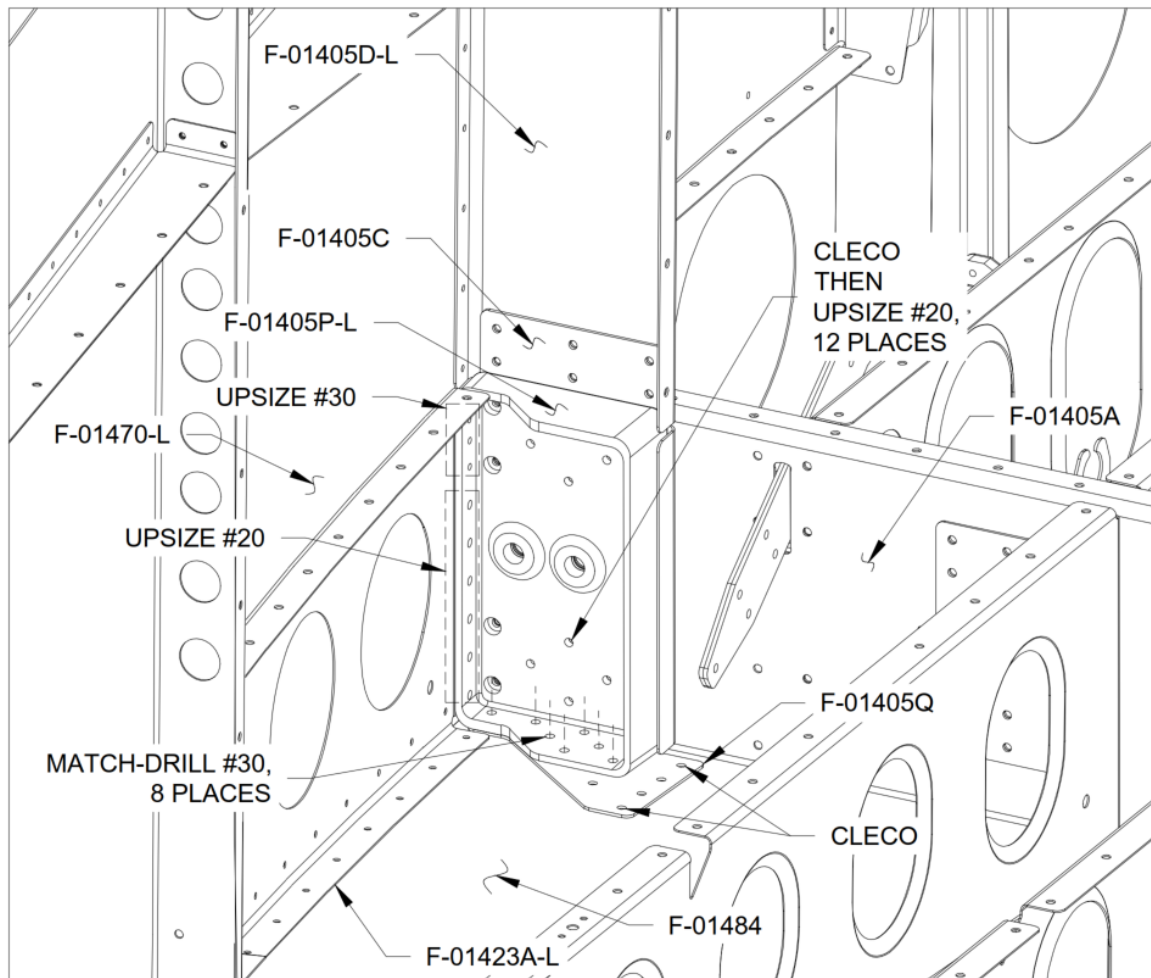
Step 26: Cleco the web of the F-01405P-L to the F-01405 Bulkhead Assembly.

Step 27: Upsize the 12 holes in the web of the F-01405P-L into the F-01405C, F-01405D-L, and F-01405A. See Figure 8.

Step 28: Upsize the holes common to the outboard flange of the F-01405P-L and the F-01470-L, F-01423A-L Outbd Baggage Rib, and F-01405D-L. See Figure 8.

Step 29: Match-Drill the eight holes from the F-01484 and F-01405Q-L into the bottom flange of the F-01405P-L. See Figure 8.

Step 30: Remove the F-01405P-L and F-01405Q and deburr any sharp edges.



**FIGURE 8:** DRILLING THE F-01405P-L  
(SOME PARTS NOT SHOWN FOR CLARITY)

**NOTE:** When installing the Cherrymax pulled rivets included in this service letter, please refer to [KAI Section 5](#) and the Van's Aircraft YouTube [video about preparing the rivets](#) for installation.

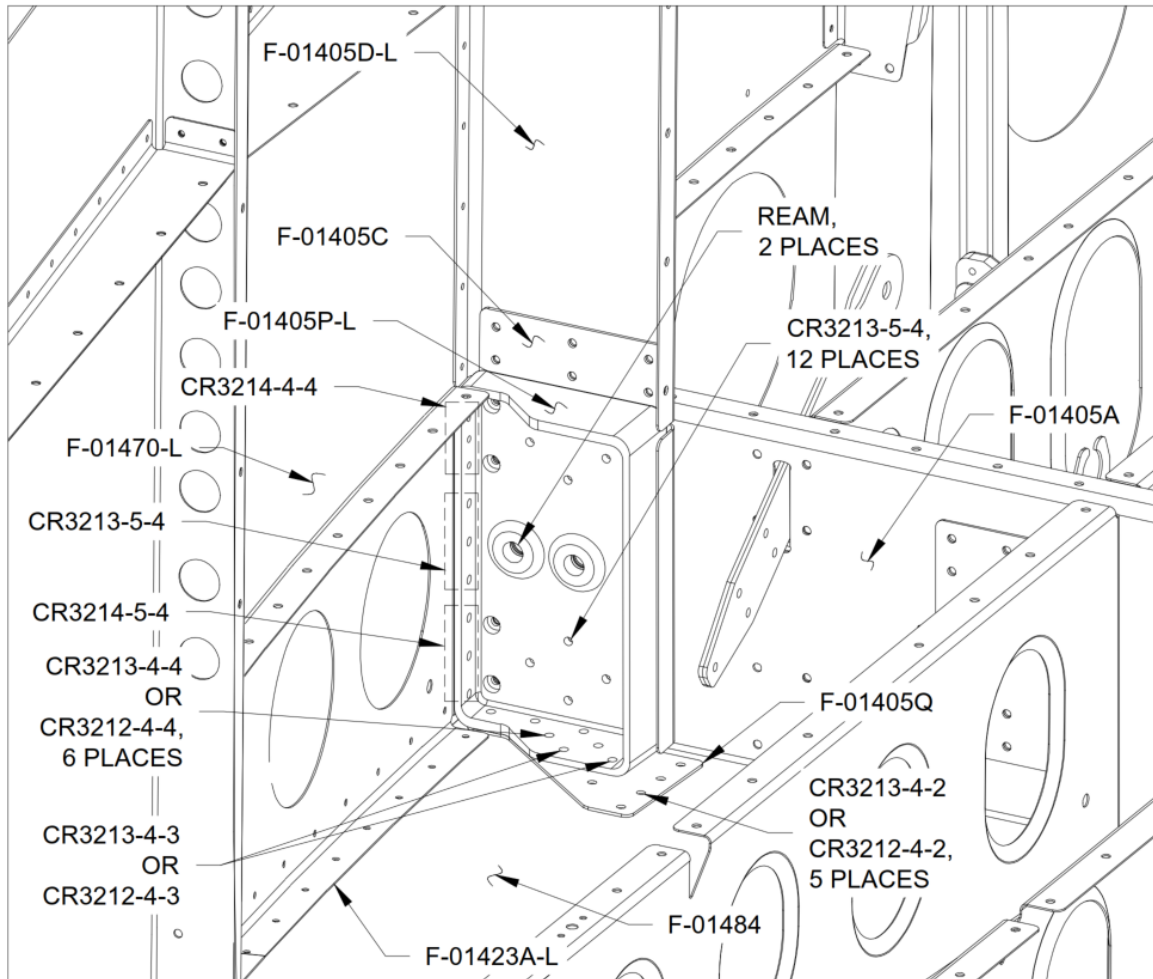
**NOTE:** Universal head or flush head rivets can be used on the belly to rivet the F-01405Q and F-01405P-L to the F-01484. If installing universal head rivets, skip to Step 32.

Step 31: Dimple the thirteen holes in the F-01405Q, and the corresponding holes in the F-01484 for AN470AD4 rivets.

Step 32: Machine countersink the eight holes in the bottom flange of the F-01405P-L for #30 dimpled sheet.

Step 33: Rivet the F-01405P-L and F-01405Q to the surrounding structure as called out in Figure 9.

Step 34: Final-Ream .311 the bolt holes from the bulkhead into the F-01405P-L.



**FIGURE 9:** RIVETING THE F-01405P-L  
(SOME PARTS NOT SHOWN FOR CLARITY)

**NOTE: Before proceeding, all steps up to this point must be completed for the right side of the fuselage.**

**NOTE: The following steps are shown for the left side of the aircraft, and should be mirrored for the right side before proceeding to the next step.**

Step 35: Temporarily reinstall the F-01447-L into the aircraft, clecoing near the outer edges.

Step 36: Cleco the F-14141A-MOD Baggage Floor Splice and F-14141B-MOD into the position shown in Figure 10. Note that the bushing hole is located on the left side as shown.

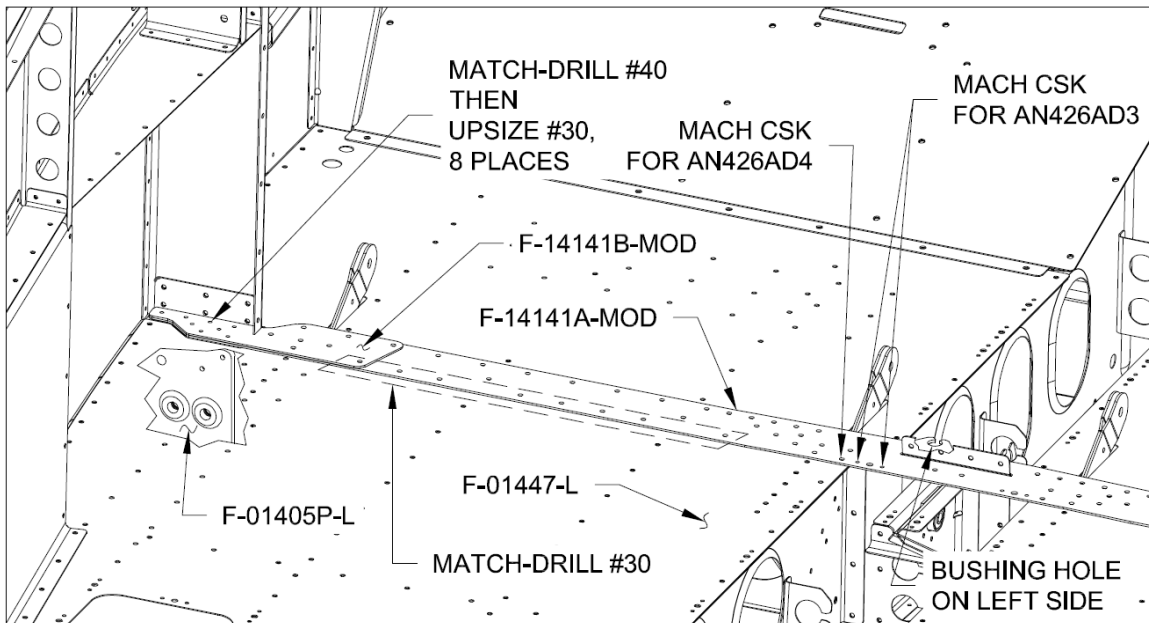
Step 37: Match-Drill #40 the eight holes from the F-14141A-MOD and F-14141B-MOD into the F-01405P-L

Step 38: Match-Drill #30 the indicated holes from the F-14141B-MOD and/or the F-14141A-MOD into the F-01447-L as called out in Figure 10.

Step 39: Machine countersink the the three holes in the F-14141A-MOD as called out in Figure 10.

Step 40: Remove the F-14141B-MOD, F-14141A-MOD, and F-01447-L.

Deburr all holes just match-drilled in Steps 37 and 38.



**FIGURE 10: FITTING THE F-14141B-MOD AND F-14141A-MOD**

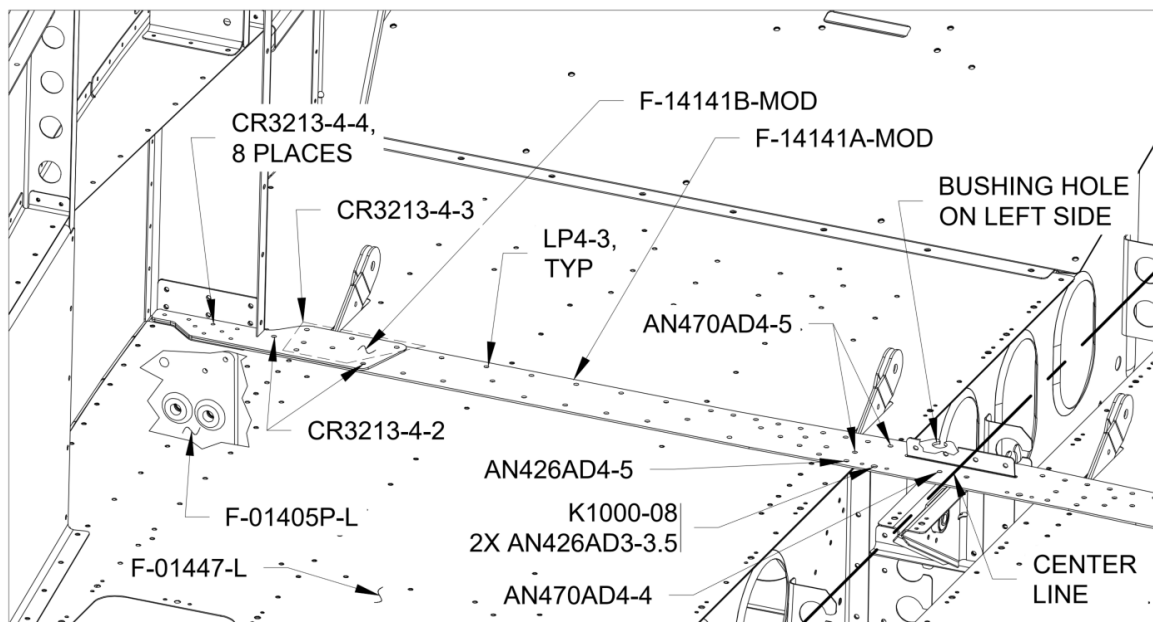
Step 41: Reinstall the F-01405B in accordance with Section 25, substituting the two outboard bolts (common with the F-01405P-L) for AN5-11A.

Step 42: Cleco the F-01447-L, F-14141A-MOD and F-14141B-MOD into position. Reference Figure 11.

Step 43: Rivet the F-01447-L to the underlying structure in accordance with Section 32, omitting the rivets common with the F-14141A-MOD and F-14141B-MOD.

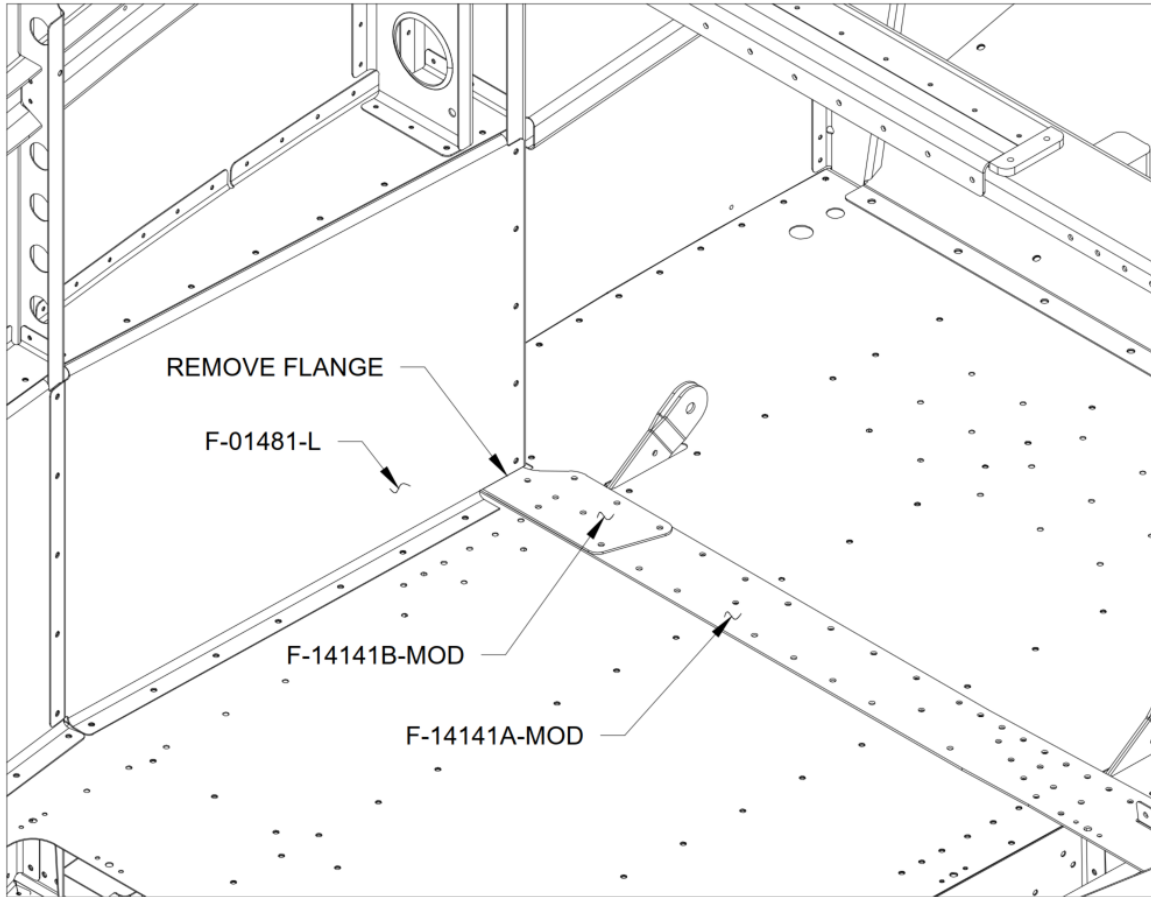
Step 44: Rivet the the F-14141A-MOD and F-14141B-MOD to the underlying structure. See Figure 11.

Rivet callouts are symmetrical about the center line.



**FIGURE 11:** RIVETING THE F-14141B-MOD AND F-14141A-MOD

**Step 45:** Remove the foremost section of the bottom flange of the F-01481-L in order to clear the F-14141B-MOD and F-14141A-MOD as show in Figure 12.



**FIGURE 12:** MODIFYING THE F-01481-L

Step 46: Reinstall the following parts, referencing section 32:

- The F-01405G-1 Flap Motor Channel
- The F-01482-L/R Aft Baggage Side Cover
- The F-01481-L/R Fwd Baggage Side Cover

Step 47: Reinstall the ES-FA-PA-270-12-5 Flap Motor, WD-1013A Flap Crank, and both CS-00010 Flap Torque Arms. Reference Section 34.

Step 48: Reinstall both Seat Back Assemblies. Reference Section 39.

Step 49: Reinstall both wings. Reference Section 41

Step 50: Reinstall the following parts, referencing Section 42:

- Both of the F-01447A or F-01447A-1 Step Access Cover
- The F-01446 Baggage Floor Cover
- The F-01445B-L/R-1 Flap Motor Side Cover
- The F-01445A-1 Flap Motor Front Cover
- The F-01439 Seat Ramp Cover
- The F-01440-L/R Seat Ramp
- Both of the Lap Belts



## **Section 2: Remediation of a laser-cut F-01451-L/R**

Step 51: Inspect the fuselage and confirm the F-01451-L/R are laser-cut.

Step 52: Remove the F-14190 Tunnel Closeout Assembly if present. See Section OP-62 of the KAI.

**NOTE: The following steps are shown for the left side of the fuselage and will need to mirrored for the right side.**

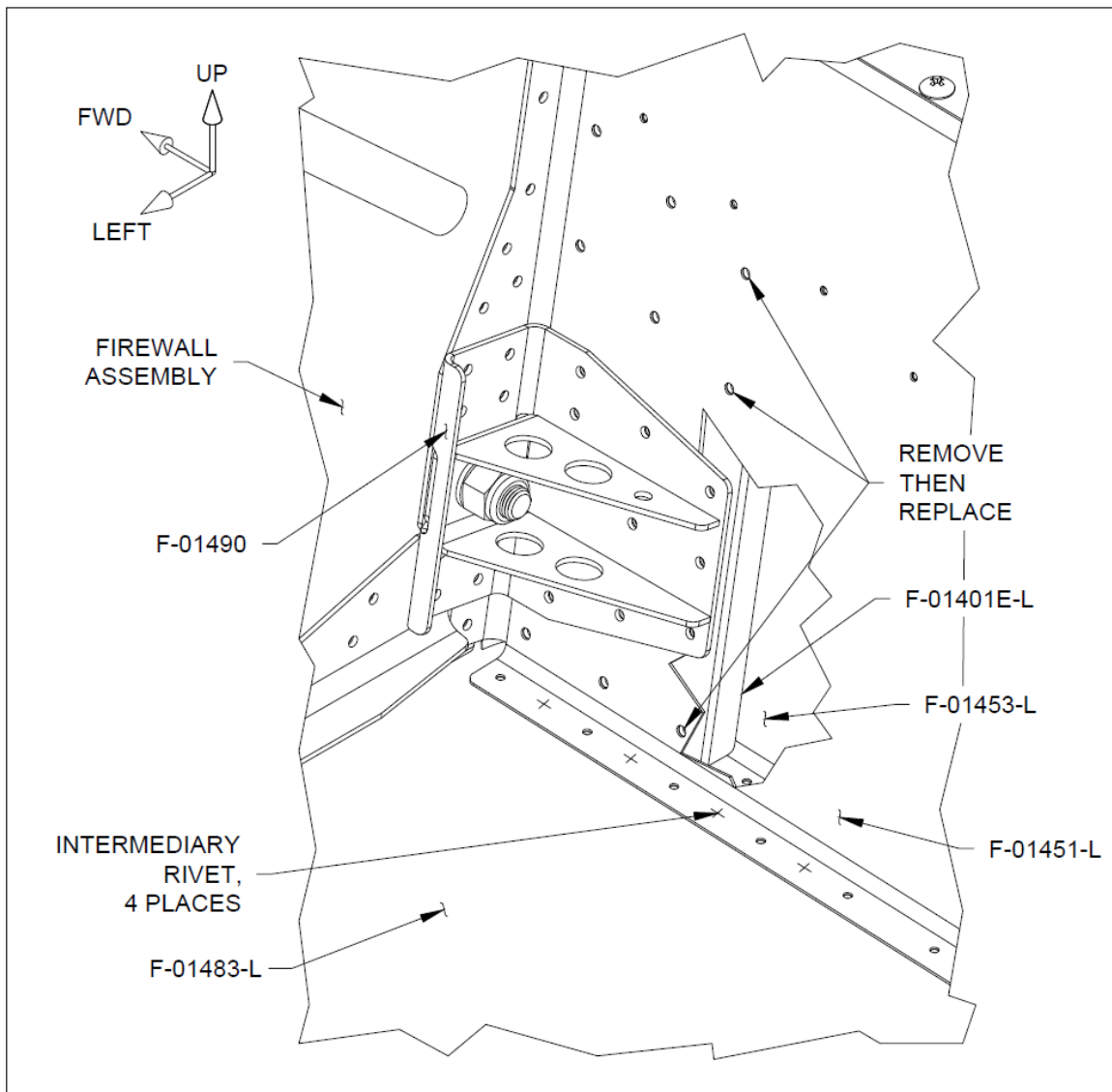
Step 53: Remove the three rivets called out in Figure 13 that join the F-01451-L Tunnel Side and the F-01401E-L Firewall Angle. A drill-stop is recommended to prevent damage due to the limited clearance between the tunnel side and underlying F-01453-L Muffler Shroud Side.

Step 54: Upsize #20 the three holes left by the rivets removed in the previous step.

**NOTE:** When installing the Cherrymax pulled rivets included in this service letter, please refer to [KAI Section 5](#) and the Van's Aircraft YouTube [video about preparing the rivets](#) for installation.

Step 55: Replace the removed rivets with CR3213-5-2 blind rivets. Reference Figure 13.

**NOTE:** Some debris from removing and upsizing these holes will remain trapped in the cavity between the F-01451-L Tunnel Side and F-01453-L Muffler Shroud Side, this will not affect the airframe.



**FIGURE 13:** FIREWALL ASSEMBLY AND TUNNEL SIDE  
(SHOWN WITHOUT OP-62 MODIFICATIONS)

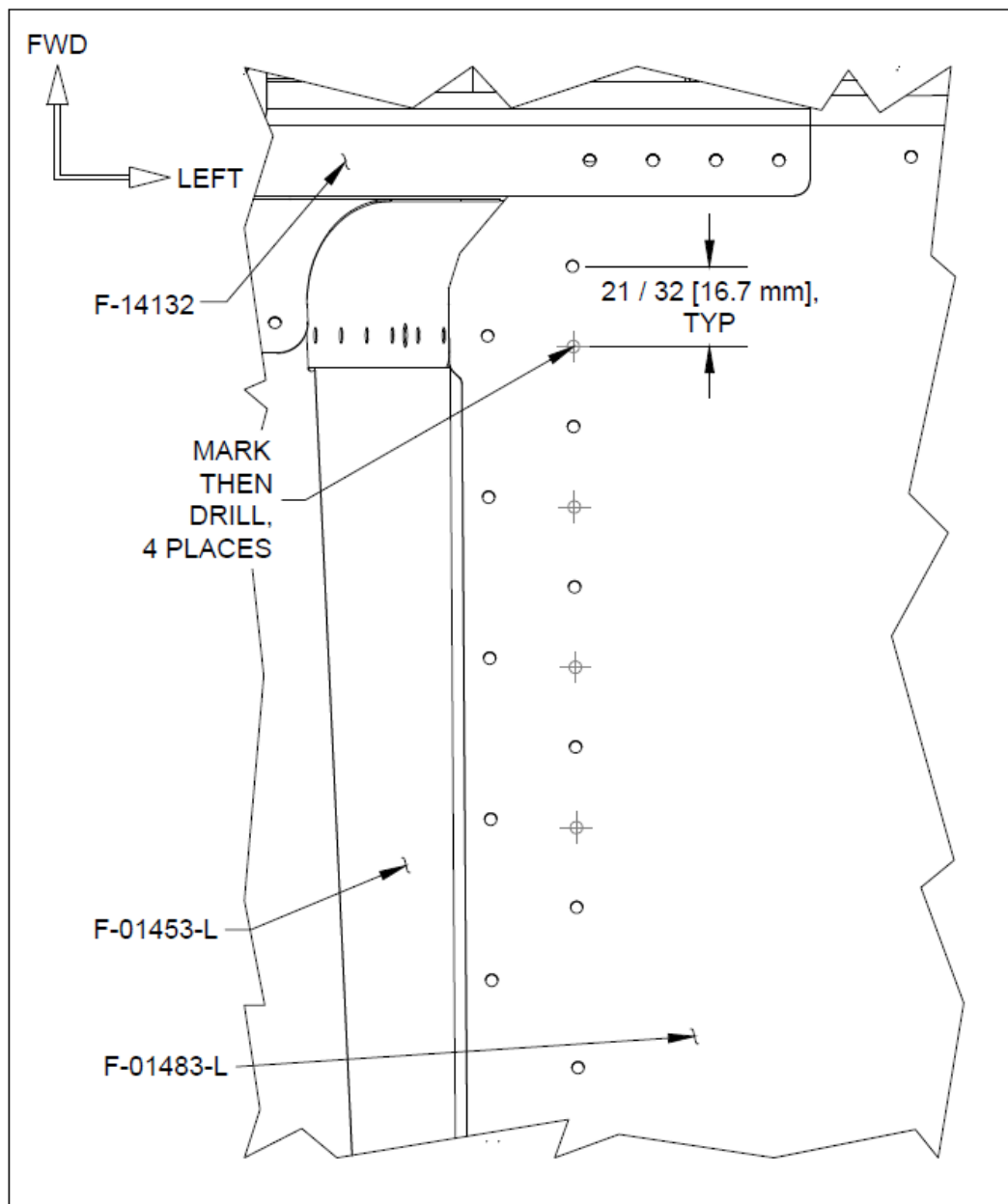
**NOTE: The following steps apply to fuselages without OP-62 (RV-14 IO-390-EXP119 Engine Installation) installed. For fuselages with, or planning to be built with OP-62, skip to Step 60.**

Step 56: From the bottom of the fuselage, mark the location of the four intermediary rivets to be added as shown in Figure 13 and 14.

Step 57: Drill #40 the locations just marked. Reference Figure 14.

Step 58: Machine countersink the holes just drilled for an AN426AD3 rivet.

Step 59: Install four AN426AD3-3.5 rivets into the holes just countersunk. Reference Figure 13 and 14.



**FIGURE 14:** MUFFLER SHROUD SIDE AND FORWARD BOTTOM SKIN.  
(VIEWED FROM EXTERIOR OF FUSELAGE, LOOKING UP.)

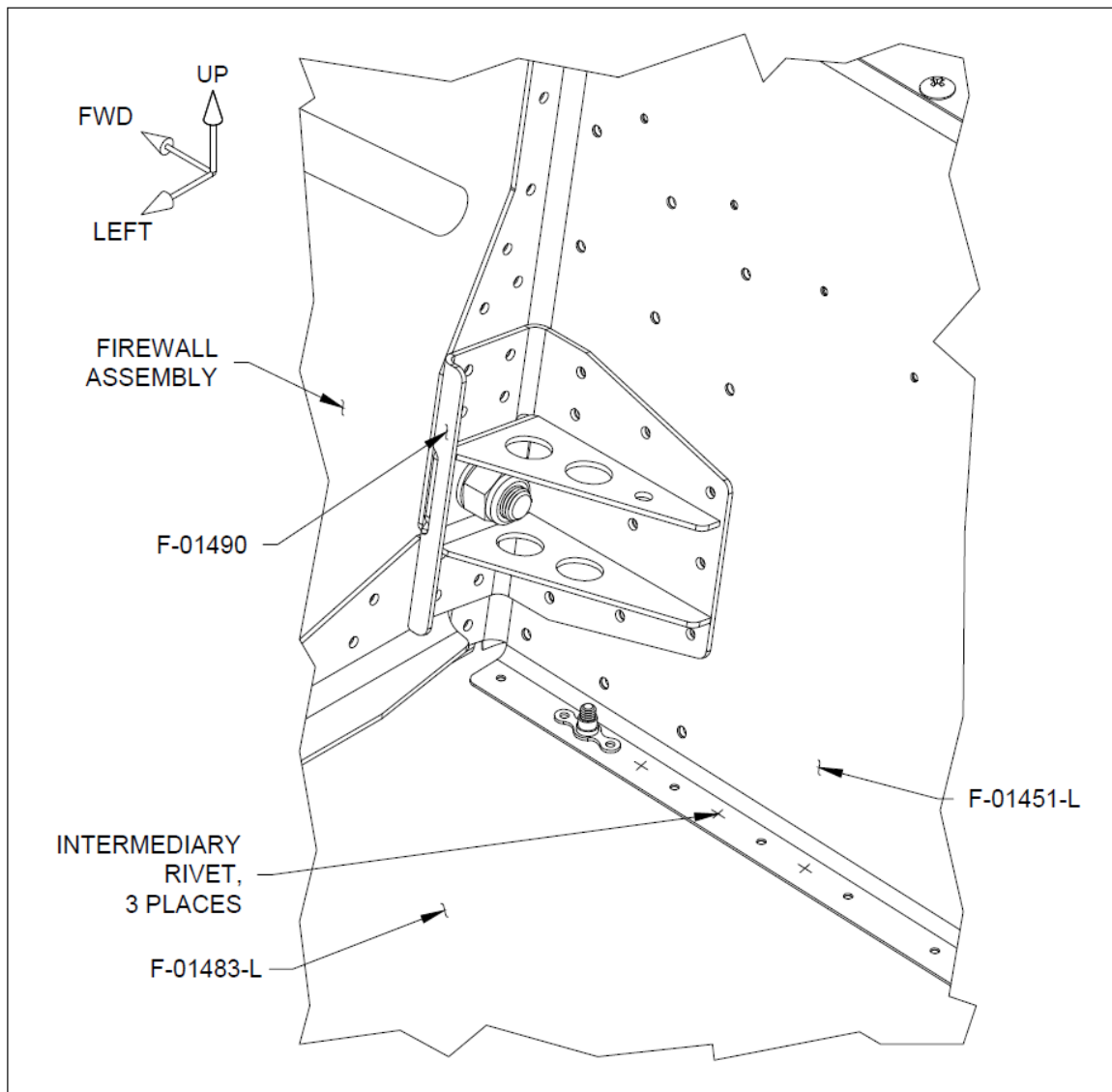
**NOTE: The following steps apply to fuselages with, or planning to be built with OP-62 installed. For Fuselages without OP-62 installed, skip to Step 64.**

Step 60: From the bottom of the fuselage, mark the location of the three intermediary rivets to be added as shown in Figure 15 and 16.

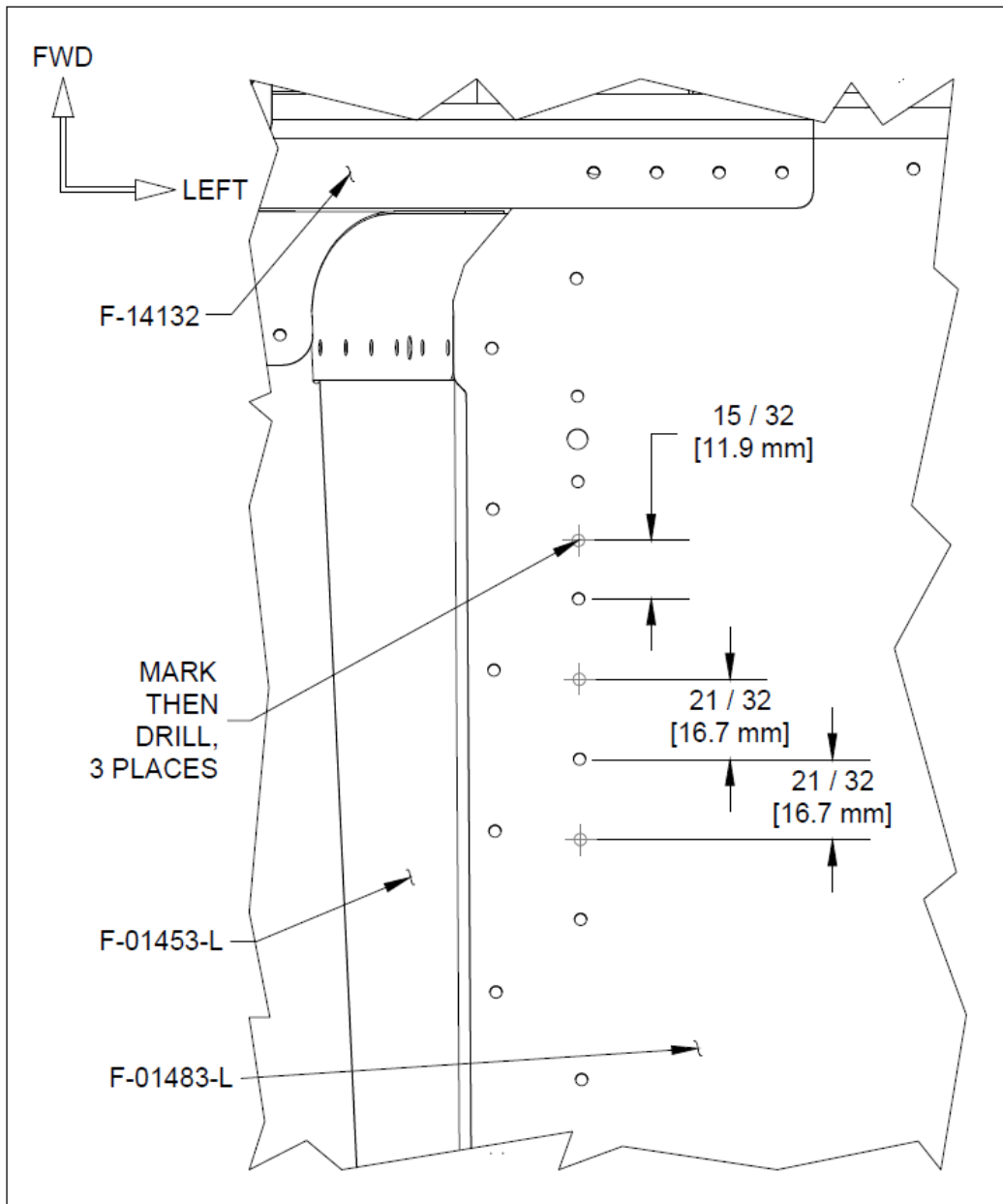
Step 61: Drill #40 the locations just marked. Reference Figure 16.

Step 62: Machine countersink the holes just drilled for an AN426AD3 rivet.

Step 63: Install three AN426AD3-3.5 rivets into the holes just countersunk. Reference Figure 15 and 16.



**FIGURE 15: FIREWALL ASSEMBLY AND TUNNEL SIDE  
(SHOWN WITH OP-62 MODIFICATIONS)**



**FIGURE 16:** MUFFLER SHROUD SIDE AND FORWARD BOTTOM SKIN. OP-62 PRESENT.  
(VIEW FROM EXTERIOR OF FUSELAGE, LOOKING UP.)

### Section 3: Remediation of a laser-cut F-01448A and/or F-01448C-L/R

Step 64: Inspect the fuselage and confirm the F-01448A or F-01448C-L/R are laser-cut.

Step 65: Remove the F-01440-L/R Seat Ramps. Reference Section 42 of the KAI.

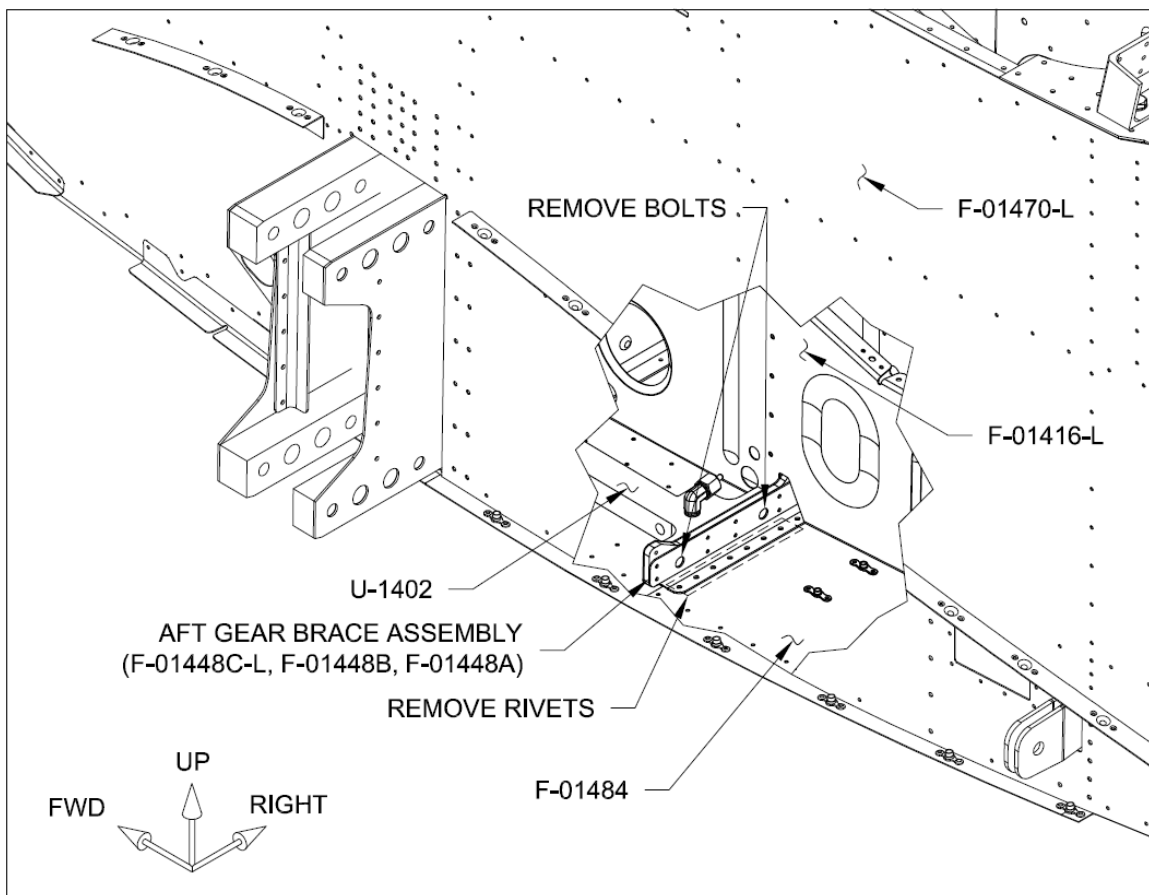
Step 66: Jack the airplane in order to unweight the landing gear.

**NOTE: The following steps are shown for the left side of the fuselage and will need to be mirrored for the right side.**

Step 67: Remove the U-01403 Gear Attachment Bar from the U-01402 Lower Gear Brace. Reference Section 40A of the KAI.

Step 68: Remove the two bolts securing the U-01402 to the Aft Gear Brace Assembly, as called out in Figure 17.

Step 69: Remove the seven outboard rivets attaching the Aft Gear Brace Assembly to the F-01484 Center Bottom Skin, as called out in Figure 17.



**FIGURE 17:** REMOVING HARDWARE FROM AFT GEAR BRACE ASSEMBLY

Step 70: Dimple the seven holes in the F-01448D-L Gear Brace Clip as called out in the detail view of Figure 18.

Step 71: Use a step drill to upsize the two .188 [4.8mm] holes in the F-01448D-L Gear Brace Clip as called out in the detail view of Figure 18.

Step 72: Position the F-01448D-L and F-01448E Gear Brace Spacer into the fuselage as shown in Figure 18.

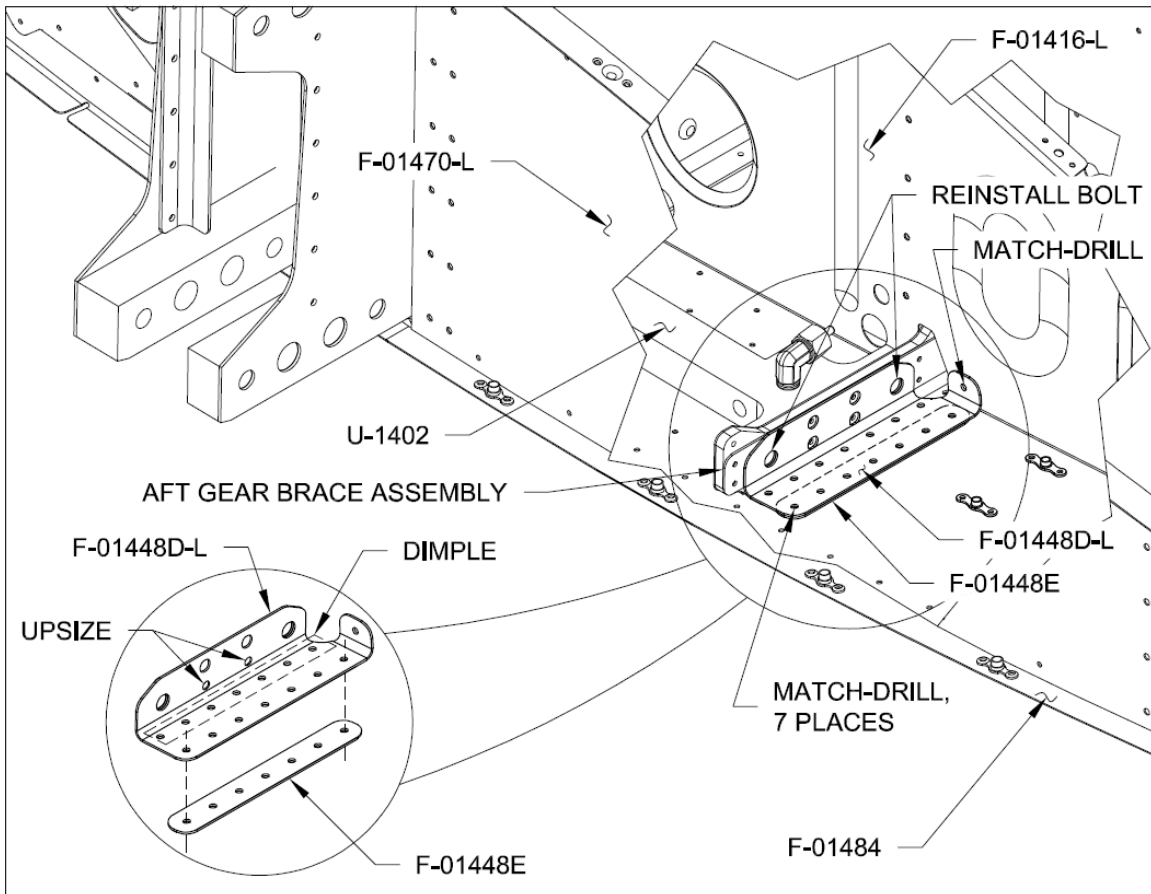
Temporarily reinstall the two bolts through the U-01402 and Aft Gear Brace Assembly, clamping the F-01448D-L. See Figure 18.

Step 73: Match-Drill #30 and cleco the seven holes from the F-01448D-L and F-01448E into the F-01484 as called out in Figure 18.

Step 74: Match-Drill #30 the single hole from the end-flange of the F-01448D-L into the F-01416-L Seat Rib. See Figure 18.

Step 75: Remove the F-01448D-L and F-01448E and deburr all match-drilled holes.

Step 76: Prime the F-01448D-L and F-01448E.



**FIGURE 18:** MATCH-DRILLING FOR F-01448D-L AND F-01448E.

**NOTE:** There are locations where the original fasteners may be substituted with an upsized, blind rivet as called out in the following figure. Use of the upsized, blind rivets are required where holes were either enlarged or oblongated during rivet removal. The upsized, blind rivets can also be used to ease installation in locations that would have limited access for bucking solid rivets. The rivet substitutions called out have an equivalent or greater strength and durability.

**NOTE:** When installing the Cherrymax pulled rivets included in this service letter, please refer to [KAI Section 5](#) and the Van's Aircraft YouTube [video about preparing the rivets](#) for installation.

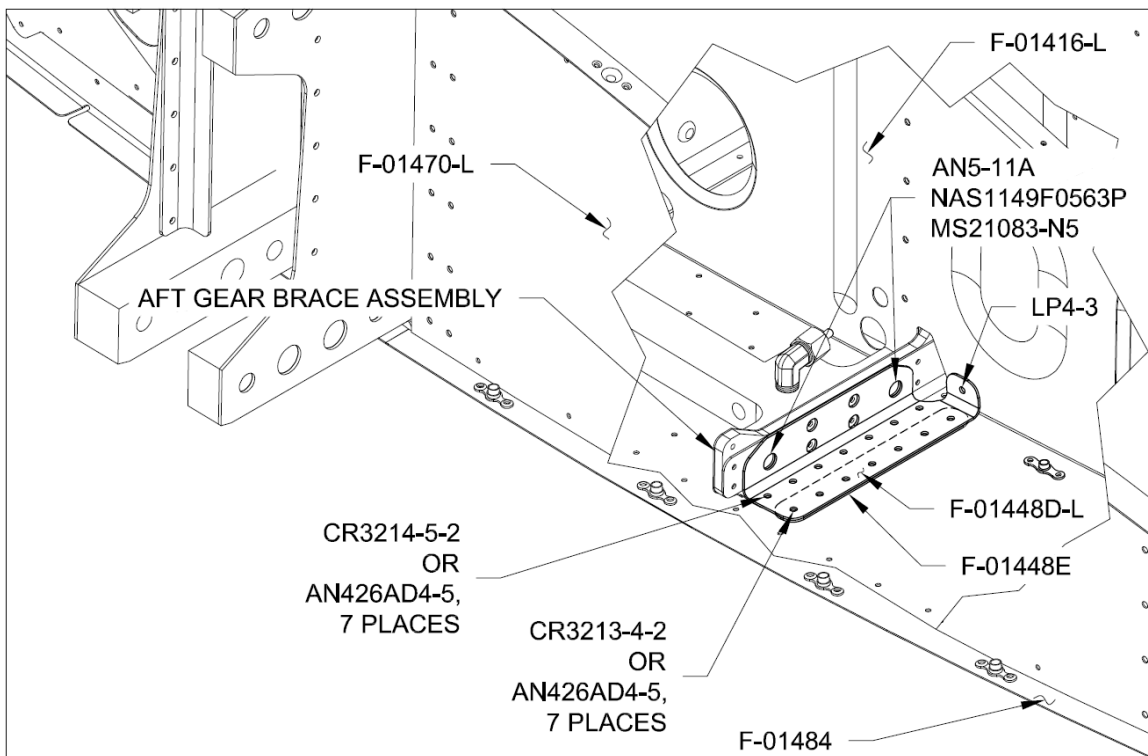
**NOTE:** The correct size to drill for a 5/32 Cherrymax Rivet is #20.

**NOTE:** Universal head or flush head rivets can be used on the belly to rivet the aft row of the F-01448D-L to the underlying structure as called out in Figure 19. If installing universal head rivets, skip to Step 78.

Step 77: If using flush rivets, dimple the F-01484 and countersink the F-01448E.

Step 78: Rivet the F-01448D-L and F-01448E to the underlying structure as called out in Figure 19.

Step 79: Install the bolts through the Aft Gear Brace Assembly as called out in Figure 19.



**FIGURE 19:** INSTALLING F-01448D-L AND F-01448E.



Step 80: Reinstall the U-01403 in accordance with Section 40A of the KAI. At this point the aircraft can be lowered back onto its landing gear.

Step 81: Reinstall the F-01440-L/R Seat Ramps in accordance with Section 42 of the KAI.

Step 82: Make a logbook entry indicating compliance with this service document per the requirements of the controlling authority/agency.

Place a copy of this notification in the back of the maintenance manual for your aircraft. Add the name and date of the service information to the Addendum Documents List at the front of the Maintenance Manual.

If you are no longer in possession of this aircraft, please forward this information to the present owner/operator and immediately notify Van's Aircraft, Inc. via email at [registrations@vansaircraft.com](mailto:registrations@vansaircraft.com).

Information regarding establishing/transferring aircraft ownership, registration and licensing is available at: <https://www.vansaircraft.com/qr/transfer-of-ownership/>