



SERVICE LETTER 00096

Date Released:	June 17, 2024
Date Effective:	June 17, 2024
Subject:	Laser Cut RV-10 Rear Spar Bulkhead Remediation
Affected Models:	RV-10 fuselages constructed with a laser cut F-1005A Rear Spar Bulkhead
Required Action:	<p>Inspect the F-1005A 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 F-1005A with a punched part. If cracks are not present, install the alternate fix detailed below.</p>
Time of Compliance:	<p>Inspect within 200 flight hours or at the next annual inspection, whichever is earlier.</p> <p>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.</p> <p>Upon or before reaching 1000 flight hours, the alternate fix must be conducted as outlined in this Service Letter, at which point compliance has been met without need for ongoing inspection.</p> <p>If fatigue cracking is present, replace the F-1005A before further flight, or contact Van's Aircraft to discuss alternative methods of repair.</p>
Supersedes Notice:	None
Labor Required:	<p>2 Hours (Time given for remediation of a QuickBuild fuselage, as delivered. Fuselages progressed past this point may require additional time).</p>
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>.

The Rear Spar Bulkhead Assembly is a highly-loaded section of the fuselage structure built upon the F-1005A Rear Spar Bulkhead; classified as Recommended for Replacement. The outboard-most rivet in the bulkhead assembly that attaches to the F-1005B Rear Spar Attach Bar sees particularly high loads, and is the sole area of concern for the assembly with regards to laser cut part fatigue. Replacement of the F-1005A 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.

The alternate fix requires the outboard-most rivet to be drilled out, the hole upsized, and an AN3 bolt installed in the original rivet's place as shown in Figure 1. Given the curvature of the side skins and existing structure in the area, drilling this rivet out from inside the fuselage would be nearly impossible while maintaining proper drill alignment. Fortunately, an existing hole in the fuselage side skin can be altered, allowing easy access to the rivet from outside of the fuselage. This modification to the side skin does not negatively affect the strength of the area, and will be covered by the wing root fairing.

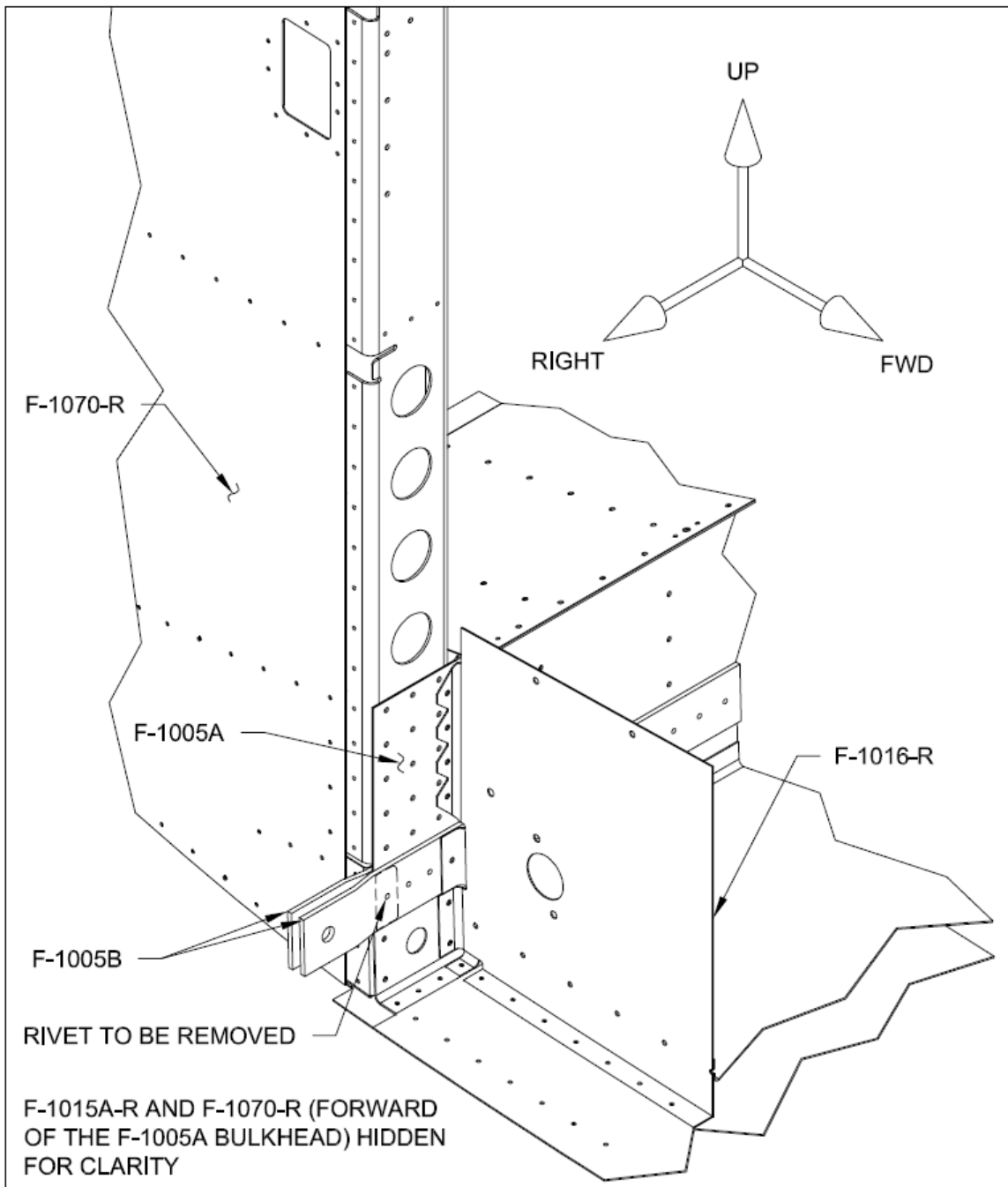


FIGURE 1: RV-10 MID FUSELAGE AS VIEWED FROM THE FRONT RIGHT

Materials Required:

The following materials are required to complete the steps necessary to achieve compliance with this SL-00096.

Purchase: SL-00096 KIT

Tools Required:

Angle drill

#40 threaded drill bit, 2 in. [50.8 mm] to 2 1/2 in. [63.5 mm] long

#30 threaded drill bit, 2 in. [50.8 mm] to 2 1/2 in. [63.5 mm] long

#12 threaded drill bit, 2 in. [50.8 mm] to 2 1/2 in. [63.5 mm] long

Die grinder with abrasive cartridge roll

Method of Compliance:

Step 1: Inspect the fuselage and confirm the F-1005A is laser-cut.

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

Step 2: Remove the F-1015D-L/R Mid Cabin Side Covers, and F-1025-L/R Rear Seat Cover Panels if installed. Reference Section 35 of the KAI.

Step 3: Remove the rivets attaching the F-1024-L/R Seat Floors to the underlying structure, and remove the F-1024-L/R. Reference Section 33 and 35 of the KAI.

Step 4: Remove the wings from the fuselage to gain access to the wing-attach area. Reference Section 44 of the KAI.

Step 5: Remove the bolts securing the WD-1013A Flap Crank to the left and right WD-1013C Flap Torque Tubes.

Slide the left and right WD-1013C out the sides of the fuselage, leaving the WD-1013B Flap Horns attached to the ends. Reference Section 40 of the KAI.

NOTE: The following steps are shown for the right side of the aircraft. Unless noted otherwise, these steps must be mirrored for the opposite side.

Step 6: Cleco the F-1070-DJ Drill Jig to the F-1070-R Mid Side Skin and F-1015A-R Outboard Seat Rib with the circular holes aligned as shown in Figure 2.

Step 7: Match-Drill #12 the three .189 [4.8mm] holes in the F-1070-DJ into the F-1070-R and F-1015A-R as shown in Figure 2.

Remove the F-1070-DJ.

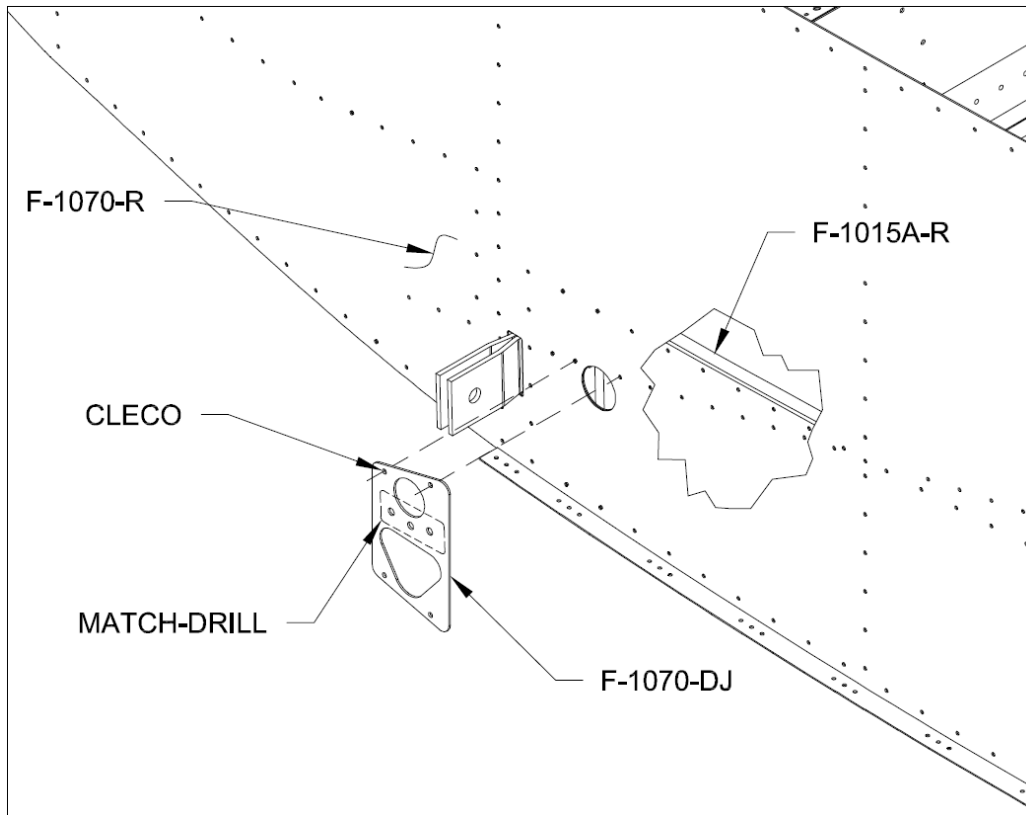


FIGURE 2: MATCH-DRILLING THE SIDE SKIN

Step 8: Use a step drill to upsize the two outer holes drilled in the F-1070-R and F-1015A-R to 3/4 as called out in Figure 3.

Step 9: Use a step drill to upsize the middle hole drilled in the F-1070-R and F-1015A-R to 1/2 as called out in Figure 3.

Step 10: Cleco the F-1070-DJ to the F-1070-R and F-1015A-R oriented as shown in Figure 3. The triangular window will be over the 1/2 and 3/4 holes.

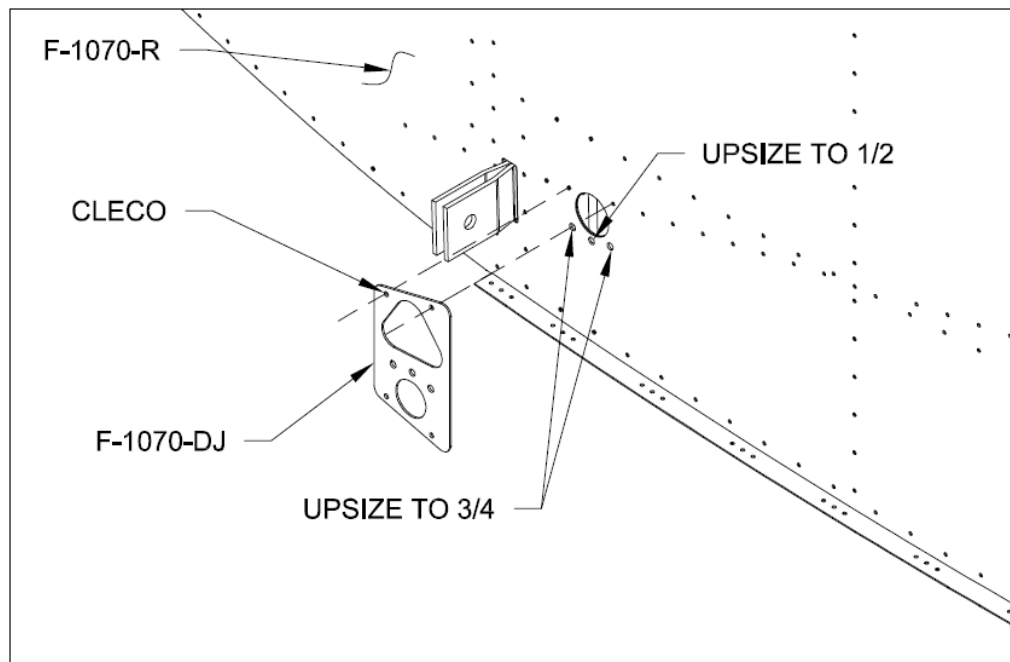


FIGURE 3: UPSIZING HOLES

Step 11: Using the F-1070-DJ as a template, cut away remaining material of the F-1070-R and F-1015A-R within the triangular window and smooth any sharp edges with the abrasive cartridge roll.

Remove the F-1070-DJ and deburr the F-1070-R and F-1015A-R.

Note: While drilling through the rivet in the following steps, care should be taken to keep the drill bit perpendicular to the bulkhead. Use visual references such as the F-1005B Rear Spar Attach Bars to keep the drill body and bit aligned properly. Every attempt should be made to keep the drill centered in the rivet, but this can be particularly challenging if drilling into the shop-head. Some wandering is permissible as the fastener hole will be upsized significantly.

Step 12: Using the #40 drill bit in the angle drill, drill through the outboard-most rivet as shown in Figure 4.

Step 13: Inspect the entry and exit of the hole for accuracy.

Enlarge the hole drilled through the rivet in the previous step to #30. This is the best time to coerce the hole into proper alignment if needed.

Step 14: Final-Drill #12 the hole drilled in the previous steps, and deburr any sharp edges.

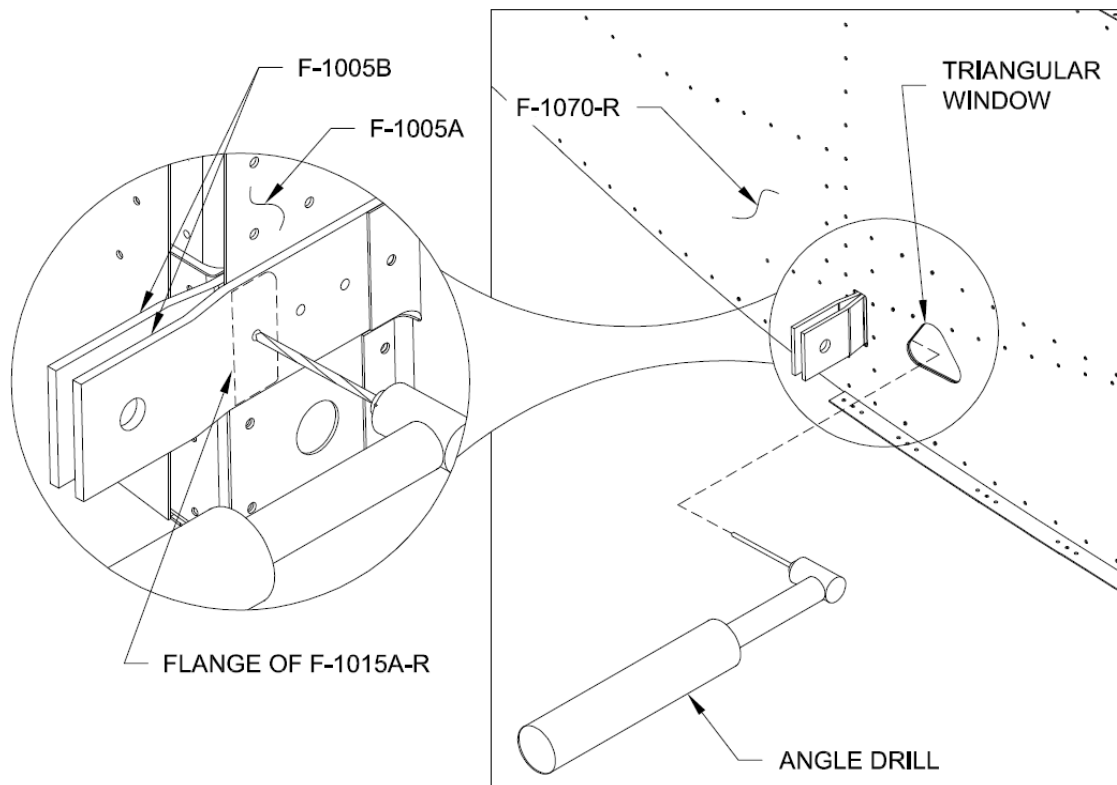


FIGURE 4: REMOVING THE RIVET THROUGH THE FINISHED WINDOW
(F-1070-R AND F-1015A-R NOT SHOWN IN DETAIL VIEW)

Step 15: Install the hardware shown in Figure 5.

Step 16: Reinstall the left and right WD-1013C and WD-1013B, reattaching them to the WD-1013A. Reference Section 40 of the KAI.

Step 17: Reinstall the left and right wings. Reference Section 44 of the KAI.

Step 18: Reinstall the F-1024-L/R, F-1015D-L/R, and F-1025-L/R. Reference Section 33 and 35 of the KAI

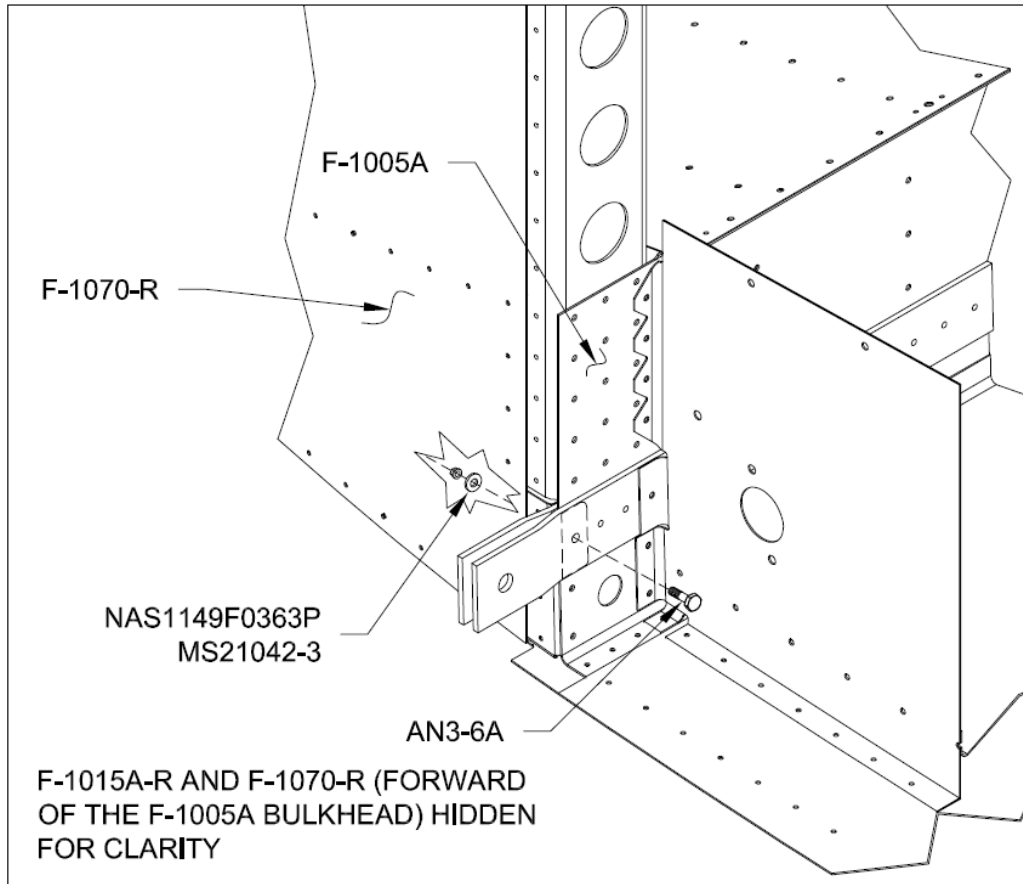


FIGURE 5: INSTALLING HARDWARE

Step 19: 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.

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