VAN'S AIRCRAFT
TOTAL PERFORMANCE

14401 Keil Road NE, Aurora, Oregon, USA 97002
www.vansaircraft.com • info@vansaircraft.com
PHONE 503-678-6545

SERVICE BULLETIN 00142 REV 1

Date Released: October 28th, 2026 (Rev 1 added acceptance criteria for RV-4 aircraft with a single bolt on each side of the aircraft attaching the horizontal front spar)

October 13th, 2026 (Rev 0)

Date Effective: October 28th, 2026

Subject: RV-4 Alternate Horizontal Stabilizer Attach

Affected Models: RV-4

Required Action: Inspect horizontal stabilizer attach. Update if required.

Time of Compliance: Before further flight the aircraft shall be compliant with this service bulletin.

Supersedes Notice: N/A

Labor Required / SLSA Warranty Allowance: N/A

Level of Certification: N/A

Synopsis:
This service bulletin covers the criteria for evaluating the attachment of the horizontal stabilizer on the RV-4. There have been multiple versions of horizontal stabilizer attachment including many custom installations which this bulletin will not be able to address. Aircraft with attach methods not addressed by this service document should contact Van's Aircraft for further assistance.

Some early RV-4 aircraft were built with a single bolt attaching an angle into the longeron on the forward spar of the horizontal stabilizer on each side of the aircraft (such as the original kit RV-4 shown in Figure 9) . These aircraft are acceptable provided they meet the criteria of this service document. This applies to RV-4 aircraft with the front spar attachment angle along the lower edge of the horizontal front spar on the forward or aft side of spar.

This also includes aircraft with the attachment angle on the aft side of the spar with additional bolts attaching through the spar web forward into the aft bulkhead of the turtle deck as shown in Figure 8 and earlier versions with a gap between the spar and the bulkhead only attached with a single bolt to the longeron on each side of the aircraft. Also included are pre-1981 versions with an attach angle on the forward side of a single piece bulkhead as shown in Figures 6 and 7.

In 1983 Van's Aircraft released Rev 1 of KAI 30 which updated the horizontal front spar attach to include two bolts on each side of the aircraft. This was in response to observing aircraft in the field with improper installations (placement of the single bolt through the longeron on each side of the aircraft). Of particular concern is a single bolt attachment with a significant unsupported washer area as shown in Figure 2 that places the bolt in bending.

While aircraft with a single bolt attachment on each side of the aircraft meeting the criteria of this service document are acceptable, it is recommendation that those aircraft be updated to have an additional bolt on each side of the aircraft. For owners who wish to add an additional bolt the following methods may be used:

Method 1: For those aircraft with attachment angles across the front side of the horizontal front spar (attached directly to the spar) and a1X1X1/8 6061-T6 angle across the fuselage beneath the deck (see the callout surrounded by a blue box in Figure 4), simply add an additional inboard bolt (as shown in KAI 30) and fit new spacers between the horizontal stabilizer and the fuselage deck with greater spanwise length sufficient to accommodate the additional bolts with an edge margin of e/D = 1.5D.

NOTE: A copy of KAI 30 is posted with this service document on the Van's Aircraft website.

Method 2: For those aircraft without an angle across the fuselage beneath the fuselage aft deck this service document shows an alternate, less invasive solution to add a second attach bolt to each side of the aircraft by adding an additional angle to the horizontal stabilizer front spar opposite of the existing angle. See Appendix 1.

NOTE: Method 2 only applies to aircraft with a stepped type fuselage not a single piece fuselage bulkhead as shown in Figures 6, 7 and 8.

Method 3: For those aircraft with the attachment angle on the aft side of the spar and no crossing angle beneath the aft deck it will be necessary to add a crossing angle beneath the deck similar as shown in KAI 30. A spacer will need to be added between the crossing angle and the deck as shown on KAI 30. With the lower angle in place add a second bolt inboard of the outboard bolts similar as shown in KAI 30.

NOTE: If the position of the fuselage bulkhead prevents this method contact Van's Aircraft for further assistance.

Materials Required:
The following materials are required to complete the steps necessary to achieve compliance with this Service Bulletin 00142

Purchase SB-00142-KIT

Method of Compliance:

Step 1: Each bolt shall be an AN3. Contact Van's Aircraft if your bolt size is other than AN3.

Step 2: For aircraft with a single bolt through the outboard horizontal stabilizer attachment angle (including aircraft with bolts attaching through the spar web into the turtle deck bulkhead as shown in Figures 6, 7 and 8) Inspect the single bolt on each side of the aircraft passing through the horizontal stabilizer front spar attachment angle into the fuselage longeron.

Each bolt shall have at minimum 1/4 edge distance from the hole center to the inboard edge of the longeron. Aircraft meeting this criteria are acceptable and may proceed to Step 3.

For aircraft with a horizontal stabilizer attachment angle on the forward side of the front spar with two attach bolts and a crossing angle beneath the fuselage aft deck (the installation shown in KAI 30) evaluate your installation using SB-00134 using RV-8 acceptance criteria.

Aircraft not meeting this criteria or of a configuration not addressed by this service document shall contact Van's Aircraft for further assistance.

Step 3: 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. Please include the new owner's contact information and date the aircraft ownership transferred.

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

Appendix 1:

This appendix describes the addition of a second bolt

Step 1: Unbolt all empennage surfaces from the fuselage (vertical stabilizer, rudder, horizontal stabilizer, elevators leaving trim connected).

Step 2: Remove the rivets attaching the 1X1X1/8 6061-T6 forward attach angle to the forward side of the horizontal stabilizer spar. See Figure 3.

Step 3: Fabricate an additional aft attach angle for the aft side of the spar from 1X1 6061-T6 angle. The aft attach angle should fully span the fuselage allowing edge distance for the bolts locations established in Steps 6, 7 and 8.

Step 4: Fabricate 1 inch by 1 inch spacers from 1/8 inch thick 6061-T6 or 2024-T3 aluminum. If your aircraft has different thickness spacers (which set the horizontal stabilizer incidence) match the thickness of existing spacers.

Step 5: Reinstall the horizontal stabilizer to the fuselage (including the bolts that attach the angle to the deck and longeron) with the original spacers beneath the ends of the angle.

Use unset rivets to temporarily align the forward horizontal stabilizer attach angle to the forward side of the horizontal stabilizer front spar through the rivet holes drilled out in Step 2.

Clamp the fabricated aft attach angle and spacers to the aft side of the spar. The spacers shall be aligned with the outboard ends of the angle and centered on the angle fore and aft. See Figure 3 and Figure 4.

Step 6: Match-Drill #30 rivet holts in the vertical flange of the forward attach angle and spar into the fabricated attach angle. Cleco each hole after drilling.

Step 7: Carefully mark (centerpunch) bolt hole locations at each end of the aft attach angle. The bolt shall be positioned on the intersection of the centerline of the fuselage longeron and the centerline of the aft attach angle.

Step 8: Drill #40 a pilot hole for the bolt holes at each end of the aft attach angle. Keep the drill bit perpendicular to the aft deck. Check the lower side of the longeron to make sure that the holes are properly positioned on the longeron.

If properly centered Final-Drill both holes #12. If the holes are not centered the position, they can be adjusted when final-drilling the holes.

Step 9: Remove all parts. Deburr and prime parts as necessary.

Step 10: Rivet the forward and aft attach angles to the spar using AN470AD4-8 rivets.

Step 11: Reinstall all empennage surfaces removed in Step 1 including the existing and fabricated spacers. Note the attach bolt lengths will vary depending on the thickness of the spacers (which set horizontal stabilizer incidence).

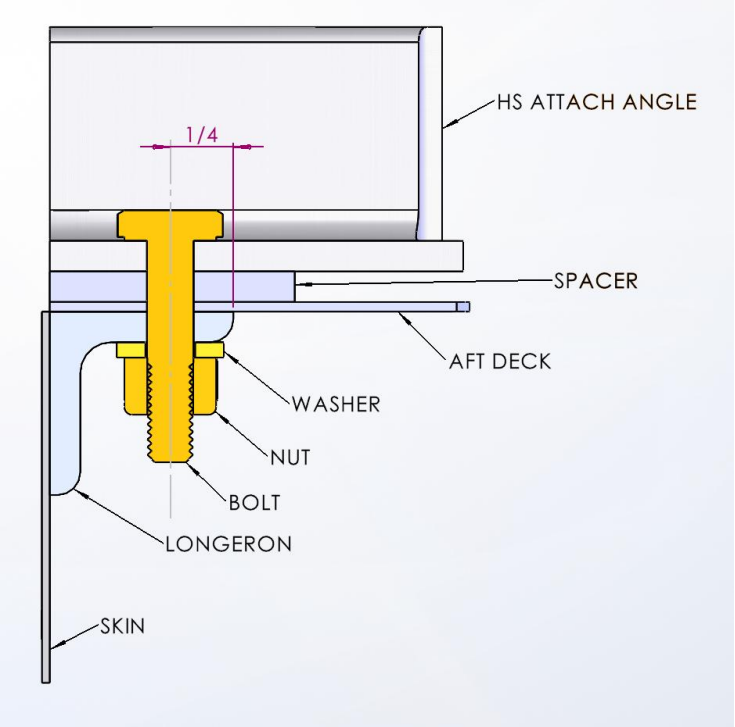


FIGURE 1: SINGLE ATTACH BOLT CUTAWAY VIEW
MINIMUM EDGE DISTANCE

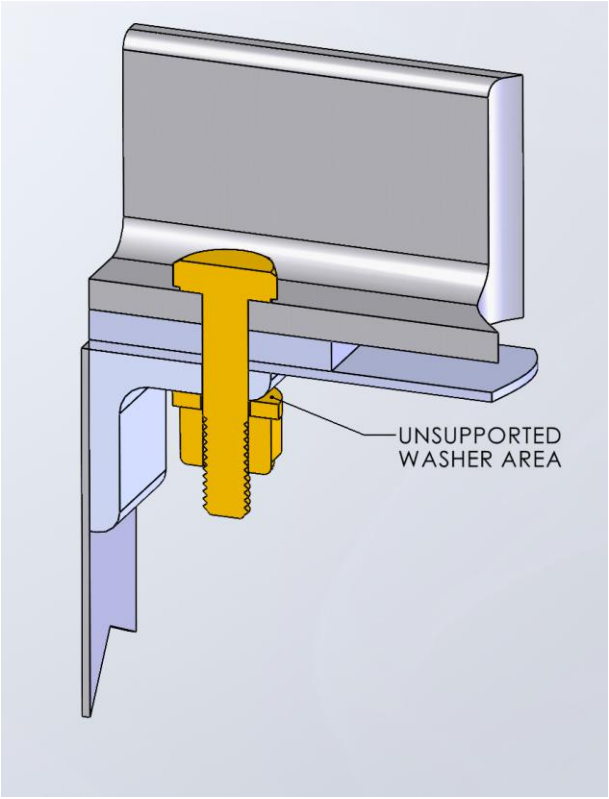


FIGURE 2: UNSUPPORTED WASHER AREA
LESS THAN MINIMUM EDGE DISTANCE

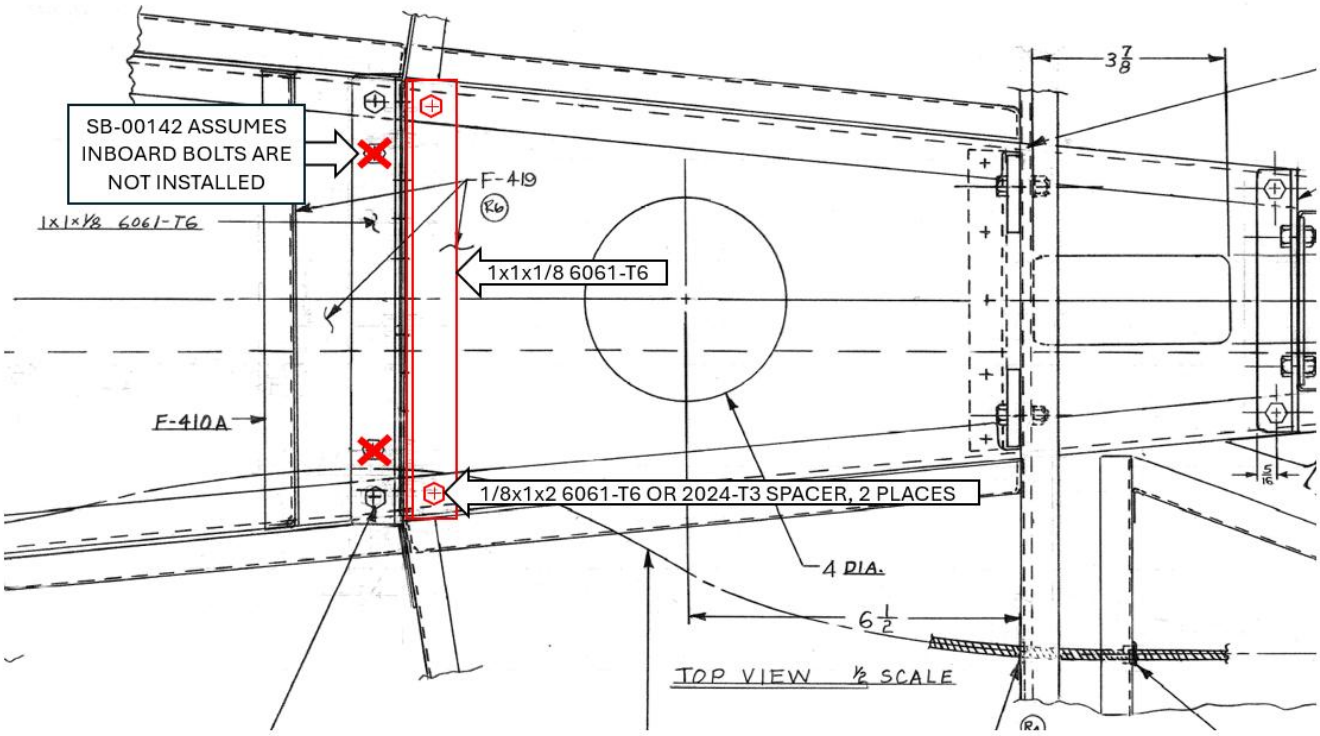


FIGURE 3: RV-4 KAI 30 TOP VIEW

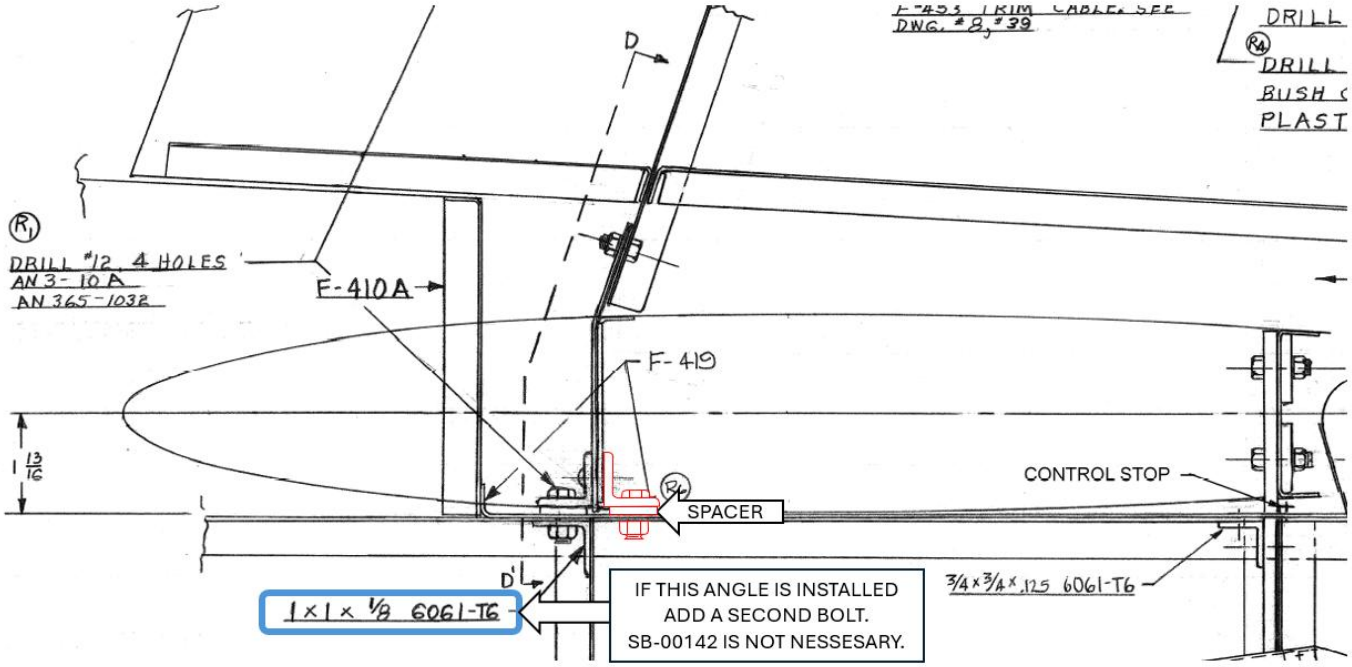


FIGURE 4: RV-4 KAI 30 SECTION A-A (SIDE VIEW)

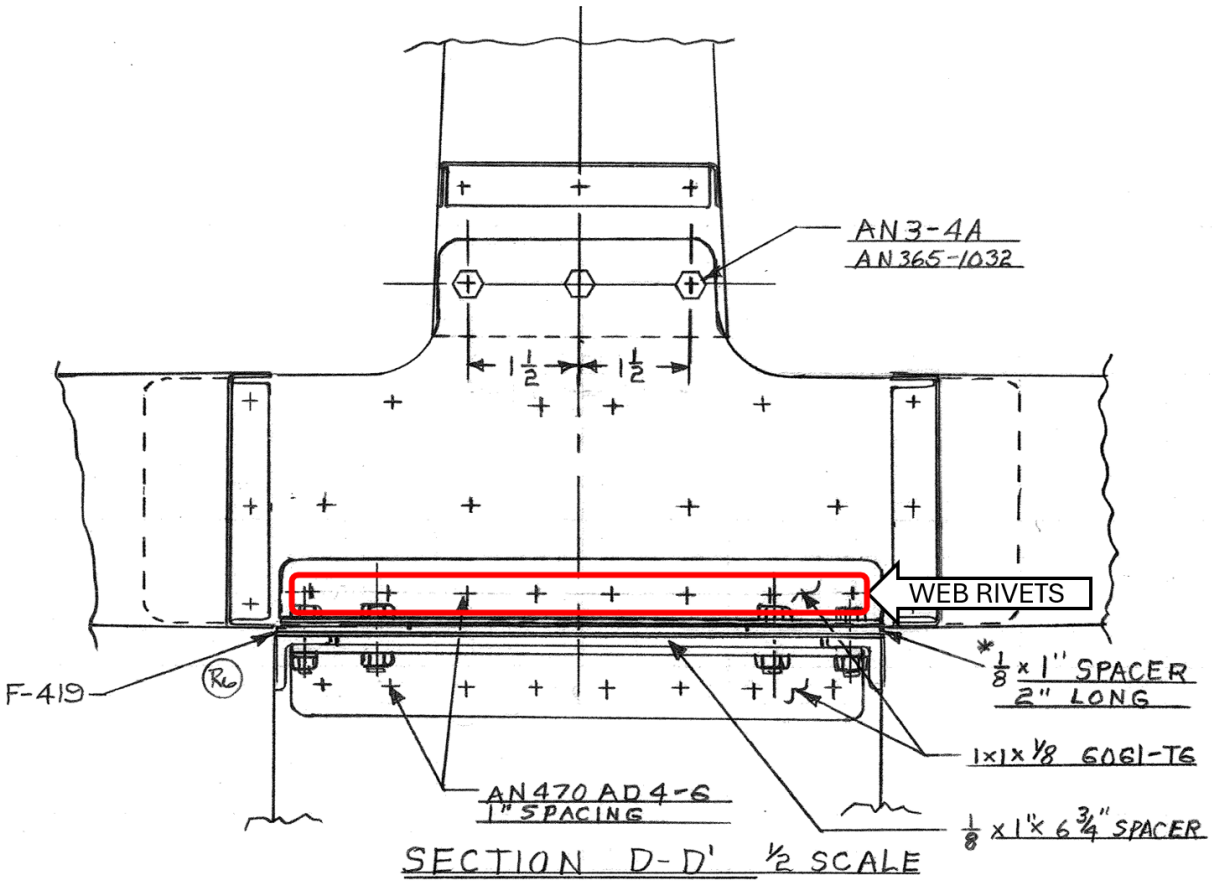


FIGURE 5: RV-4 KAI 30 SECTION D-D (FRONT SIDE VIEW)

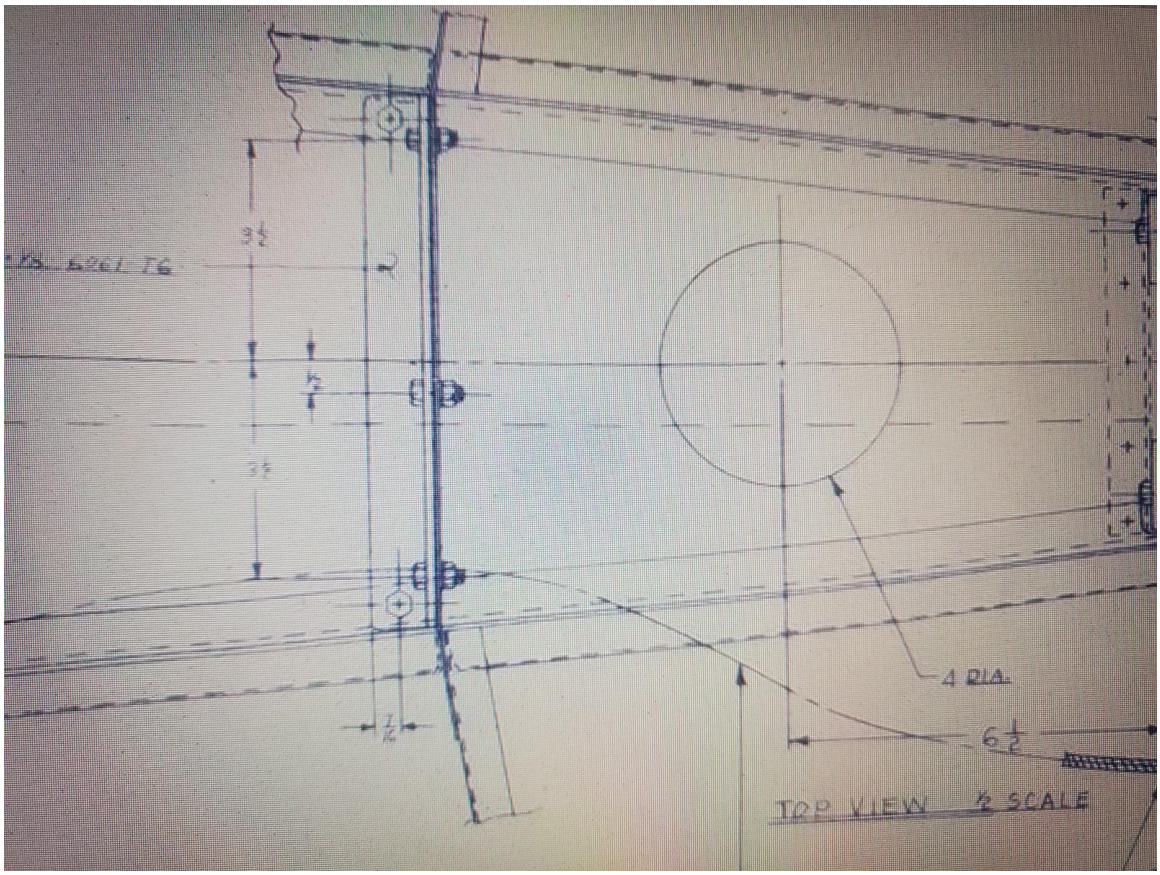


FIGURE 6: RV-4 ATTACHMENT TO AFT TAILCONE BULKHEAD PRE-1981
(SIDE VIEW)

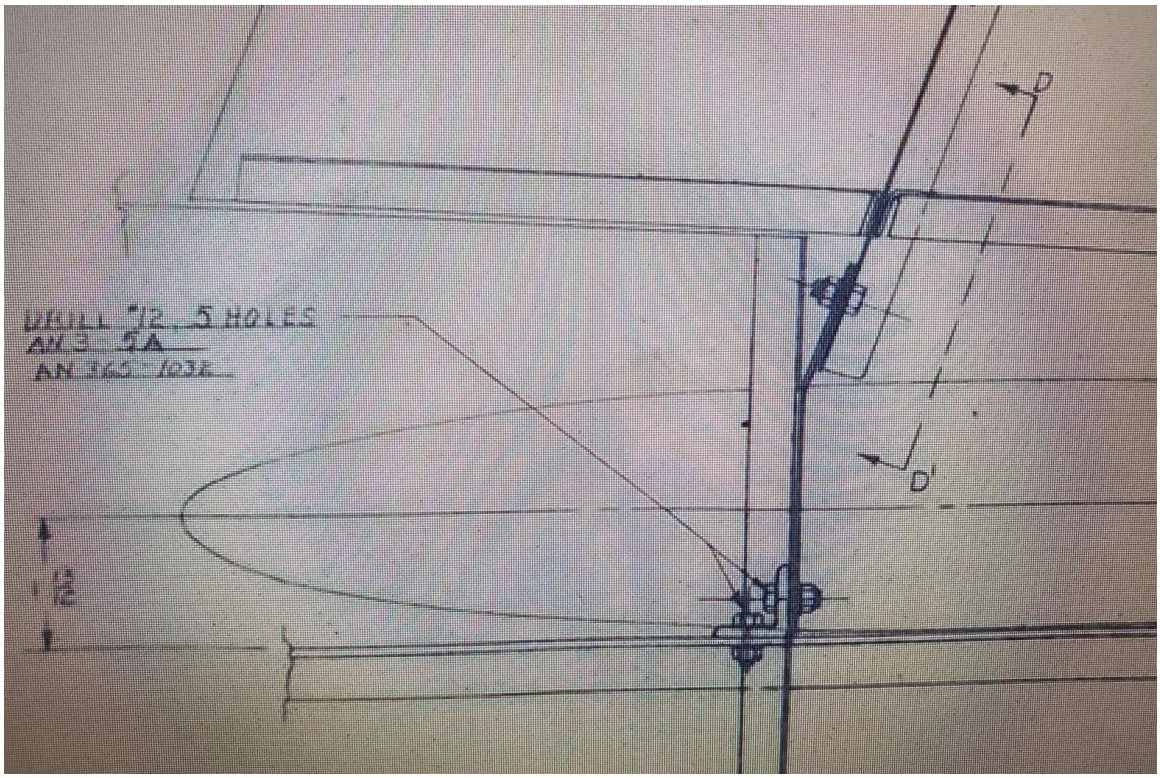


FIGURE 7: RV-4 ATTACHMENT TO AFT TAILCONE BULKHEAD PRE-1981
(TOP VIEW)

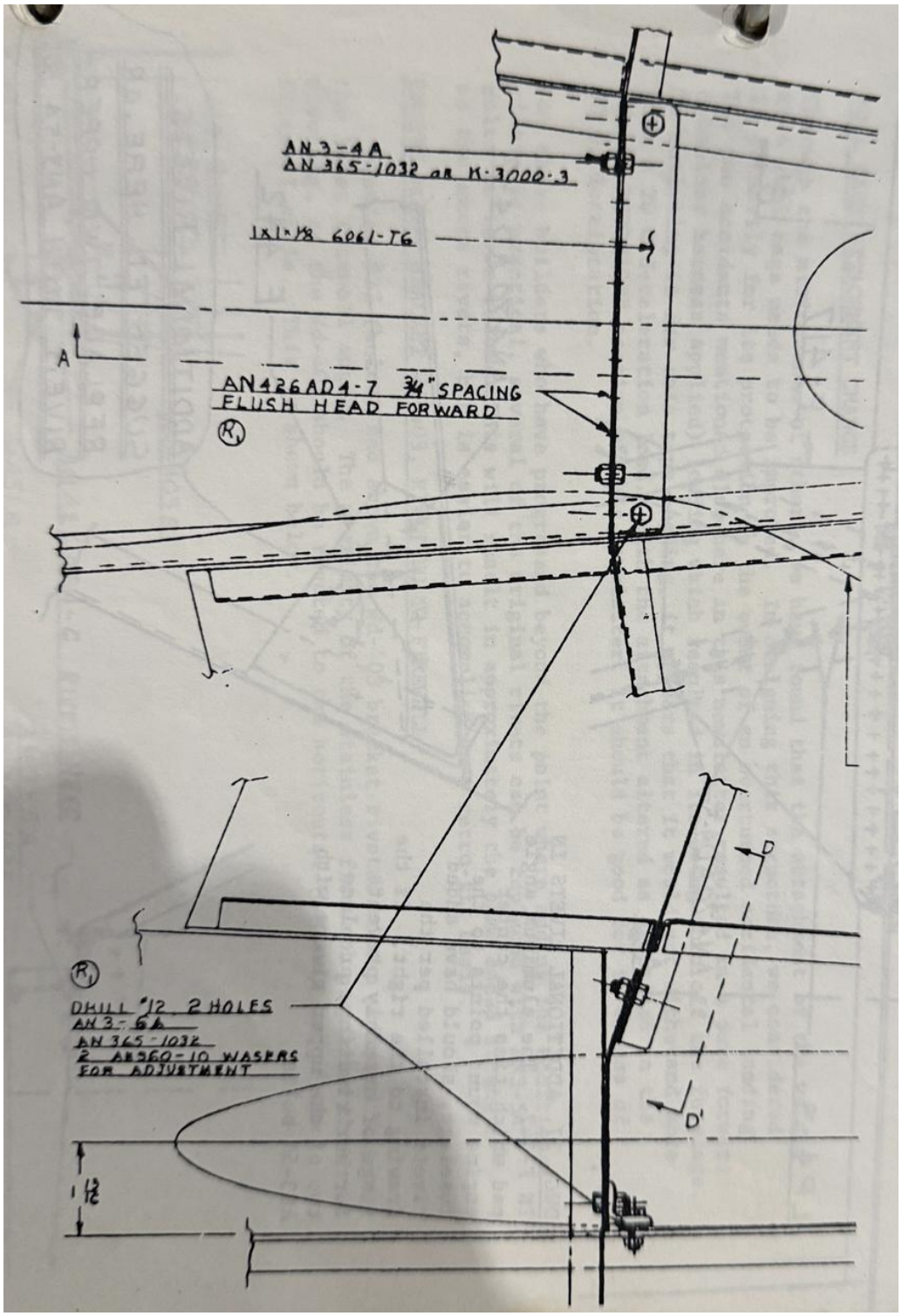


FIGURE 8: RV-4 HS ATTACHMENT AS DEPICTED IN RVATOR

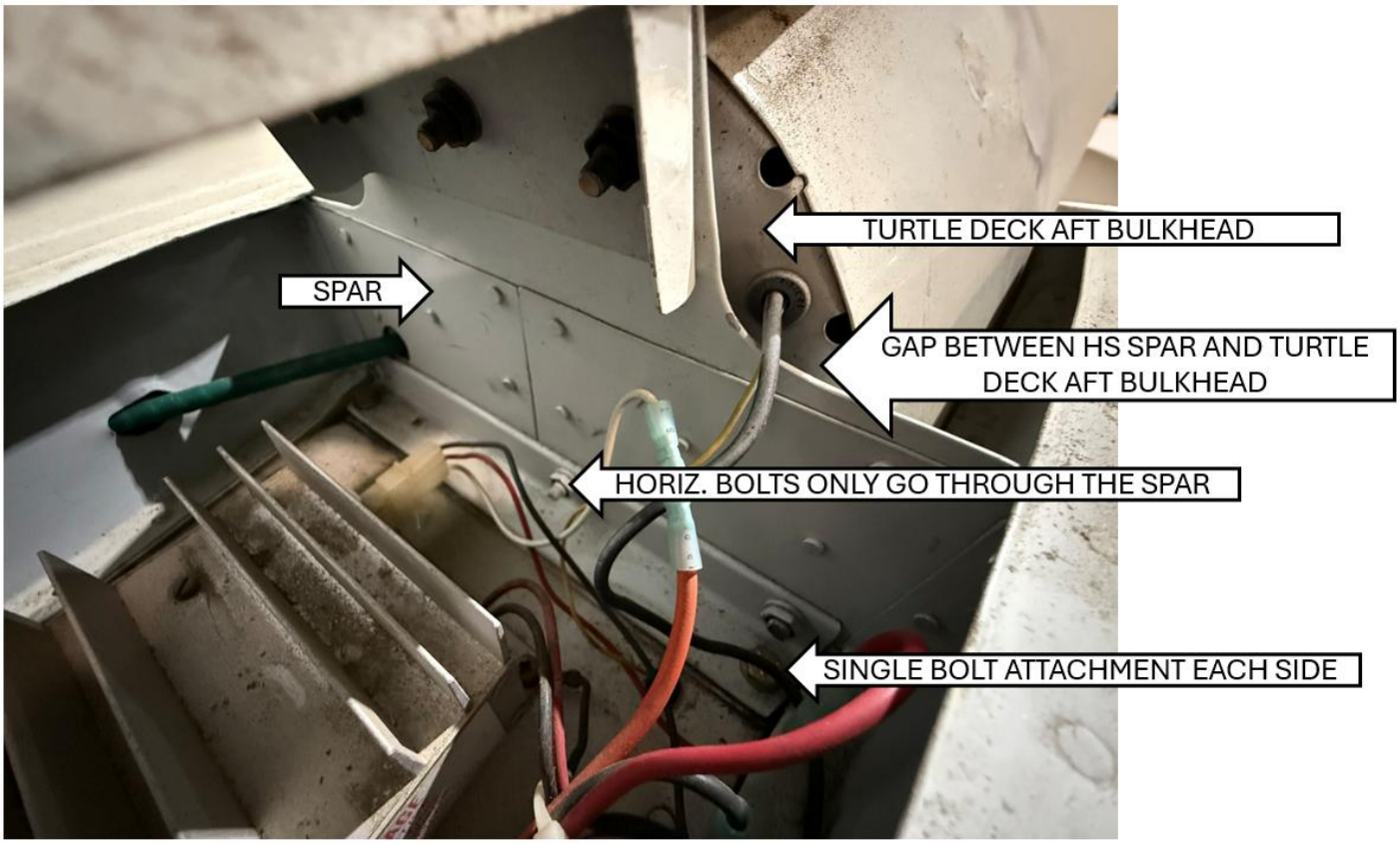


FIGURE 9: RV-4 ORIGINAL HS ATTACHMENT