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# 1 FILTERED AIR BOX (FAB) INSTRUCTIONS

## 1.1 Build Instruction Updates

- 06/02/21 [FAB-320-360-540-Air-Box.pdf](#)

Check for more recent updates [here](#)

### 1.1.1 Hints

- Engine offset discussion, see [FB Thread](#)
- Fitting the filter, see [FB Thread](#)

## 2 SECTION 10: TAILCONE

### 2.1 Build Instruction Updates

- 10/05/21 [10\\_10.pdf](#)

Check for more recent updates [here](#)

#### 2.1.1 Hints

- If you intend on installing a yaw damper as part of your autopilot package, you are encouraged to think about the mounting hardware for it while you are building the tailcone, as access is much easier NOW than later. See this page for more details: [https://rv10.org/index.php?title=Yaw\\_Damper\\_Servo](https://rv10.org/index.php?title=Yaw_Damper_Servo)
- Vans also sells a mounting bracket that fits in the RV-10 tailcone ([https://rv10.org/index.php?title=File:Screen\\_Shot\\_2022-03-24\\_at\\_11.50.50\\_AM.png](https://rv10.org/index.php?title=File:Screen_Shot_2022-03-24_at_11.50.50_AM.png)) that is perfect for a spot to mount additional hardware. It's much easier to install earlier in the build process than later.
- The tie down ring and the jam nut is not included in the kit.  
Consider those sources:
  - ♦ [Cleaveland Tie Down](#)
  - ♦ [3/8-16 Stainless Jam Nut at Marine Bolt Supply](#)
- Consider electrical wiring and rudder cables before completing the tailcone. It is much easier to do before the top skin is riveted than to climb inside later.
  - ♦ Complete section 10 up to page 10-21 step 4. Do not rivet the Aft Deck assembly (F-1014) or the Top Skin (F-1075) until you are happy with the wiring.
  - ♦ If you don't have the fuselage kit yet, you can purchase the rudder cables (F-1053) from Vans for about \$110, then later have them deleted from the fuselage kit.
  - ♦ Follow the instructions in section 38 (page 38-8) on how to install the rudder cables. Install the cables through F-1008, and coil them for later between F-1007 & F-1008.
  - ♦ You will need to wire three (or more) systems:
    - ◇ The tail light -- refer to OP-56 for instructions on how to route the wire to the rudder. If you have ZipTips (see [Wing Tips](#)), the tail light is optional.
    - ◇ The trim motor and sensor.
    - ◇ A coax for the VOR antenna -- route a 25ft coax with a male BNC connector to the base of the vertical stabilizer. 25 feet of cable allows an unbroken run all the way to the control panel; each connector results in a drop in signal strength, so the minimum should be used.
  - ♦ (More to come.)

### 2.2 Preparation

Make sure you have enough clecos. During the initial assembly, I used about 650 clecos.

### 2.3 Page 10-2

Step 3 - Consider also using the center line on the back of the AEX tie down as an additional reference to center the AEX to the centerline of the F-1012A bulkhead. It can be difficult to accurately center the marked lines in the exact centers of the holes as referenced in the plans.

- 5/28/22 I did it per the plans, drawing the two lines exactly. Now use a cleco CLAMP on the bottom (threaded end) and a wood C clamp on the top gently holding it in place while you drill the 4 holes. A little confusing in the plans it calls to drill the 3/32 out w/ a # 30 drill. Correct. It's a 3/32 hole oversize it to #30 so it will receive a -4 (4/32) rivet down line. See page 10-18 for rivet size. Drill the 4 #30 holes first and cleco as you go. Then drill the 3/16 holes also clecoing if you have 3/16 clecos.



Tie down assembly

Step 1: 5/28/22 Taping the Tie down. Note: The hole should first be drilled out to 5/16 to receive a 3/8-16 tap. The hole is undersized by Vans. A trick a machinist taught me, put the tap in your drill press and center your piece under while turning the tap BY HAND. DON'T turn on the drill! It's just a jig to keep things straight while you start the tap. Once you get a couple turns on the tap, take it out, put in your vice and finish.



Tap drilling

Step 5: Those nut plates will be used to hold the rudder cable sleeves with the help of an Adel clamp. It is then very difficult to start the AN3-4 bolt into those nut plates because the area is very hard to reach. Now is a good time to test run the bolts.

## 2.4 Page 10-4

Step 1 - Double check the length and make sure you center the F-1010A on the F-1010 bulkhead to avoid any edge distance issues later on when match drilling the top deck to the longerons.

## 2.5 Page 10-5

- Step 1 The angle in figure one is shown upside down in regards to its later mounting position. The angle has a vertical part that gets trimmed  $\frac{5}{32}$  on both sides and it has a forward pointing horizontal part that gets wider towards the front where it reaches the full width of  $10 \frac{3}{4}$ .
- Step 4 Consider making a jig to make drawing the center line more consistent and efficient. YouTube video: [https://youtu.be/yC1kzDO\\_Gg8?t=590](https://youtu.be/yC1kzDO_Gg8?t=590)
- Step 4 Carpenters Scribe modified for a sharpie. Drill  $\frac{3}{8}$  hole in end. Keep it parallel. Works great easy to make. See image:



Carpenters Scribe Modified for sharpie

- When cutting the stiffeners to length, consider making them slightly longer than Vans recommends in the instructions by approx 1/8 inch. If cut too short, you may end up with edge distance issues when match drilling the end rivet holes. The length can then be adjusted if desired after first fit up.
- Don't assume the stiffeners are exactly 8 foot long and just measure how much to cut off, measure across the entire length to mark the cut-off line.

## 2.6 Page 10-8

- Step 1: For hints, see this [VAF thread](#)

## 2.7 Page 10-8

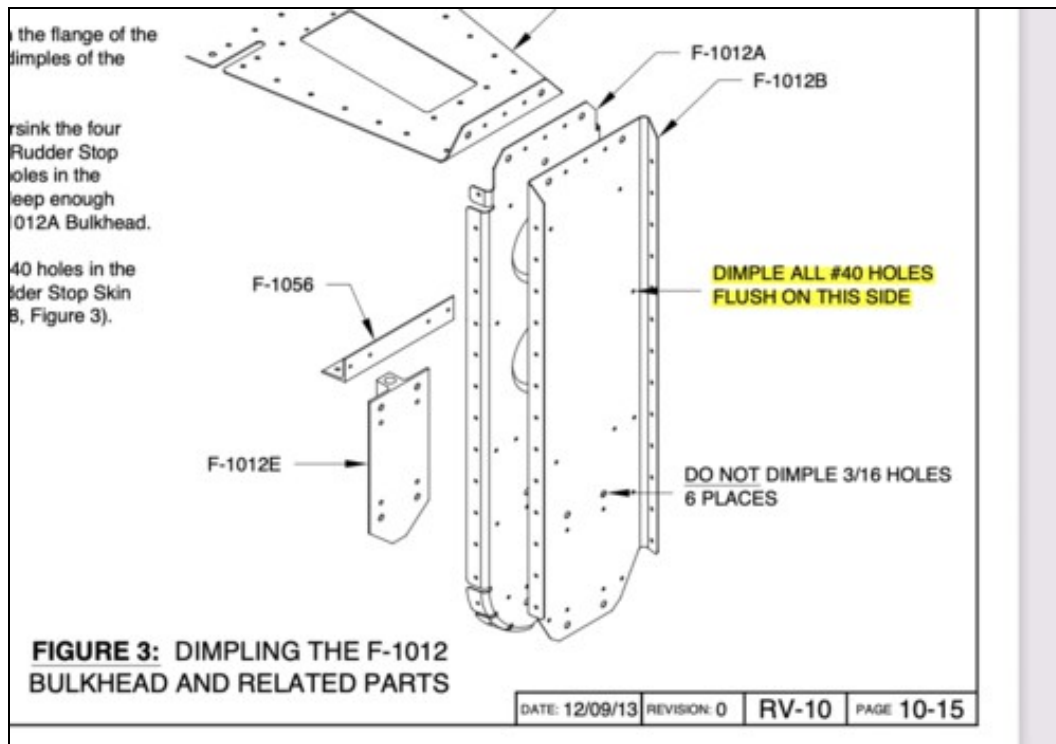
I had to buy a large clamp that could fit across the width of the F-1014 aft deck in order to align the longerons correctly.

## 2.8 Page 10-13

There is a service bulletin (<https://www.vansaircraft.com/wp-content/uploads/2018/03/sb18-03-30.pdf>) for the elevator stop (F-1012D). As mentioned in this YouTube build video (<https://youtu.be/g5ONB4e28TI>), Van's did send the required material to create the new part with the rest of the kit (subkit #5), but did not update the plans to reflect the service bulletin.

## 2.9 Page 10-15

Step 7 instructions only apply to the web of the F-1012B Bulkhead. Dimpling of the flanges of this part is done in step 4 on page 10-16 which instructs to not dimple the topmost hole.



## 2.10 Page 10-20

If working alone, you can get away with riveting the bottom skin stiffeners to the bottom skin before clecoing the side skins on -- and you can back-rivet these.

Step 2 - If you plan to install the BRS parachute, don't rivet the forward 2 holes of the F-1047F-L/R stiffeners as the rear attachment external plate is using same rivet holes.

Step 7 - The outer rivets are very hard to get to. Plans call for AN470AD4-4 rivets, but you may consider using CR3213-4-2 CherryMax rivets (confirmed with builder support that this should be okay). Measure your parts to ensure proper rivet length. You may have to modify your hand riveter to fit within the opening. YouTube video: <https://youtu.be/cvwDYFG6s?t=614>

Step 7 - Alternatively, you can rivet the stiffeners to the rudder stop brace before inserting the F-1012 assembly in for final riveting.

## 2.11 Page 10-21

Step 5 - If you already have the rudder cables, consider installing them along with rudder fairings (optional) at this point before riveting the aft deck. See [Rudder\\_Cable\\_Fairings](#).

## 2.12 Page 10-23

Step 2 -- before Cleco'ing the aft top skin, check out the last step of this section -- Page 10-24 Step 3. I think this would be a lot easier to do before installing the aft top skin if you can still rivet with it in place. I had to crawl in the tailcone to do this step at the end.

Step 4 - Check whether the AN3-5A bolts to hold down the Bell Crank Angles are in fact the proper bolts. Builders are reporting that those are too long. Note: In general, no more than 3 washers can be stacked to compensate for too long bolts.

Step 5 - The entire F-1035 top plate needs to come off later when you thread in the two push-rods through this opening. Don't mount the servos yet, just the yaw damper servo bracket.

## 3 SECTION 11: EMPENNAGE ATTACH

### 3.1 Build Instruction Updates

- 10/05/21 [11\\_10.pdf](#)

Check for more recent updates [here](#)

Note: there are a lot separate steps in this section that require priming. Especially if you are using epoxy primer and a spray gun, you may want to read ahead. For example, when/if you prime on 11-5 Step 3, or 11-6 Step 4 (pushrod) you may want to jump ahead and do the rest of the fabrication, deburring, and priming:

- Page 11-8 Steps 1 through 7
- Page 11-9 Step 1
- Section 12, Page 12-6, F-1094A Empennage Gap Covers (deburr and prime inside surface)

### 3.2 Page 11-2



Tool to screw in the rod end bearings. The outer ring is a cut-off fitting.

And a link to Sam Buchanan's tool fabrication: <http://home.hiwaay.net/~sbuc/journal/odd-ends.html#bearing%20tool>

Looks like the picture above (not my post) uses a drilled hole at the top of the tool which is probably better since it can be adjusted in tight places...

Step 3: I found this nearly impossible to do without a few tricks. Even then it is best to get at least one helper.

- The brackets on the elevators that you are attaching to in Detail B tend to be a bit too narrow.
- Make two small wooden wedges that you can insert in there to spread the bracket a bit -- I used the end of the wedges I cut out for the trim tab holders.
- Ruin two AN3-10A bolts by grinding down the end to make it have a smooth and narrow end.
- Insert both wedges, then insert the bearings into the brackets. Insert these modified bolts to attach the elevator. You may need to tilt the elevator far up or down and use needlenose pliers to get the bolt in there.
- Nuts should still thread onto the end of these modified bolts -- that is good for now. Obviously, you'll need to use unmodified bolts later for final assembly. I actually didn't install any nut (or washer) for most of the work in this section.

- Note that the sentence in this section that refers to Detail C doesn't actually apply until you attach both elevators ("Not completely filling the gap between the elevator horn and the VA-146..."). That sentence is letting you know that it is important to fill the gap complete (I found it confusing).

Step 4: I used two clamps per side instead of duct tape.

### 3.3 Page 11-3

Step 5: Now this is where you use Detail C from the previous page. Make sure to fill the gaps as much as possible and fully tighten. Make sure the elevators are perfectly even before drilling. You can use flat dental floss to help get the washers in place, and/or Washer Wrenches. It's tough to get two washers in one side without some dental floss.

Again, I used two clamps per side to line the counterweight with the HS.

### 3.4 Page 11-5

Step 3: Because I had to remove the VS and HS later before transporting to my hangar, I did not remove and prime the parts at this stage.

### 3.5 Page 11-6

Step 4: This step details how to mark a template to drill six holes around each end of the control rod. Section 39 (**Control System**), page 39-4 step 3 has a better method of drilling the rivet holes. In particular, use a center punch to make sure the drill does not wander, and use a drill press if you have one for best accuracy. Rather than cutting up the plans as Vans suggest, take a photocopy and use that.

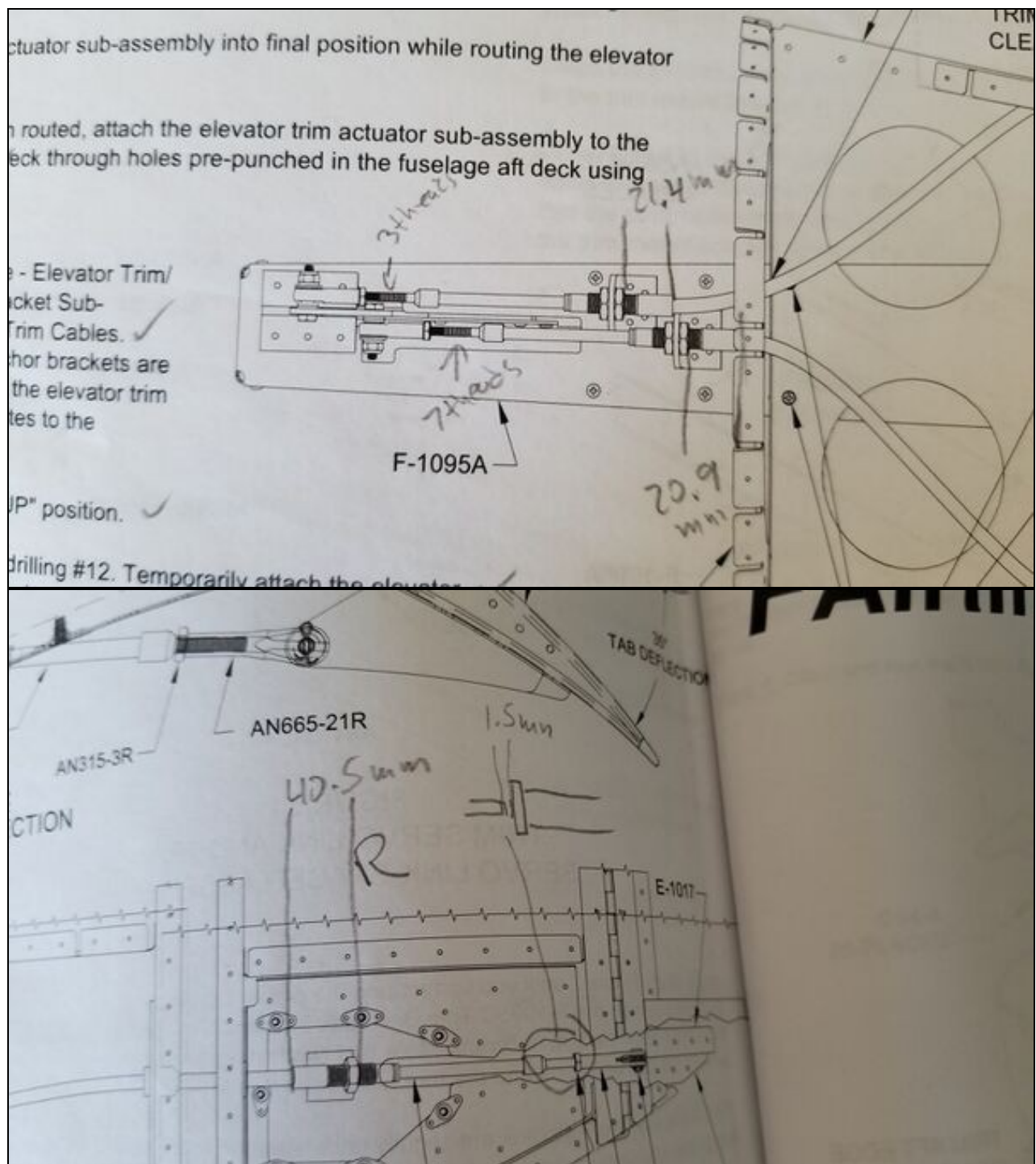
## 4 Page 11-7

When installing bolts in the rod end bearings for the elevators and rudder, I used a set of hemostats w/ some blue tape on the tip to hold the bolts during the install. Worked great to take in/out of the bearings.



### 4.1 Page 11-9

- Step 5: As a starting point, check these drawinging



The centered starting values for the trim cable nut positions are not very good and require painful iterations.

Goal is that both tabs go down 35 degrees, are in sync in neutral and the right tab goes up 25 degrees while the left one stays neutral in all up.

- Good right cable starting values:  
3 threads exposed at the servo clevis,  
21.4 mm from where the green ends at the servo side to the first nut  
40.5 mm from where the green ends at the trim tab side to the bracket end  
1.5 mm exposed of the threads at the trim tab clevis.
- Good left cable values:  
7 threads exposed at the servo clevis, 20.9 mm from where the green ends at the servo side to the first nut  
42.6 mm from where the green ends at the trim tab side to the bracket end  
1 mm exposed of the threads at the trim tab clevis.
- Check also this thread on same topic: [VAF](#).

- Be sure to check the position output of the Ray Allen servo early in the process. There was a bad batch of Ray Allen servos where the potentiometer has intermittent output when cold (showing after 5 minutes in a freezer (keep servo in a freezer bag to avoid condensation)).

## 5 SECTION 12: EMPENNAGE FAIRINGS

### 5.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

### 5.2 Page 12-2

- Step 1: Good results were achieved by clamping an aluminum strip along the recess edge and then using a Dremel with router attachment to square the edge. Even though the Dremel has the potential to eat into the aluminum strip, one can guide the Dremel in a fashion where it barely touches the strip.

### 5.3 Page 12-3

- It is possible to 3D-print a mold and lay up a fiberglass cap that goes onto the leading edge of E-912 instead of building it up to match the curvature of E-913. The 3D-print project is here [at Onshape](#). The 3D-printer file is here [HS\\_Fairing\\_Mold1.stl](#).
- It is possible to 3D-print a mold and lay up a fiberglass insert that goes into HS-910. It has the right curvature and it has the necessary kink to match the Elevator counter weight leading edge. The 3D-print project is here [at Onshape](#). The 3D-printer file is here [HS\\_Fairing\\_Mold2.stl](#)

### 5.4 Page 12-6

- Step 6: There is no machine countersink bit with a pilot that would fit exactly into the threaded part of a #6 screw (#36 hole), only for the #28 hole that the screw goes through. Use the countersink bit for 3/32 rivets (#40).

## 6 SECTION 13: MAIN SPAR

### 6.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 6.1.1 Page 13-2

- Figure 1 shows an "extra" hole on the flange. It is not used anywhere, does not need countersinking.



- Step 7: Study figure 2 which points out that the long stiffeners align at the outboard end while the short stiffeners align at the inboard end.
- Step 8: See this [FB thread](#) regarding how to manage the imperfect overlay of the long and short stiffener.

#### 6.1.1.1 Page 13-4

- Step 4 has you installing AN426AD4-6 rivets, but the rivets are not part of the SB kit (as of 3/2022).
  - ♦ Some builders indicate that the rivets are included in the SB kits.
- Step 6, check this [FB thread](#) on the tie down bracket and a potential gap between the skin and the bracket.

## 7 SECTION 14: WING RIBS

### 7.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 7.1.1 Videos

- [Plane Lady: Van's Aircraft RV 10 Build Wing Ribs](#)

### 7.2 Page 14-04

- Step 2: The second instruction says to insert the snap bushing from the inside but Figure 2 shows it inserted from the outside and that seems to be more correct as the W-1029C angle that got notched would be in the way of the snap bushing when inserted from the inside.

### 7.3 Page 14-05

- Several builders report callouts on page 14-05 with the wrong number of rivets to attach the ribs to the spar: Innermost rib needs 6 instead of 5 rivets, the 2 ribs inside the outmost rib need 8 instead of 4 rivets. See FB post [3/28/2022](#) and VAF thread [3/20/2016](#)

## 8 SECTION 15: REAR SPAR

### 8.1 Build Instruction Updates

- 10/05/21 [15\\_10.pdf](#)

Check for more recent updates [here](#)

#### 8.1.1 Videos

- [Plane Lady: Van's Aircraft RV-10 Build: Rear Spar & Service Bulletin 16-03-28](#)

### 8.2 Page 15-2

(FB 3/20/2022) Aileron bracket errors[Ed: this page isn't very useful, as you have to be a member and logged into Facebook to see it]

YES, all the FB links assume you are a member of the two RV-10 groups: [RV-10](#) (4,700 members) and [Van's RV-10](#) (420 members).

### 8.3 Page 15-3

- Step 3: You are asked to draw a single line along the sloped edge of W-1013D-L/R. You ignore the top horizontal edge of W-1013D-L/R. So W-1013F-L/R will only have a corner trimmed off, you are not shortening the angle in height. See also this [FB thread](#).

### 8.4 Page 15-5

- Step 1: Match-drilling 4 of the W-1007B holes on the fork's arms create new holes in the flanges of the W-1010-L/R ribs as they don't align with the existing holes in the rib flanges





- Read through the Service Bulletin [SB-16-03-28](#) to better understand the assembly (ignore the drill-out instructions).
- See also [FB post 6/9/2022](#)

## 9 SECTION 16: TOP WING SKINS

### 9.1 Build Instruction Updates

- N/A

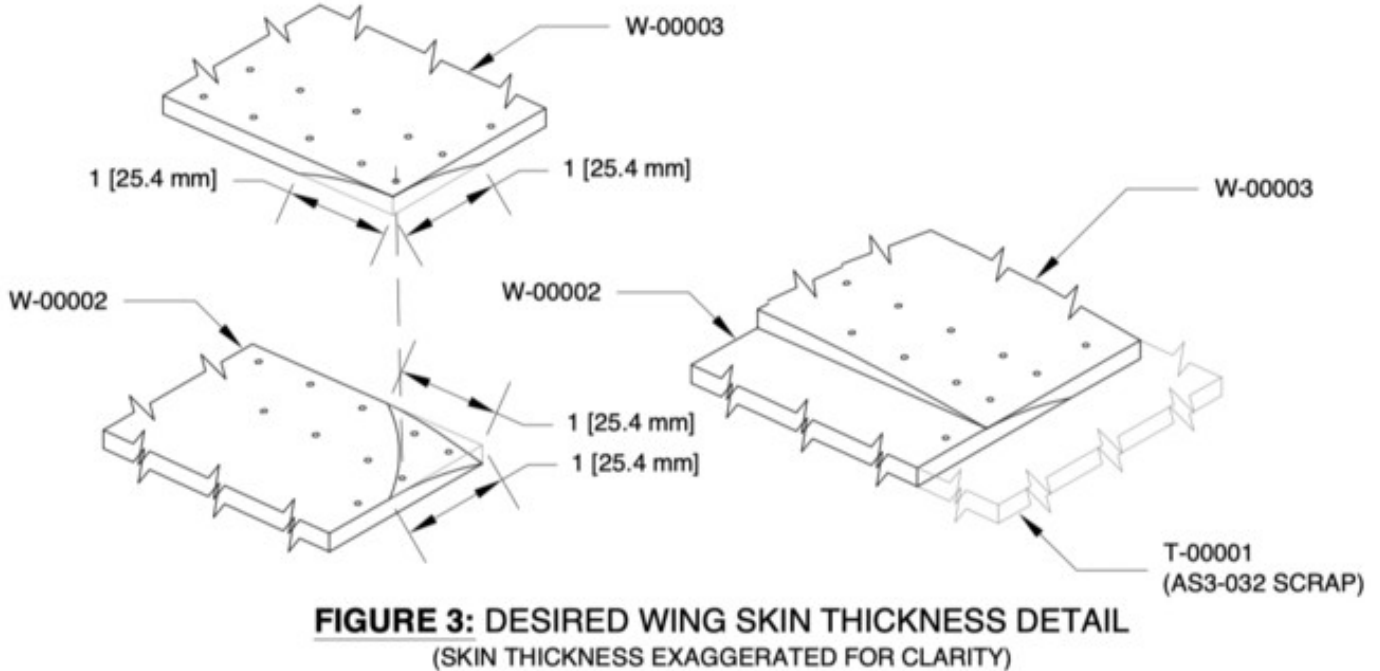
Check for more recent updates [here](#)

#### 9.1.1 Videos

- [Plane Lady: Van's Aircraft RV-10 Build: Top Wing Skins 2/2024](#)

### 9.2 Page 16-2

Step 5: This step can be confusing. The RV-14 plans have a better diagram of what you're trying to do. After reading a few blogs I found that you're trying to scarf the two top wing skins at the forward corner only to achieve a better fit. I marked the top of the inboard skin and bottom of the outboard skin where I needed to remove material then used a file and sanding block to remove the material. I also had to make a few passes with the Cleaveland edge-breaking tool to achieve an acceptable joint.



## 10 SECTION 17: OUTBOARD LEADING EDGE

### 10.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 10.1.1 Hints

- ***Page 17-3***

Be sure to put some bubble wrap, blanket, towel or other padding in the bottom of the leading edge before riveting the leading edge in the cradle. A dropped bucking bar can cause serious damage to the leading edge skin. Don't ask me how I know.

# 11 SECTION 18: FUEL TANK

## 11.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

### 11.1.1 Videos (Definitely watch the Vans Video!)

- [Vans](#)
- [Plane Lady](#)

#### 11.1.1.1 Hints

- Deburr the ribs before fluting
- Check threads on leak testing
  - ♦ [VAF 4/2022...](#)
  - ♦ [FB 3/2024](#)

#### 11.1.1.2 Page 18-6

- The aluminum vent line needs to be flared. Otherwise, it may leak later or come apart. Consider buying one of these tools:
  - ♦ [at Spruce](#) Read the comments section, there are some great hints for the tool posted.
  - ♦ [at Amazon](#)
  - ♦ [at Spruce](#)

## 12 SECTION 19: STALL WARNING SYSTEM

### 12.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 12.1.1 Hints

- If you are using a pitot tube with angle of attack measurement, you don't necessarily need the stock stall switch.  
There are two guide holes in the leading edge for the slot that need to be closed. Builders report success using JB Weld and then sanding it back to the leading edge contour. What doesn't work well is dimpling the hole and putting a 426 rivet in because the leading edge flattens around the guide holes during the dimpling process.

## 13 SECTION 20: BOTTOM WING SKINS

### 13.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 13.1.1 Hints

##### 13.1.1.1 Page 20-5

- Step 10



Details of the holes for the aftmost nutplate on a QuickBuild. Not clear how to handle that top hole (it is called out in 20-5 step 9 not to be dimpled because there is no room for the dimple in that gap). There doesn't seem to be enough room for a rivet in the gap. Potentially just fasten one side of the nutplate.

## 14 SECTION 21: AILERON

### 14.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

### 14.2 Page 21-03

Consider deferring the riveting of A-1007-1B and A-1006-1B plates to the A-1005A-1 ribs until after the top skin is attached to the spar on page 21-08. This will allow for better access to the spar attach rivets that end up being inside the hinge brackets. Just be sure to attach them before the bottom skin gets attached.

### 14.3 Page 21-04

Consider buying a Cobalt drill bit for drilling into the stainless steel counter-balance tube.

### 14.4 Page 21-05

Step 3: The aileron counterbalance pipe is made from stainless steel and is much harder than aluminum. When match drilling the aileron counterbalance attach holes through the nose skin it is easy for the bit to wander and significantly enlarge the pre-punched holes in the nose skin. Drill slowly, checking often that you're centered especially when starting to drill the holes. Another option would be to just mark the holes in the counterbalance and remove the skin before drilling the holes.

## 15 SECTION 22: FLAP

### 15.1 Build Instruction Updates

- 10/05/21 [22\\_10.pdf](#)

Check for more recent updates [here](#)

#### 15.1.1 Page 22-5

- Step 2  
The nose ribs don't have all holes pre-drilled. During this step, you will match-drill from the nose skin to the rib flanges to add them.
- Step 5  
One needs to fabricate a shim for the cage of the countersink tool to rest on and then adjust the depth of the counter sink to account for the shim thickness. This is only explained in the RV-14 build manual which uses the same construction. See the RV-14 Flap build instructions, page 21-6 [here](#).  
See also this [FB thread](#).

#### 15.1.1.1 Page 22-6

- Step 4  
If your nose ribs look different then in the manual because yours don't have holes in some flange sections, please read page 22-5, step 2 where the ribs get match drilled to the holes in the nose skin.

## 16 SECTION 23: AILERON ACTUATION

### 16.1 Build Instruction Updates

- 10/05/21 [23\\_10.pdf](#)

Check for more recent updates [here](#)

#### 16.1.1 page 23-3

- In summer 2022, Vans could not source the correct push rod material for W1018A, so they sent out ones that are slightly narrower inside. The plans call for 4130 1/2 O.D. .035 steel tubing material (powder coated), the replacement had thicker walls at same OD, 4130 1/2 O.D. .049 tubing (not powder coated). A 7/16 reamer (e.g. \$21 at [Yardstore](#)) is needed to make the AN490-HT8P (AKA VA-4908P) rod ends fit. The replacement rod material is not powder coated and needs to be primed.
- It is common that the rod end doesn't easily fit into the push rod tube. Sanding is then necessary. See also this [FB thread](#).

#### 16.1.1.1 page 23-4

- Part WD-421-R, the bellcrank, is used in several models. The RV-10 plans show it without nut-plate mounting holes for the autopilot servo attachment. Ignore those extra holes for the RV-10. See also this [VAF thread](#) or this [FB post](#)

#### 16.1.1.2 page 23-9

- Important: Read this [VAF thread](#) on rivet interference with rear spar. Aileron may jam in full up position if rivet has ability to be in contact with spar.

## 17 SECTION 24: WING TIP

### 17.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 17.1.1 Hints



Cutting the lens is easy - use your tin snips and then sand to get the edges straight. Using a Dremel melts it and it leaves a bulky burr.

I would suggest waiting until the wings are on the plane and the ailerons rigged before you drill these. I did them in the jig while vertical since I liked the access - put the flaps to the stop, lined up the ailerons and figured I'd be good. Outcome was that I was 1/4" low, and had to cut the back edge apart to be able to adjust the wing tip so it would align nicely with the aileron.

The solution was to cut the back edge, and drill out the W-1016 wingtip rib.

Then you can move everything back into alignment, fill with floc, to glue it back together. There is a layer of fiberglass on the inside that was folded to connect top and bottom. Replaced that with two layers of BID. Not too bad, but likely could have been avoided.

## 18 SECTION 25: MID FUSE BULKHEADS

### 18.1 Build Instruction Updates

- 01/07/21 [25\\_10.pdf](#)

Check for more recent updates [here](#)

### 18.2 PAGE 25-1

### 18.3 PAGE 25-2

### 18.4 PAGE 25-3

#### 18.4.1 F-1004C-L and F1004C-R

##### 18.4.1.1 Conduit Summary

The holes in the bulkheads are only big enough to have cables run directly through them using snap bushings (vs. in a conduit). Also, there are only two holes on each side and depending on your needs, you need more. You do need conduits for sure but only to tunnel underneath the baggage compartment. You can go back to snap bushings forward of the baggage compartment if you like. Some people though like to just run at least some of the conduits all the way from the tailcone to the front. Now that is where the diameter needs to increase from .75 to at least .77 for Van's Nylon conduits. It is a pain to enlarge those holes afterwards since they are tucked in underneath horizontally-running structures. Adding more holes can be done later but is also a bit easier if the bulkheads aren't in the plane yet. If you run conduits all the way from the back to the front, it will be easy to route the static pitot tube, the pitch and yaw servo cabling, the pitch trim servo cable, the battery cables etc. Also makes cabling for later add-ons easy.

##### 18.4.1.2 Hints

Step 8 details the assembly of the bulkheads to the center section prior to deburring and priming these parts. Now is a very good time to consider whether you will need additional pass-through holes in the bulkheads for items like conduit, pitot, static, and AoA sensor tubing, air conditioning lines, and other electrical circuits. Many builders find that the two holes referenced here and on [#PAGE 25-4](#) are insufficient for all of the required lines and circuits for an RV-10, especially if it is going to have a full glass panel and backup/redundant electrical systems.

Do yourself a favor and read forward in the plans to Sections 29 and OP-37 (even if you do not use the Van's provided wiring harness, OP-37 is very useful in understanding the options for routing electrical circuits).

Later in the build, especially after the side skins are installed, it is quite difficult and awkward to cut new holes for conduit or other pass-throughs. Installing caterpillar or snap bushings can be awkward later, too. You will save considerable time later by thinking ahead at this point.

See also Section 26 where the F-1017 under-seat ribs can be much more easily modified before installation to allow conduit and antenna installation, which might not be done until Section 35 or later.

**ENSURE that any additional holes you cut in the bulkheads are properly spaced and, if needed, reinforced per the guidelines in AC43.13.**

See also this [FB thread](#) on the subject.

See also this [FB thread](#) on the subject.

## 18.5 PAGE 25-4

- Step 6  
Step 6 requires you to 'Rivet the Mid Seat Rail Support Subassemblies, F-1004C-L and -R Center Section Bulkheads and F-1004N Stiffener Angles to the F-1004A Center Section Bulkhead per the callouts in Figure 2.' Figure 2 in the plans (Rev 1 Date 1/7/21) omits the quantity and rivets to be used. The older plans (Rev 0 Date 7/24/14) shows the rivets and places.
- Step 7  
Don't insert the snap bushings instead widen the two holes to a bit larger than .75 inches (.77) so they can pass through Van's conduit later. Also drill a third / forth hole with same diameter underneath the two holes for a more conduits if desired.

## 18.6 PAGE 25-5

- Step 7: Check that F-1004J has the correct length and is not pushing the spar caps out of their proper position where the wing attach bolt holes no longer line up through all layers. See also this [FB Post 2/2024](#).

## 18.7 PAGE 25-6

- Step 4  
Don't insert the snap bushings instead widen the two holes to a bit larger than .75 inches (.77) so they can pass through Van's conduit later. Also drill a third and forth hole with same diameter underneath the two holes for more conduits.

## 18.8 PAGE 25-7

- Enlarge the two holes at the lower corners of F-1005A to a bit larger than .75 inches (.77) so they can pass through Van's conduit later

## 18.9 PAGE 25-8

- Enlarge the two holes at the lower corners of F-1034A to a bit larger than .75 inches (.77) so they can pass through Van's conduit later

# 19 SECTION 26: MID FUSE RIBS & BOTTOM SKINS

## 19.1 Supplemental Instructions

Planes with the old flap motor (without integrated position sensor) can be upgraded to use the new flap motor with integrated position sensor. OP 64 is the manual for how to do the upgrade.

- 09/05/22 [OP-64 FLAP MOTOR RETROFIT](#)

Check for more recent updates [here](#)

### 19.1.1 Build Instruction Updates

- 11/05/22 [26\\_10.pdf](#)
- 10/05/21 [26\\_10.pdf](#)

Check for more recent updates [here](#)

### 19.1.2 Discussions

- [VAF thread on chapter 26 errors](#)

## 19.2 PAGE 26-2

- New Flap Motor Variant

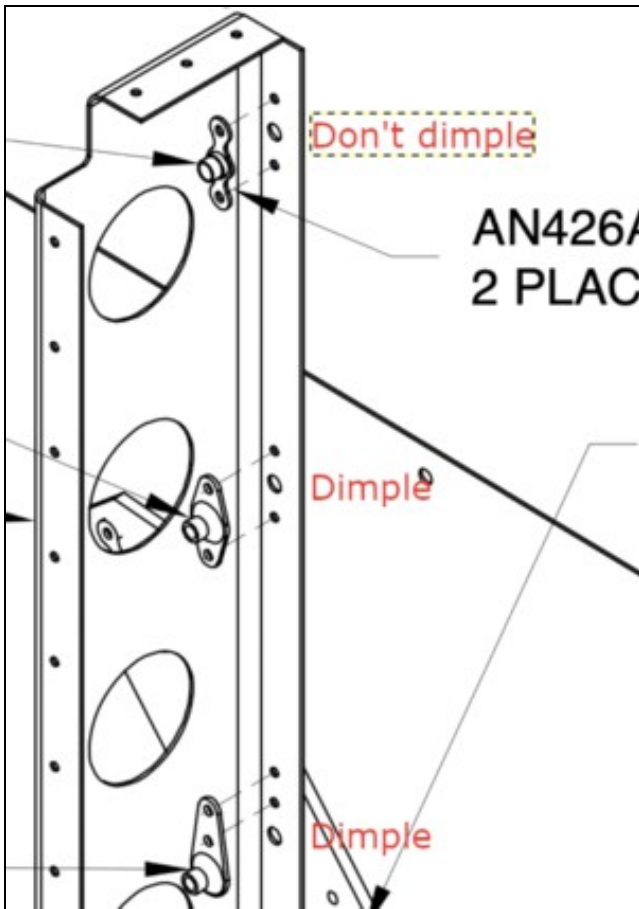
The forward edges of the F-1066C-2-L and F-1066C-2-R reinforcement angles are not flush with the forward edge of the seatbelt attach bar horizontal extension, rather they hang over a bit. They would sit flush if left and right angles were switched, however the plans say otherwise.

## 19.3 PAGE 26-3

If you have part F-1016D (seatbelt strap) with an extra tab on the side and two additional holes but your manual depicts that part without flanges/extra holes, you are experiencing the transition from the old flap motor to the new flap motor where the tab is no longer needed. Your manual is a new version but Vans sent you the older part with the tab. According to Vans, just remove the tab and match drill the two extra holes and use same rivets as the other surrounding holes. For details, see this FB thread ([FB Link 3/28/2022](#)) and ([FB Link 4/1/2022](#))

**If your plans don't match what you have, check the electronic version of the plans which should show up under your name in the vans store.**

Step 6 gotcha (Step 7 on V2 of 7/16/21 of the page): Plans call for 'Dimple the screw holes in the inboard flange of the seat rib intercostals that correspond to the flush nut plates...' Note that there are 3 nut plates on this flange, but only 2 of them are flush nut plates. The top nut plate is a K1000-08 and must not have its screw hole dimpled.



#### 19.4 PAGE 26-4

There are plans provided as Rev 0, dated 7/24/14, that accidentally show the seat belt fitting on the wrong side of the left outboard rib. A correct page 26-4, also marked Rev 0 and with same date was on the thumb drive of some builders. The newest version provided on their web site, marked as Rev 1 dated 2/24/22 shows it also on the wrong side. However, the detailed figure on page 26-2 shows it correctly.

#### 19.5 PAGE 26-5

If you haven't updated your plans in a while, ensure you dimple the #40 holes in the web of F-1015A-L/R. There was a revision on page 26-5 in July of 2021 that added this as step 1. However, don't dimple the holes that are on the flange of F-1015A-L/R which interfaces with F-1004D-L/R.

Note that the F-1015A-R/L seat ribs have a joggle joint on the front edge with the F-1004D-L/R bulkhead where the rib will be on the inside of the outer flange of the bulkhead. Similarly, the upper portion of the front edge of the F-1018-R/L rib goes inside of the F-1005C-L/R bulkhead however, its lower part goes outside of F-1005C-L/R.

Consider at this point whether you need access holes in the F-1017 under-seat ribs for conduit and/or antenna wiring. Many builders cut holes in the F-1017 ribs for conduit passthroughs. These holes will be much easier to cut at this point.

Also consider marking and cutting/installing antenna doublers on the bottom skins in this general section. This will be much easier now than later, when the seat plates are permanently riveted in place.

#### 19.6 PAGE 26-6

Double check that the left and right WD-1008-L / WD-1008-R step weldment parts are labelled correctly by Vans. There are two reports of them being swapped. See also [FB Post 4/6/2022](#).

WD-1008-L / WD-1008-R step weldments have 16 holes each. The corresponding F-1021-L / F-1021-R outboard baggage ribs are missing four of these holes, with no instructions on the page to match drill. Vans support confirmed (12/15/2022 - Gary Keyser support engineer) that it is acceptable to match drill through the WD-1008 into the F-1021 and rivet. The plans corroborate this as they call out 32x AN470AD4-4 rivets.

## 20 SECTION 27: FIREWALL

### 20.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 20.1.1 Videos

- [Austin Manke: RV-10 Firewall - Section 27](#)

### 20.2 PAGE 27-2

- For additional info on the firewall in general, see also section [QB\\_Fuselage](#)
- Plan your control cables pass-throughs at step 3
- Some people have used an "eyeball" type here that may require different spacing than the pre-punched holes provided in the kit.  
Many use these for the control cable penetrations (at Spruce: [EYEBALL FIREWALL FITTING- SS PRESSURE PLATE - STEEL TTP](#)):

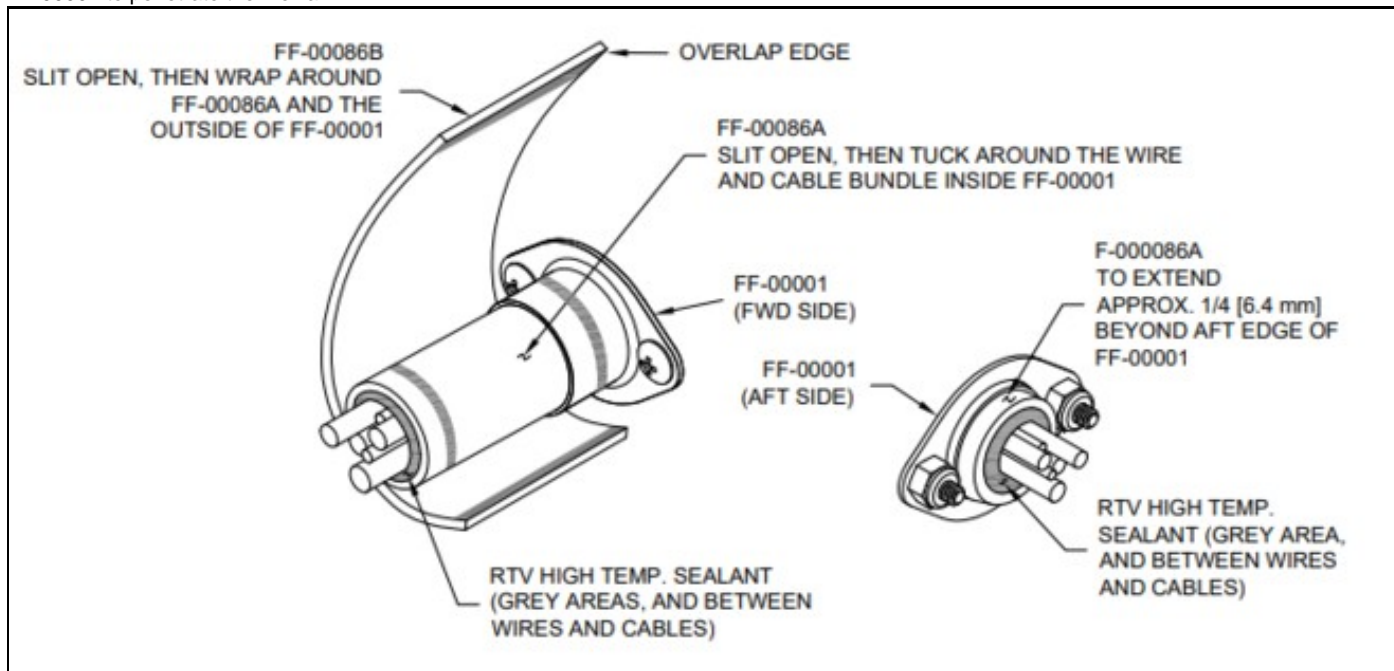


More products are here: <https://www.firewallfittings.com/product/ttp-s/>

You may need to order custom diameter pass-throughs [here](#), for example, the California "176-VTT"-type Push Pull cables have an OD of .34, so a custom OD of .345 may be appropriate. You can also order double hole ones [here](#)



- Look ahead in the plans to see if you want to do the double plastic bushing. The RV-14 kit uses an FF-00001 to penetrate the firewall:



- Many people have used the following pass-thru with the RV-10 (at Spruce: [Avery SS Firewall Pass-Thru](#)):



- If you plan to install electronic injection (SDS or EFII) or a fuel purge valve, mirror the 9/16 hole over to the left side as you will need two.

#### **20.2.1 Step 4**

- Several builders are reporting that part WD-1002-L-PC / WD-1002-R-PC is being labelled incorrectly. If you ended up with two of the same kind, Vans will be happy to swap them out.

#### **20.2.1.1 Step 7**

- Note when riveting F-1001M Left Side Angle, you need to leave the 2 holes that intersect the Oil Cooler Box Attach Holes open so that they can be used to attach the oil cooler in Section FF1-2

### **20.3 PAGE 27-3**

- Part F-1051J Scat Tube Support is installed on Page 50-2, Step 1.

### **20.4 PAGE 27-4**

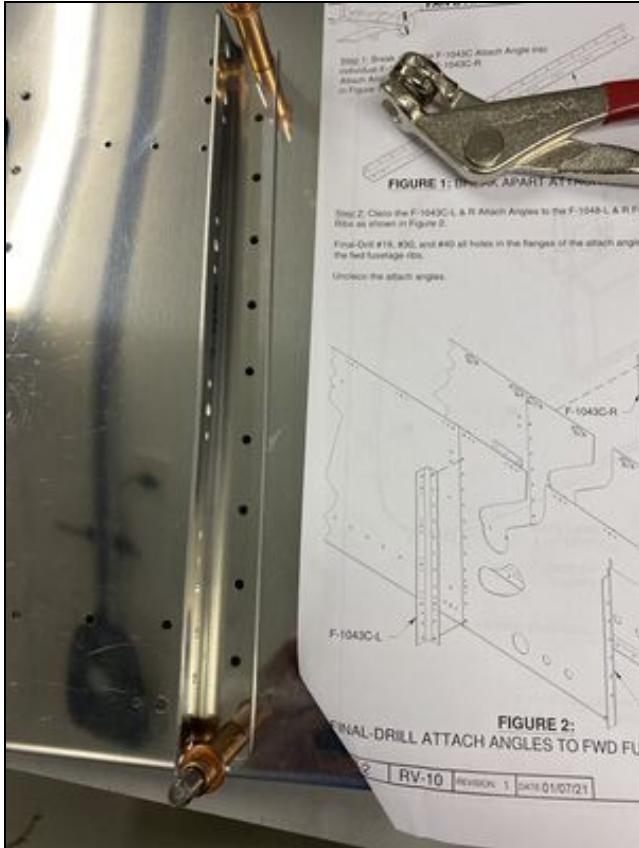
- Step 1: In order to nest the aluminum and steel parts and make the holes align, it's necessary to file F-1001E-L/R as indicated in figure 1.
- Step 1: The WD-1004 nose gear tension fitting is the same part for left and right. The tooling hole will be on the upper rib on the left and the lower rib on the right side.
- Step 6: The manual doesn't spell out that you need to dimple the screw holes of the K1100-08 nutplates. See page 26-2, step 5 as reference.
- Step 8: If you are planning to use the Andair fuel selector you might want to hold off riveting the F-1048C-1 Fuel Valve Bracket to the fwd fuselage ribs, as the Andair selector does not fit this bracket.

## 21 SECTION 28: FWD FUSE RIBS, BHDS & BOTTOM SKIN

### 21.1 Build Instruction Updates

#### 21.1.1 Page 28-2

Step 2 requires "Final-Drill #19, #30, and #40 all holes in the flanges of the attach angles that mate to the fwd fuselage ribs." and show the image of a nut plate on the flange that mates to the fwd fuselage rib. However, the kit does not have any provision for this nut plate in the attach angle, nor in the fwd fuselage rib (see photo)

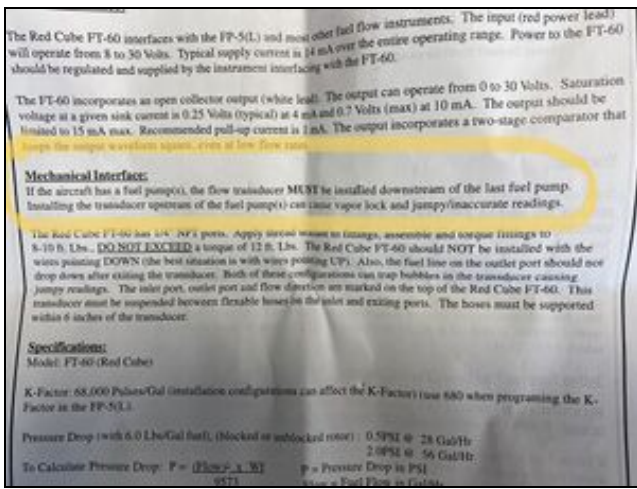


Further searching on Vansairforce ([link](#)) indicates that this nut plate was previously used to hold adel clamps for the fuel lines, but are not required in the newer kits.

Check for more recent updates [here](#)

#### 21.1.1.1 Page 28-5

Plans call for installation of the VA-188 Flo-Scan Mount Bracket to be installed in the tunnel location. This bracket is to be used for the Flo-Scan as well as for the FT-60 'Red Cube' fuel flow transducer. The positioning in the tunnel (between the electrical fuel pump and the engine-driven pump on the engine side of the firewall) is contrary to the installation instructions for the FT-60. See Vansairforce threads on this topic for alternative locations ([link](#) and [link](#)).



## 21.1.2 Hints

### 21.1.2.1 Page 28-10

Step 6: On the version of the plans published 01/07/21 figure 1, there are three rivets called out to be countersunk for an AN426AD4 rivet - the top row of rivets attaching the forward seat supports to the fwd fuselage bulkhead. In fact, all four of the top row of rivets holding the forward seat supports should be countersunk. The F-01043D cover panel lays across all of those rivets and a universal head would cause a bulge. Verified w/ Vans Support 2/14/2023.

Step 10: The plans omit telling you to dimple the bottom flanges of the F-1048-L/R forward fuse ribs. Consider doing it at this step.

### 21.1.2.2 Page 28-11

Step 5: On the version of the plans dated 01/07/21, the rivet callouts in figure 2 to attach the inboard and outboard forward seat supports to the fwd fuselage bulkhead don't add up to equal the number of holes joining the parts. The top row should be AN426AD4-5 qty 4 (NOT 6 + 6), and the bottom two rows should be AN470AD4-5 qty 8 (this is correct, albeit labelled poorly). The third row is left open to attach the fwd floor in a later chapter. Verified w/ Vans Support 2/14/2023.

### 21.1.2.3 Page 28-12

Figure 2: Note that the 7 rivets on each side of the bottom skin must be double flush. This means you have to countersink the shop head side of the main spar so that when they are driven, the shop head sits flush into the spar. The landing gear steel piece sits on top of this area, and the shop head of the rivet will interfere with it if it's not flush.

### 21.1.2.4 Page 28-13

Step 2: Before riveting the F-1048 L and R Fwd Fuselage Ribs to the bottom skin, you need to ensure you've dimpled the 8 holes (4L and 4R) for the Vent DL-10 2.4 Flanged Ducts. These are installed on as per page 36-4 using CS4-4 rivets, but the plans omit instructions to create the dimples until too late. Ref on VAF [here](#)

### 21.1.2.5 Page 28-14

Step 7: Check the threads shown. The 3 upper AN3-6A bolts might need two washers to show 3 threads out the nut.

## 22 SECTION 29: FUSE SIDE SKINS

### 22.1 Build Instruction Updates

- 10/05/21 [29\\_10.pdf](#)

Check for more recent updates [here](#)

### 22.2 29-11

- See this [FB Post](#) on how to keep the skin and clamping block in place while bending.

### 22.3 29-14

- Step 5  
When match drilling from the F-1001B angle into the WD-1002-L / WD-1002-R firewall steel brackets, be aware that it's easy to violate the edge distance in the steel bracket (2 x D, measured from the center of hole). Remedy is to temporarily install a bolt into the engine mount hole to pull the bracket into place and to use a clamp to move the steel bracket to increase edge distance.

See [this build log](#)



See also [FB post 4/17/2022](#)

See also [FB post 3/27/2023](#)

### 22.4 29-15

- Questions on which holes to dimple? See [this FB thread](#). Another [FB thread on same topic](#)

### 22.5 29-19

- If you are using the Aerosport interior side panels, don't install the VENT-0004 knob. The Aerosport side vents need a different extension lever which can only be attached once the panel is in place.
- The kit may not include the nylon washers 5610-90-31. They can be obtained at your local hardware store as #10 Nylon washer.

### 22.6 29-20

- Don't rivet the forward cabin floor to the center tunnel walls if you are getting electronic injection (SDS or EFII), or you intend to install access covers to the side of the tunnel as the rivet holes will be needed. For the SDS pump shelf, you will have 5 stock rivets counting from front, then the next 11 are to be left out for the fuel pump shelf. For the access covers, see the instructions from Airward.

## 22.7 29-21

- Some time around the start of 2021, Vans updated the design of the landing gear mount to address some concerns with cracking. For those of us that received our fuselage kits after this (like me), we received the SB-00007 kit with the fuselage kit. There's no explanation on how to apply this SB to a kit in construction. I researched it and this is my take on this.
- SB-00007 has been partly applied to new parts in the kit. In particular, the landing gear mount and the forward spar designs have been updated, but the side skins have not. The SB calls for enlarging some holes in the forward spar, however, those holes are already the correct size in newer kits (several 1/4in holes, and one 5/8in on each side). The SB includes two templates (VA-274 & VA-275) and two drill guides. As far as I can tell, these are not needed at all. The part of the SB that involves drilling into the side skins (F-1069 & F-01004T) using the drill templates VA-277 & VA-278 **is necessary**.
- All of this is covered correctly in the plans. The instructions that come with SB-00007 do not need to be followed at all.
- If you have any doubts, please call Vans tech support.

## 23 SECTION 30: STEP INSTALLATION

### 23.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 23.1.1 Hints

- Consider installing a pair of "step bushings" (<https://www.tcwtech.com/product/rv-10-products/>) in your RV-10 steps. Without them, it is likely that over time the bolt holding your step in place will enlarge the hole, and you'll have some movement/play in your step.

The instructions say to use a nylon string but something more sturdy is necessary should you need to pull the bushing back.

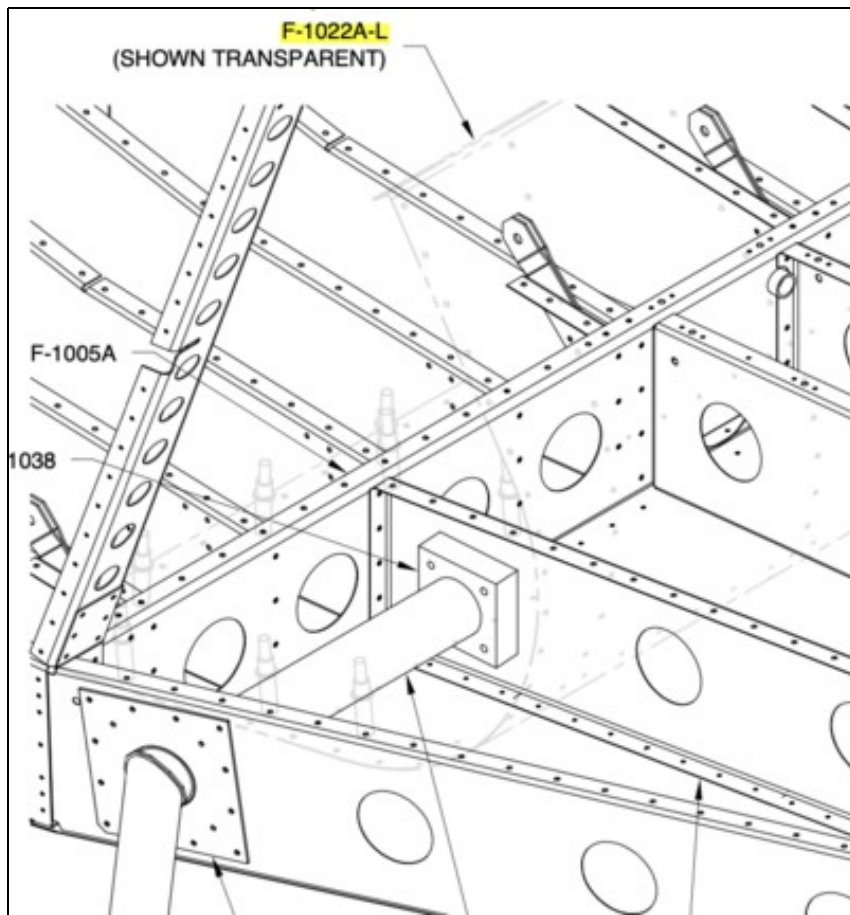
The bushings may require to be buffed to reduce their diameter to fit into the steps.

Make sure the step's bolt holes and the open end of the step are properly deburred before inserting the bushing.



##### 23.1.1.1 Page 30-2 Step 4

- On some plans, the transparent baggage floor F-1022A-L is not showing as outline (it's of gray color). Please check the pdf of the electronic version.



- See this [FB thread](#) on how to have the floor in and mark at the same time.

#### 23.1.1.1.1 Page 30-3 Step 3

- Consider installing [Airward access covers](#) or [Vans 6 x 5 access covers](#) to be able to reach the step bolts later. This requires drilling the step bolt holes at a 45 degrees angle, so the bolts can come out without touching the baggage floor, see [Good Plane Living Blog](#).

## 24 SECTION 31Q: UPPER FORWARD FUSELAGE ASSEMBLY

### 24.1 Build Instruction Updates

- 07/24/14 [31Q\\_10.pdf](#)

Check for more recent updates [here](#)

#### 24.1.1 Hints

This section is called 31Q because Q stands for Quadrant. If you plan to use push/pull knobs, manual 31 without the Q applies.

### 24.2 Page 31-5

- Step 3 is not needed if you have a QuickBuild fuselage as the hole in the F-1044B brace is already present and matching the hole in the F-1001B angle.

## 25 SECTION 32: TAILCONE ATTACHMENT

### 25.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 25.1.1 Builder Videos

- Jason Ellis
  - ♦ [Episode 35](#)
  - ♦ [Episode 36](#)
  - ♦ [Episode 37](#)
- Rodrigo Damazio Bovendorp
  - ♦ [RV10: Tailcone attachment 1](#)
  - ♦ [RV10: Tailcone attachment 2](#)
  - ♦ [RV10: Tailcone attachment 3](#)

#### 25.1.2 Discussions

- [FB thread 2/2024](#)

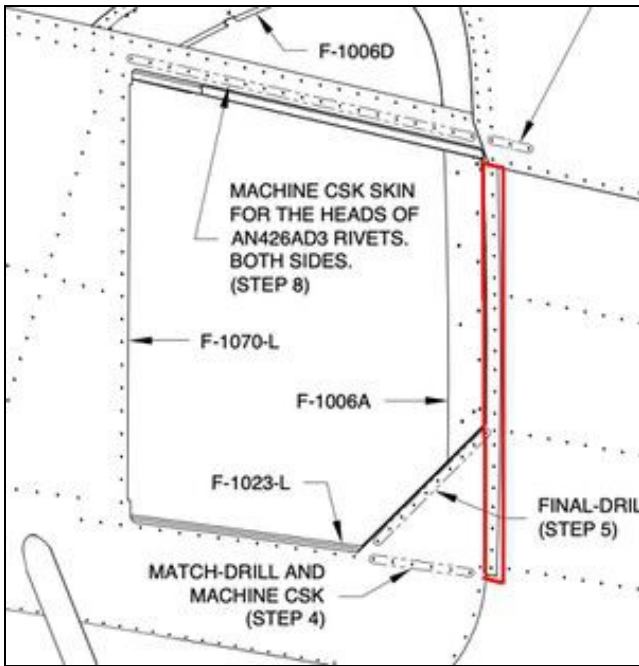
### 25.2 Page 32-3





- Stack at the corners from inside to outside
  - ◆ tailcone bottom skin
  - ◆ tailcone side skin
  - ◆ fuselage bottom skin
  - ◆ fuselage side skin
- Stack at floor joint from bottom to top:
  - ◆ fuse skin (F-1077)
  - ◆ tailcone skin (F-1078)
  - ◆ bulkhead (F-1006B)
  - ◆ rib tabs (e.g. F-1019-R)
- Consider using plastic wedges to guide the tailcone bottom skin to go above (inside) the fuselage bottom skin, e.g. [at Amazon](#)
- Consider using two thin strips of aluminum (3/4 inch wide) in the bottom corner sections to guide the tabs of the tailcone to go inside the fuselage skin.
- Consider using an inflated 20 inch truck inner tube underneath the fuselage center to lift the fuselage slightly, allowing a swivel motion within the fuselage cradle constraints e.g. [at Amazon](#)
- This is going to be the first section where you will be happy to have a creeper to get underneath the fuselage, e.g. [this one at HF](#).
- Throughout the build, a "pallet stacker" / manual forklift comes in handy. Shown here to raise the tailcone to be level with the fuselage. They ran around \$1,000 new on ebay in 2020 but keep their value and allow you to unload the kits from the truck which makes the delivery non-residential thus saving money each time. They can also act as an engine hoist as you can lift the fork 6 feet and hang the engine from a fork. When not in use, they make an adjustable work bench. Might also come in handy when fitting the fiberglass cabin top.

## 25.3 Page 32-4



- When to dimple the holes marked in red? Answer: Page 32-5, step 3: Dimple all skins common to the F-1006 A, B & D bulkheads. In this case, it is the F-1006A bulkhead. This is also true for the corner hole of the tailcone side skin. Uncleco the longeron to pull the skin forward during dimpling. One needs to pull up the longeron a bit to countersink the underlying hole in the longeron. Helps to take the cake off the countersink step tool.
- When dimpling the aft most holes of the fuselage ribs, one needs to put one or two dimpled shims in when dimpling the stack.
- Countersinking the side skins: The three holes on the left side skin located rear of the baggage door top (and same three on the right side) need to be flush plus 7 clicks to accommodate a dimpled skin on top of them (you just removed the top skin F-1074 which covered them), however the horizontal line of holes above the baggage door and the corresponding ones on the right side, also the six holes on the bottom right of the baggage door, need to be countersunk just flush since nothing goes on top of them.

## 25.4 Page 32-5

- If you plan to install the BRS parachute, match drill and attach / rivet the rear attachment external plate at this stage to the bottom of the tailcone. Some of the rivets are common.
- Step 6 refers to "Page 33-4, Figure 3", correct is "Page 32-4, Figure 3". Also, debur the 6 holes before dimpling as they were recently match drilled.
- Step 18, installing two SB625-7 snap bushings: those shipped with the empennage kit, not part of the fuselage kit / fuselage QB kit.  
Don't install any of the snap bushings yet that carry the rudder cable. You cannot get the rudder cable end fitting through the snap bushings if they are mounted as they need to be squeezed oval to let them through. Install the snap bushings along with the rudder cable install instructions on page 38-8.
- Once you are done with the tailcone attach, add two AN960-8 washers and AN515-8R8 screws to the frontmost two holes of the F-1035 battery mount. The nutplates are now installed. The build instructions don't cover those two holes. Note: You will later temporarily remove the entire F-1035 battery mount to thread in both forward elevator push rods.

## 26 SECTION 34: BAGGAGE DOOR

### 26.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 26.1.1 Hints

- [Ed's video on how to make the door removable](#)

Note: you will need more hinge pin length than with the stock setup.



- If the pins ends seem loose, consider securing them with a safety wire. Thread the safety wire all the way over to the other end of the door and grab them through the door lock hole. Twist the ends and form the wire so it sits flush when pulling the safety wire all the way back towards the hinge. Safety wire the hinge pins.



Split hinge pin with safety wires.

- Allen's solution is a 3D-printed part to secure the hinge pins, see [allenglen.com](http://allenglen.com)



#### 26.1.1.1 Page 34-4

- Step 9 - consider making the door fit perfectly (page 34-6) before closing out the door. Once you rivet the inner panel to the door, it won't warp.

#### 26.1.1.2 Page 34-6

- Step 4 - see [Door\\_Locks/\\_Hinges/\\_Handles](#) for weather strip options.
- Step 5 - You may not be able to reach the upper two rivets from the backside. Consider using two CCR-264SS-3-2 pull rivets. The AN470AD4-5 and AN470AD4-7 rivets on top are hard to reach, consider using pull rivets (Note: LP4-3s are not long enough to replace a 4-7) or use full rivets and a 12 inch back rivet set.

## 27 SECTION 35: ACCESS COVERS AND FLOOR PANELS

### 27.1 Build Instruction Updates

- 04/08/21 [35\\_10.pdf](#)

Check for more recent updates [here](#)

#### 27.1.1 Page 35-2

- Step 1 - this step needs to be also done for the Quick Build, it says "Standard Kit" only. The holes are only drilled 1/8th and need to be match drilled to #30. Also the holes on the front that need to be match drilled into the main spar aren't done with the Quick Build. There is one hole on each side facing the rear spar which is very close to a seat rib. When you match drill this hole, the drill will be scraping the web of the rib underneath the seat. Later, when you rivet this hole, you cannot get a bucking bar behind the entire rivet, so it will have a step.
- Step 5 - Figure 2 shows AD470AD4-4 rivets along the outboard and inboard foot well ribs. There are though two rivets an each side of the floor boards that go through the seat belt attach lugs and they need to be longer. The entire row of rivets along the outboard foot well rib is really hard to buck, see this [FB thread](#) or this [FB thread](#) for hints. See also [this FB thread](#).

##### 27.1.1.1 Page 35-2

- Step 1 - the QB comes with the holes not match drilled. You first need to cleco the seat floors and match drill for pop rivets, then bend the floor up (it is already riveted at the rear edge) and debur the holes from the underside and then clean out the burs.

## 28 SECTION 36: BRAKE LINES

### 28.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

### 28.2 Hints

#### 28.2.1 Page 36-2

- Step 2 - The hole in the landing gear mount might need to be enlarged a bit to 7/16 to make the elbow fitting go through. Works best with a 7/16 reamer (e.g. \$21 at [Yardstore](#)).  
The elbow fitting doesn't quite stick out enough to get a wrench on it when torquing the nuts. Consider adding a AN960-716 / NAS1149F0763 washer sneaked in between the bottom skin and the weldment so that the washer sits between the fitting and the weldment on the bottom side.  
If you are working alone, it works well to use heavy duct tape and fixate a 7/16 wrench on the bottom skin to hold the elbow fitting in the right direction when torquing the nuts inside.
- Figure 2 - If you have a return fuel line (e.g. SDS electronic injection), the brake line goes into the aft of the 3 holes, not the center hole as illustrated in figure 2.

## 29 SECTION 37: FUEL SYSTEM

### 29.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 29.1.1 Hints

##### 29.1.1.1 Page 37-2

Step 4

- The firewall fitting needs to point slightly down to not interfere with the heater valve.
- If you are installing electronic injection, the line from the pump goes to the left side (mirror the hole) and the return line to the right.
- Consider using a steel elbow fitting for the firewall (AN837-6 and the nut AN924-6j)
- The firewall is rather thin, therefore the fitting's rim will not end within the wall thickness, it will engage with the inside washer. Make sure you first hand tighten the nut while adjusting the washer's position to avoid that the rim sits proud of the washer.

## 30 SECTION 38: RUDDER PEDALS & BRAKE SYSTEM

### 30.1 Build Instruction Updates

- 11/15/04 [38\\_10.pdf](#)

Check for more recent updates [here](#)

### 30.2 Page 38-3

#### 30.2.1 Step 2

- Consider using an improved break pedal hinge mechanism using a single axis and bronze bushings. See [Brakes/\\_Wheels](#), chapter "Improvements to Brake Pedal and stock Master Cylinder".

#### 30.2.1.1 Step 3

- Since the master cylinder rotates a bit at the fastener ends, make the nuts only hand tight and then loosen them 1/4 turn, then put the cotter pin in.

### 30.3 Page 38-4

#### 30.3.1 Step 5

- The manual only shows how to install the pedals in the forward position. It is also possible to install the pedals one hole further back to accommodate pilots with shorter legs. One can adjust the seat forwards and backwards in the RV-10 but that does not change the distance between the control stick and the pedals. Page 38-10, step 1 shows how to tailor the rudder cable link for the two rudder pedal mounting options which shows it is supported.  
See also Bob's log entry: [Relocate Rudder Pedals](#)  
See also this [FB thread](#).
- The QuickBuild fuselage might have the holes in the longeron for the Bearing Block Mount Plate F-1039B drilled a little bit off spec which might need adjustment with a round file or match drilling.

### 30.4 page 38-5

#### 30.4.1 Step 2

- It might be necessary to sand the upper surface of the upper half of the F-6115 block a bit to make it fit less snug underneath the rudder pedal brace.

#### 30.4.1.1 Step 3

- If the ruder pedals have too much friction after tightening down the center bearing block, add a washer on each side in-between the halves to compensate for the saw blade thickness. See also this [VAF thread](#)

### 30.5 Page 38-8

#### 30.5.1 Step 2

- Before inserting the rudder cable consider adding a rudder cable fairing to your build. Avery makes a suitable fairing and is available from e.g. [Aircraft Spruce](#). Draw lines 1 inch above and below the exit hole.



See also this Wiki page for variants of how to shape and mount the fairing: [Rudder\\_Cable\\_Fairings](#).

- It's hard to install the Adel-clamp which holds the sleeve at the tail end. Best to first get just the screw test threaded into the nut plate and backed out. Then capture just the cable with the adel clamp, hold the adel clamp closed with a temporary safety wire or a Hemostat and get the bolt in a few threads deep. Then remove the safety wire or Hemostat and capture and position the cable sleeve. Lastly tighten the bolt.

## 30.6 Page 38-10

### 30.6.1 Step 1

- Since the links are used in pairs, drill the holes in pairs so the bolt holes align
- The links are steel, best to be drilled with a drill press and the links clamped in a drill press vise sitting on top of a piece of wood that is slightly narrower. The steel is soft, the holes can be drilled in a single step with a #12 bit.
- Some builders make the left and right link different length so the pedals are neutral when the rudder is straight. This requires installing the rudder to assess the needed length.

#### 30.6.1.1 Step 6

- The rudder cable is much thicker than the nylon slot. The slot is also square and the cable round. It helps to bevel the slot edges with a Dremel router.

## 31 SECTION 39: CONTROL SYSTEM

### 31.1 Build Instruction Updates

- 11/05/22 [39\\_10.pdf](#)

Check for more recent updates [here](#)

#### 31.1.1 Modifications to avoid the grip hitting the panel

- [FB thread 11/2023](#)
- [FB thread 1/2022](#)
- [FB thread 9/2021](#)
- [FB thread 12/2019](#)

##### 31.1.1.1 Stick Grips

- See [Stick Grips](#)

##### 31.1.1.2 Page 39-2

- Step 3: If you have issues printing the document to scale, try printing this file instead: [Pushrodholes.pdf](#)
  - ♦ Note: HP laser printer drivers on Mac laptops may not print at the needed 1:1 scale, no matter what software you use or what you do in the print settings. Exact same file, printer and Adobe Reader are able to print at 1:1 scale on a Windows laptop. There might be an issue on Macs.
  - ♦ Hint for Onshape users: You can import a pdf page via Inkscape. Import the pdf page in Inkscape and save it out as dxf v14 file. Import that dxf file into Onshape. Start a new sketch. Add the dxf drawing to the sketch. Take a known distance between two points and call out a dimension between them. It will show the distance as it imported the drawing. You can now override that distance to the known distance and the whole dxf is now at scale. You can now overlay your own drawing while the endpoints will snap to the dxf points. Next, create a drawing within Onshape and add the sketch. You can then export that drawing back to a pdf and the scale is correct.

##### 31.1.1.3 Page 39-3

- Step 2: You need two holes that are opposed to each other and aligned so you can get a straight safety wire through later.
- Step 4: One way to prime the inside of the tubes is to hang them off the ceiling dangling 2 inches above the ground. Then inserting a bow tie of paper towel that acts as a plug with a wire that allows you to pull it out the bottom. Pull it down so you can pour an inch of primer into the tube without spilling out the holes. Then slowly pull down the plug. Catch the paint running out the bottom once the plug is coming out.
- Step 5: The long rod end bearing is nominally 2.312" from bolt end to hole and the short one is 1.375. The rod ends are sticking out 0.75", therefore the threads should engage 0.390" into the rod end fitting on both ends to yield a hole to hole length of 37 13/32. Taping the jam nuts into the 0.39 position will make it easy to do the initial thread insertion. 52% of the short and 26% of the long rod end bearing thread is engaged with the rod end fitting.  
Math:  $(33 + 1.5 + 2.312 + 1.375 - 37.40625)/2 = 0.39$

##### 31.1.1.4 Page 39-4

- Step 5: Similar to F-1089, the F-1090 thread engagement can be calculated to 0.718".

##### 31.1.1.5 Page 39-5

- Step 1: Similar to F-1089, the F-1064 thread engagement can be calculated to 0.687".
- Step 2: Similar to F-1089, the F-1065 thread engagement can be calculated to 0.5".
- Step 3: You thread in the front tube first (with the long rod end bearing first), then the rear tube.

**31.1.1.6 Page 39-7**

- Step 4: Don't force washers in and don't have play before tightening the bolt. Consider adding 1/64th thick washers. Make sure that after tightening the second side down, no binding can be felt from the bearings that might have taken on side load.  
Consider using a drilled bolt and a castellated nut / cotter pin.

**31.1.1.7 Page 39-8**

- Step 1: The bearing surface is between the outer side of the bushing and the inside of the base pivot tube. Therefore, it doesn't matter if the bolt sits tight inside the bushing, it's actually good if it sits tight. Be careful removing burrs from the inside of the base pivot tube. The play between the bushing and the base pivot tube must be minimal. Consider adding grease to the outside of the brass bushing (e.g. [Permatex Anti-Seize](#) or [Aeroshell #22](#) which is also later needed for the wheel bearings).
- Step 3: Insert the bolts that hold the aileron pushrods from front to back to avoid binding with the F-1033 Control Column Mounts.

If you install an Aerosport 310 panel, you probably will have interference between the grip and the panel. Also, if you opted to let the elevator travel reach its maximum angle of 25 degrees down (only 20 down is required, see first flight section), even the stock panel might interfere with a grip (especially the Tosten 8 button since it is tilted forward). The WD-1011-L/R Control Stick Bases have large tolerances concerning the angle the control stick has versus the WD-1010 Control column. If the angle is more forward, your stick will interfere more with the panel. If the angle is more rearwards, the bottom aileron pushrod bolts of the Control Stick Base will interfere with the F-1033-L/R Control Column Mounts. Also the aileron center pushrod will interfere with the tunnel side wall cutouts. Consider asking Vans for an exchange of the bases if they are too far off. The angle between the control column brass bearing and the exiting control stick should be 20 degrees up. The angle between the control column and the centerline of the bracket that holds the aileron pushrods should be 90 degrees (brass bearing and aileron pushrod bolts should be parallel).

- ♦ To fix the grip interference, a lot of builders bend the control stick with e.g. a hydraulic HF tube bender (don't forget to fill the tube with sand). However, then, the elevator all up position might interfere with the pilot / passenger with the seats in the front 3 notches, especially, if you opted to let the elevator travel reach its maximum angle of 30 degrees up (only 25 up is required). See also this [FB thread from 2021](#) and this [FB thread from 2023](#).



- ◆ Tosten supplies a 5 degree tilt adapter on request that moves the top of the stick about 0.5 inches back.
- ◆ If you want to reach larger tilt angles, see this [1] FB thread that refers to a 22.7 degree adapter design that yields 2.5 inches.



- ◆ Some have opted to lengthen the pushrod setup to move the stick aft. This may require longer rod end bearings as the stock thread engagement is only about 1/2 inch. This may introduce binding between the aileron pushrod bolts and the F-1033 Control Column Mounts which needs shaving. See this [FB thread](#).. This may also introduce binding between the central aileron pushrod and the elevator pushrod.

## 32 SECTION 3: TOOLS AND WORKSPACE

### 32.1 Build Instruction Updates

- 10/02/14 [RV-ALL\\_03-except12.pdf](#)

Check for more recent updates [here](#)

## 33 SECTION 40: FLAP SYSTEM

### 33.1 Build Instruction Updates

- 05/24/2023 [40\\_10.pdf](#)  
Part ES-FA-PA-450-12-5 replaced with ES-FA-PA-270-12-5
- 11/05/2022 [40\\_10.pdf](#)

Check for more recent updates [here](#)

#### 33.1.1 Hints

##### 33.1.1.1 Page 40-4

- Step 4: See [this pdf](#) with 4 templates for the cutout with rounding radiuses applied. Print at 100%. The outer corner dimensions on the printout should be 2.5" \* 1.75".

##### 33.1.1.2 Flap Position Sensor

- The old flap motor (before mid 2022) has no built-in position sensor and needs an external POS-12 sensor. See section [Flap\\_Position\\_Sensor](#)

## 34 SECTION 41Q: UPPER FORWARD FUSELAGE INSTALLATION

### 34.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 34.1.1 Hints

This section is called 41Q because Q stands for Quadrant. If you plan on using push/pull knobs, refer to section 41.

## 35 SECTION 42: REAR SEAT BACKS



### 35.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 35.1.1 Hints

- If you consider buying rear seats with headrests (vendors listed in section [interior](#)), check whether they replace the entire rear seat backs which would make section 42 unnecessary.

## 36 SECTION 43: CABIN COVER

### 36.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 36.1.1 Related Pages

- [Door Seals](#)

#### 36.1.1.1 Posts

- [FB 7/23](#)
- [VAF 5/21](#)

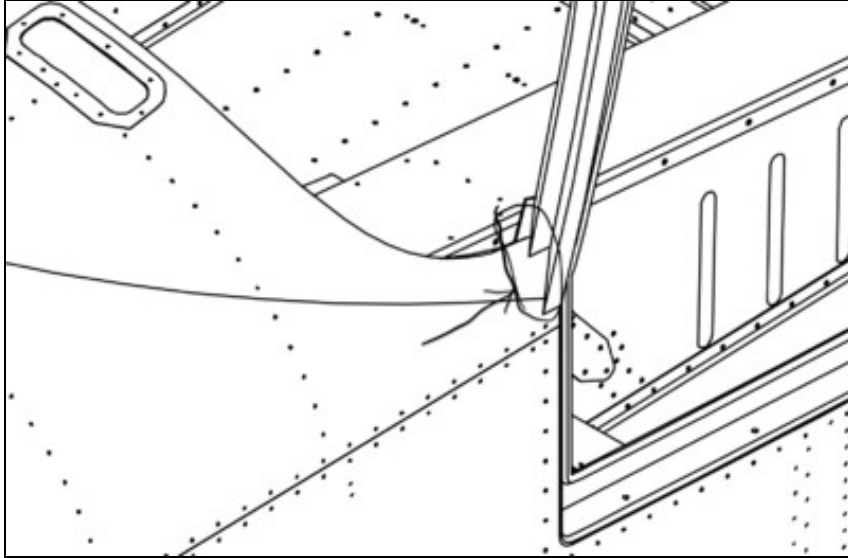
#### 36.1.1.2 Videos

- [Craig's video](#)
- [BuildFlyGo's video 1](#)
- [BuildFlyGo's video 2](#)
- A leaf on the Wind Videos
  - ♦ [cabin top part 1](#)
  - ♦ [cabin top part 2](#)
  - ♦ [cabin top part 3](#)
  - ♦ [cabin top part 4](#)
- Rodrigo Damazio Bovendorp' videos
  - ♦ [Cabin Cover 1](#)
  - ♦ [Cabin Cover 2](#)
  - ♦ [Cabin Cover 3](#)
  - ♦ [Cabin Cover 4](#)
  - ♦ [Cabin Cover 5](#)
  - ♦ [Cabin Cover 6](#)
  - ♦ [Cabin Cover 7](#)
  - ♦ [Cabin Cover 8](#)
  - ♦ [Cabin Cover 9](#)
  - ♦ [Cabin Cover 10](#)
  - ♦ [Cabin Cover 11](#)

### 36.2 Hints

- Fiberglass Dust Protection
  - ♦ [3M Respirator](#)
  - ♦ [coverall with hood](#)
  - ♦ [HobbyAir fresh air respirator](#) (pumps clean air from remote location into mask). Full face mask also protects dust getting into your eyes / face.)
- (D. Peterson) This is time consuming, but it isn't rocket science. It is an expensive part & you don't want to mess it up, but be methodical & patient and it will be fine. We started with Dremels with Permagrafit cutoff disks and also a Dewalt oscillating tool with a "fast wood" blade which worked surprisingly well (get a couple extra blades). I tried a jigsaw, but the blades I had dulled super fast. The 40 grit paper on a belt sander worked very well for the closer work and getting the bottom and sides of the door thin enough. We traced the scribe line with a fine tip sharpie and rough cut to that, then worked our way down until it fit. We probably put it on and off the airplane 15-20 times, which is a bit of a pain, but not bad in the big scheme of things. I now understand what people mean when they say it gets "razor thin"; the edges get very sharp as you get close to the end. Use caution! One thing we did

wrong at first was trying fit the aft edge of the Upper Fwd Fuse OUTSIDE the cabin top. It doesn't work well that way. The skin goes INSIDE the cabin top. Seems obvious now. See pic. One thing we did toward the end of the door bottom was get a micrometer out and get average current readings, subtract 0.0625 (our goal of thinning for that round) so we had a goal to trim to. If you do this, mark your micrometer so you are sticking it "into" the cabin edge the same amount (the fiberglass tapers, so the depth of material into the throat of the micrometer affects your measurement). Before it got too thin we were drawing thin permanent marker lines to trim to. I second breathing protection, safety glasses, and hearing protection at least. We also used the air hose to blow ourselves off numerous times. Good luck. It took two of us about a day and a half. It wasn't as bad as I expected.



- There are several tools that work well for trimming fiberglass.
  - ♦ Vans ships a couple of cutting disks with the kit.
  - ♦ This combination is expensive but makes it really easy. The 60,000 rpm pencil grinder is very small and can rest on top of the surface. It grinds in all directions, meaning one can make an incision near the scribe line and slowly grind sideways until the scribe line is exactly matched, then cut forwards right along the scribe line. Makes cutting as easy as drawing a line.
    - ♦ [Pencil grinder](#)
    - ♦ [Dremel Cutting / Shaping Wheel](#) (You will need more than one)

### 36.2.1 Page 43-3

- Step 1:
  - ♦ The cover's scribe lines for where it needs to mate with the door opening of the fuselage are too far apart. The door opening is only 37 inches but the scribe lines yield a 37 7/16 wide cover. See this [VAF thread](#) for details. Consider making a tool to easily measure 1/8 thickness because that is about the final thickness the frame has around the door opening.



- ◆ The scribe lines for the bottom of the door opening leave the cabin top too thick. The thickness should be determined by what is needed to have the cabin top joggle sit on the upper edge of the side skins. It will be about 1/8 thick as well.
- ◆ The scribe lines for the windows are not giving you the requested 3/4 inch joggle, in some areas, only as little as 0.5 inch. Consider making your own scribe lines for the window cutouts.
- ◆ The distance between the longeron and the upper edge of the outside skin is not necessarily 3/4 inches at all places. Measure and correct for your build. The scribe lines that Vans puts on the side lines are not correct (up to ~ 1 inch). Since the longeron is not necessarily parallel to the upper edge of the side skin, it's better to use the upper edge of the side skin and the upper end of the joggle on the cabin top as the two edges that need to match.



The joggle is nominally 3/4 inch but will depend on the longeron to side skin top edge distance.



Squaring the joggle step with a dremel set to 0.75 inches and the joggle depth.

## 37 SECTION 44: WING ATTACHMENT

### 37.1 Build Instruction Updates

- 11/05/22 [44\\_10.pdf](#)
- 10/05/21 [44\\_10.pdf](#)

Check for more recent updates [here](#)

## 38 SECTION 45: CABIN DOORS & TRANSPARENCIES

### 38.1 Build Instruction Updates

- 03/10/05 [45\\_10.pdf](#)

Check for more recent updates [here](#)

### 38.2 General

- Door fit: See this [VAF Thread](#)
- Epoxy to use: See this [FB Thread 3/2024](#)

### 38.3 45-02

- The holes in the two door halves don't align, just use the ones that do align, see also this [FB thread 4/2024](#).

### 38.4 45-06

- A group of builders are working on a hinge cover, see [OnShape CAD project](#), check fit using this 1:1 print [pdf file](#)
- The plans provide instructions for fitting the hinges to the LHS door, and Step 3 provides the positions for the WD-1019-L and WD-1019-R hinges. The plans then instruct the builder to 'repeat this step for the right side door hinges'. Note: the WD-1019-L hinge must be placed Forward side, and the WD-1019-R hinge must be placed Aft side of the doors, not Left and Right as the part naming would suggest.



See also section 4:

WD-1018-L	2	CABIN HINGE FWD LEFT/ AFT RIGHT
WD-1018-R	2	CABIN HINGE FWD RIGHT/ AFT LEFT
WD-1019-L	2	DOOR HINGE FWD LEFT/ AFT RIGHT
WD-1019-R	2	DOOR HINGE FWD RIGHT/ AFT LEFT

## 38.5 45-08

- Silpruf Method  
[Silpruf @ Amazon](#)  
[5-part instructional video](#)  
 See also this [Glastar article](#).  
 This method requires drilling holes along the edges of the windows. If your inside is in a finished state, this will cause patching / touch-ups after the window installation.  
 The video recommends 6 inch sanding discs which aren't readily available. 4 1/2? flap sander disks from Harbor Freight work as well.
- [Sikaflex instructions](#)
- A good read on window attachment is this [VAF thread](#)
- [June 2023 FB thread](#)
- Be diligent with the window attachment, this VAF thread talks about a window which popped out during flight: [this happens](#)
- [Feb 2024 FB thread](#)

## 38.6 45-19

- Windscreen base fairing lay-up  
[Windshield\\_to\\_Fuse\\_Transition\\_Steps.pdf](#)  
 See also [Van's video for the RV14](#).

## 39 SECTION 45A: CABIN DOOR SAFETY LATCH

### 39.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 40 SECTION 47: SPINNER & COWLING

### 40.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 41 SECTION 48: GEAR LEG & WHEEL FAIRINGS

### 41.1 Build Instruction Updates

- 05/21/19 [48\\_10.pdf](#)

Check for more recent updates [here](#)

#### 41.1.1 Page 48-8

- Step 4: For opaque fairings, there are several ways to deal with the problem of how to make matching holes. See this [FB thread](#).

#### Page 48-16

- See this [FB thread](#) on fitting the nose wheel fairing.

#### 41.1.1.1 Page 48-17

- Step 2: Screw 3/8-24 x 1 3/4 is an RV-10 problem point. The steel bolt in the aluminum fork may eventually strip the thread and come loose. Consider evaluating measures to prevent this. See also
  - ♦ this [FB thread](#)
  - ♦ this [VAF thread](#)
  - ♦ this [Youtube](#)

## 42 SECTION 49: SEATS & SEAT BELTS

### 42.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 42.1.1 Upgrades

- See [Seat Adjustment Lever](#)

#### 42.1.2 Hints

### 42.2 49-3

- Note: The outer seat rails are blocking the assembly of the F-1015D mid cabin side covers since they are inserted on the upper end first, then rotated down. For this reason, the outer rails shouldn't be finally assembled before the cabling is done.
- Modification so seat comes out easily  
Note: the seats come with a label that warns not to modify the seat in any way. The hints below are not a recommendation to violate this.  
Note: Nutplates are commonly used with fully threaded bolts where the length of the bolt just needs to meet a minimum length but it can be longer. If you use nutplates with non fully threaded bolts, care needs to go into determining the correct bolt length / washers to avoid bottoming out or having threads show inside the hole. Best to check where the threads end before mounting the nutplates.
  - ◆ There are two ways to disable the rail stop, consider making one of the two mods (they save time, nothing more):
    - ◇ (1) Easier removal of the T-handle (4 AN3 bolts)
      - One mod is to replace the nuts with nutplates, so you don't have to fumble with washers and nuts in a tight space. Keep in mind though that a nutplate is not as strong as a lock nut.
      - One can also change out the bolts with AN-4s and tap the T-handle bracket. Keep in mind though that bolts usually need to engage into an aluminum thread with twice the diameter in length.
    - ◇ (2) Easier removal of the rear stopper (2 AN4 bolts - factory installed within the rail)  
The mod is to replace the nuts that are part of the seat rail with nutplates below the seat (needs match drilling and longer bolts). Keep in mind though that a nutplate is not as strong as a lock nut.
  - ◆ The space behind the seat is tight. Once the seat is free to slide back, it still won't come out because it will bump into the flap torque tube cover before it is completely out of the rail. It is tedious to remove the flap cover, especially if you have carpet on it. An additional mod is to chamfer the front end of the nylon track sleeves in the seats so you can angle the seat up before it hits the flap cover.
  - ◆ See FB Post [3/29/2022](#)
  - ◆ [Brandi's build log](#)
  - ◆ [VAF thread 5/8/2010](#)
  - ◆ [Nutsert mod](#)
  - ◆ [VAF thread 1/10/2019](#)
  - ◆ [FB thread 3/2024 cover cutout](#)

## 43 SECTION 50: CABIN HEAT AND VENTILLATION

### 43.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 44 SECTION 5: GENERAL INFORMATION

### 44.1 Build Instruction Updates

- 02/24/23 [RV-ALL\\_05.pdf](#)

Note: The new Section 5 redefined the severeness of cracks at dimpled holes to make laser cut parts be more acceptable where this may be a problem.

Check for more recent updates [here](#)

## 45 SECTION 8: HORIZONTAL STABILIZER

### 45.1 Build Instruction Updates

- 10/05/21 [08\\_10.pdf](#)

Check for more recent updates [here](#)

#### 45.1.1 Page 8-3

- Step3: The 1 21/32 lower flange width dimension is to be applied at the 1 inch line, not at 2 inches, the raw angle size.

##### 45.1.1.1 Page 8-7

- Step 3: only cut back the two corners on the front edge of the nose rib, not the entire edge because then you will violate the edge distance for the foremost rivet. See also this [FB thread](#).
- Step 4: Very likely that the nose rib that came with a recent kit already has the holes in the web that step 4 calls out for making

## 46 SECTION 9: ELEVATORS

### 46.1 Build Instruction Updates

- 9/6/2023 [09\\_10.pdf](#)  
Skin bonding to rear spar.

Check for more recent updates [here](#)

#### 46.1.1 Builder Videos

Plane Lady:

- [9-1 to 9-8](#)
- [9-9 to 9-15](#)

##### 46.1.1.1 Page 9-7

- Step 4: Some builders prefer CNC machined cable anchor brackets (WD-415) over the welded ones that come with the kit (Vans did have issues with the first version of them since they only had a weld on one side of the nut). Do your research before ordering a set from iflyrv10.com. See [this FB post](#). Consider using fasteners instead of rivets to attach WD-415. If they are riveted, you need to rotate the entire access cover to adjust the length. It's possible, but it takes to move the F-1095A trim mount bracket all the way aft to have enough cable sticking out.

##### 46.1.1.2 Page 9-15

- Step 6: You can use solid rivets instead of blind rivets on the bottom skin if you really want to. If you can fit your bucking bar through the lightening hole on the front spar, then you can turn the elevator and set it vertically resting on the tip rib assembly. This lets the bucking bar sit flat and gravity helps hold it in place. You can get your fingers through the lightening hole to hold it while using normal rivets.
- Step 12: do NOT alternate directions of the rivets like you did on the rudder; make sure the factory (flat) head is on the top skin of the elevators.

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Dave Corwith:

#### Section 9-16 Elevator Trim Tab Fabrication:

My Notes:

- Step 5 Bending the ends of the trim tabs:

Make a wooden trim tab template verbatim from the templates. Use this on the inside of the area to be bent. Now put a reverse wedge on the top so the clamps will work. Now the outboard end is square (90 deg) so offset 1/32 as illustrated then clamp to table FIRM, and bend with wood block. I skipped the double sided tape as I was able to precisely clamp w/ 1/32 offset. I used a plastic peen on the rivet gun set to 40 psi. Bend the bottom first. Use the plastic peen to sharpen the edge of the bend. - Now bend the top down and match drill. When doing the other end, draw a line w/ sharpie from the angle edges. Put the wood block in at the same angle as the line. Clamp to the table same as other end. Clamp it FIRM.

#### Section 9-17 Step 4

Note: it may be easier to prime before doing this step as the access to the inside (for spraying and removing the tape) is pretty small after this step.

I used my buddy's 90 deg "shear/brake" with a 1/4-1/2" angle iron. I slightly opened up the trim tab while gently bending to 15 degrees. Came out ok. Better than just doing it with duck bill pliers.



Elevator Trim Tab Peening



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#### Section 9-20 Safety Wire

- I used 0.32 stainless steel safety wire.

## Section 9-21 Trim Tab Templates

- as svg files, they print correctly 1:1 with e.g. free Inkscape (<https://inkscape.org/>)

[Trailing edge foam ribs.svg](#)

[Trim tab foam ribs.svg](#)

See also hints concerning printing at 1:1 scale in [SECTION\\_39:\\_CONTROL\\_SYSTEM](#)

## 47 SECTION FF1: ENGINE INSTALLATION

### 47.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 47.1.1 Hints

- Before you hang the engine, put the oil pressure fitting in the accessory case because it can't be done afterwards.
- If your alternator pulley does not align with the flywheel groove, check this [FB thread](#) 4/2024

## 48 SECTION FF2: COWL BAFFLE

### 48.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 49 SECTION FF3: CONTROL CABLES

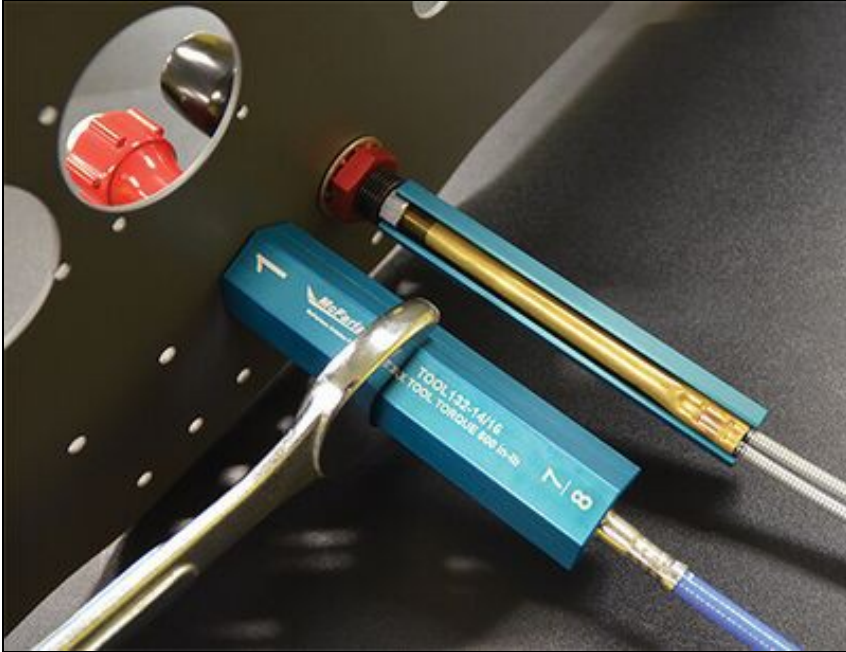
### 49.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

#### 49.1.1 Tools

- [Push Pull Control Cable wrenches](#)



#### 49.1.2 Hints

- The exact push pull cable lengths you need are usually very specific to your airplane / the options you have. Run a pitot hose or something similarly stiff along the planned route and measure exactly what you need.
- If you use the **AeroSport Products throttle quadrant**, with the standard Van's firewall pass-through locations, and an IO540 with **Barrett cold air induction**, and **EFII** system (specifically the air intake), then the throttle control cable needs to be 70.5" long. So a 176-VTT-2.25-70.5 needs to be ordered from California Push-Pull instead of the 176-VTT-2.25-65.5 that is called out on the AeroSport Products website.

## 50 SECTION FF4: FUEL SYSTEM

### 50.1 Build Instruction Updates

- 12/08/06 [FF4\\_10.pdf](#)

Check for more recent updates [here](#)

#### 50.1.1 Hints

- Check this [Service Bulletin](#) on how to plug the fuel pressure sensor port on the spider.

## 51 SECTION FF5: OIL SYSTEM

### 51.1 Build Instruction Updates

- 10/05/21 [FF5\\_10.pdf](#)

Check for more recent updates [here](#)

## 52 SECTION FF6: EXHAUST SYSTEM

### 52.1 Build Instruction Updates

- 11/04/09 [FF6\\_10.pdf](#)

Check for more recent updates [here](#)

## 53 SECTION OP-36: WINGTIP LIGHTING

### 53.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 54 SECTION OP-38: ELECTRIC AILERON TRIM

### 54.1 Build Instruction Updates

- 09/29/16 [RV-10-14\\_OP38.pdf](#)

Check for more recent updates [here](#)

#### 54.1.1 Hints

- "If you put it in the right wing, wiring is easier for EFIS systems having auto trim capabilities."
- Avoid spring chafing on pushrod, see this [VAF thread](#).
- "you may need to bend the servo arm slightly to prevent the springs from dragging on the pushrod."
- "I attached the springs to the aileron pushrod brackets first. Then, I stretched the springs so that the ends that attach to the servo were together, securing them with a piece of safety wire. Once it was time to attach the servo to the springs, the ends were hooked to the servo arm and the safety wire was removed. It was just there to hold the springs together..."

## 55 SECTION OP-40: COWL BAFFLE

### 55.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 56 SECTION OP-43: ACCESS PANEL INSTALLATION

### 56.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 57 SECTION OP-48: RV-10 AHRs BRACKET

### 57.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 58 SECTION OP-50: FUEL PUMP NOISE FILTER

### 58.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 59 SECTION OP-51: SHEET METAL BASICS

### 59.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 60 SECTION OP-52: LANDING LIGHT

### 60.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 61 SECTION OP-52A: AERO LEDS SUN SPOT LX

### 61.1 Build Instruction Updates

- N/A

Check for more recent updates [here](#)

## 62 SECTION OP-55: WING TIP NAV STROBE LIGHTING

### 62.1 Build Instruction Updates

- 09/24/19 [OP-55-Wing-Tip-Nav-Strobe-Lighting.pdf](#)

Check for more recent updates [here](#)

## 63 SECTION OP-56: TAIL LIGHTING

### 63.1 Build Instruction Updates

- 09/24/19 [OP-56-Tail-Lighting.pdf](#)

Check for more recent updates [here](#)

#### 63.1.1 Hints

- The suggested hole to bring the tail light cable into the fuselage is above the bottom rudder hinge in OP-56. In the obsolete RV-10 electrical wiring instructions (OP-37), the hole was shown below the hinge. Many builders have used the lower hole placement without issues and the upper hole is at a place where the leading edge of the rudder doesn't leave much space:



*Photo by J. Tremble*

- See also discussions
  - ◆ FB Post [6/1/2022](#)
  - ◆ FB Post [3/31/2022](#)
  - ◆ FB Post [3/29/2022](#)
  - ◆ FB Post [12/24/2019](#)
- A tail light is not needed if the wing tips have white rear position lights as on the Aveo Ziptips. See CFR title 14 volume 1 section 23.1385 (c): Rear position light. The rear position light must be a white light mounted as far aft as practicable on the tail **or on each wing tip**.

## 64 SECTION OP-60: (AD)AHRS BRACKETS

### 64.1 Build Instruction Updates

- 09/24/19 [OP60-01.pdf](#)

Check for more recent updates [here](#)

#### 64.1.1 Hints

- This bracket is for DYNON only, the GARMIN ADAHRS does not fit above the tray and putting it hanging down blocks the open space unnecessary which you might need to crawl in there later.

## 65 SECTION OP-64: RV-10 FLAP MOTOR RETROFIT

### 65.1 Build Instruction Updates

- 05/24/2023 [OP-64-RV-10-Flap-motor-retrofit.pdf](#)  
Part ES-FA-PA-450-12-5 replaced with ES-FA-PA-270-12-5
- 11/05/2022 [OP-64-RV-10-Flap-motor-retrofit.pdf](#)

Check for more recent updates [here](#)

#### 65.1.1 Hints

- N/A