

## RV9A Builder Log

### 1. Empennage

10/21/2004, Thursday

Received the empennage kit  
Inventory the kit and found all  
included.





Rearrange the shop  
Clecoing front spars together with front spar doubler plate  
Clecoing rear spars together



Sketched the attach angles  
Study the manual

Total time: 3 hrs

10/22/2004, Friday

Drill #30 holes, deburr all holes

Built HS cradle (add one more)



Fluting ribs (adjustment only)

Built angles



Round edges and holes on all spars and ribs



Total time: 8 hrs

10/23/2004, Saturday

Clecoing vertical stabilizer



Cleaned again edges and lightening holes of all ribs on the HS



Fluting VS ribs  
Purchase more tools from Indy

Total time: 4 hrs

10/24/2004, Sunday

Drill #30 holes on vertical stabilizer  
Debur all holes  
Cleaned edges and lightening holes for vertical stabilizer spars and ribs  
Cleaned edges for rudder and elevators spars and ribs  
Fluting rudder ribs  
Prime angles and stiffeners  
Setup HS cradle

Waiting for silver clecos to come  
Setup hand squeezer, C-frame dimpler, rivet gun

Total time: 8 hrs

10/25/2004, Monday

Clean up and study

10/26/2004, Tuesday

Go to Indy, replace the 8" grinder with a 6" grinder and purchased a torque wrench  
Mount Scotch-Brit wheel to the grinder  
Fabricated all parts except rudder stringer for the empennage kit

Total time: 4 hrs

10/27/2004, Wednesday

Built small paint booth  
Touch up the parts primed 2 days ago.  
Figured out how to use all the tools

Total time: 4 hrs

10/29/2004, Friday

Practice reviting

Total time: 1 hr

11/1/2004, Monday

Assemble drill press, belt sander  
Build fixture for back rivet plate  
Mount hand squeezer bracket

Total time: 3 hrs

11/2/2004, Tuesday

Cutting rudder stringers and sand and Scotch Brit sanding all stringers

Total time: 2 hrs

11/5/2004, Friday

Clecoing left and right HS  
Drill all #40 holes on left HS, debur, sand all surfaces, dimple and countersink.  
Prime all left HS parts.

Total time: 8 hrs

11/16/2004, Tuesday

Match drill #40 holes on right HS, debur, sand, dimple and countersink spars and ribs.  
Prime spars and ribs.  
Drove a few rivets on the spar.  
Fit left HS skin on the cradle, rivet one forward rib.

Total time: 6 hrs

11/17/2004, Wednesday

Assemble front and back spars.  
Dimpled right HS skin. Prime.  
Partially assembled left HS.

Total time: 6 hrs

11/18/2004, Thursday

Finish riveting left HS.  
Put right HS skin in the cradle. Revit two front ribs.

Clecoing VS match drilled all #40 holes. Deburred all holes.





Total time: 8 hours (65 hr)

11/19/2004, Friday  
Rivet right HS



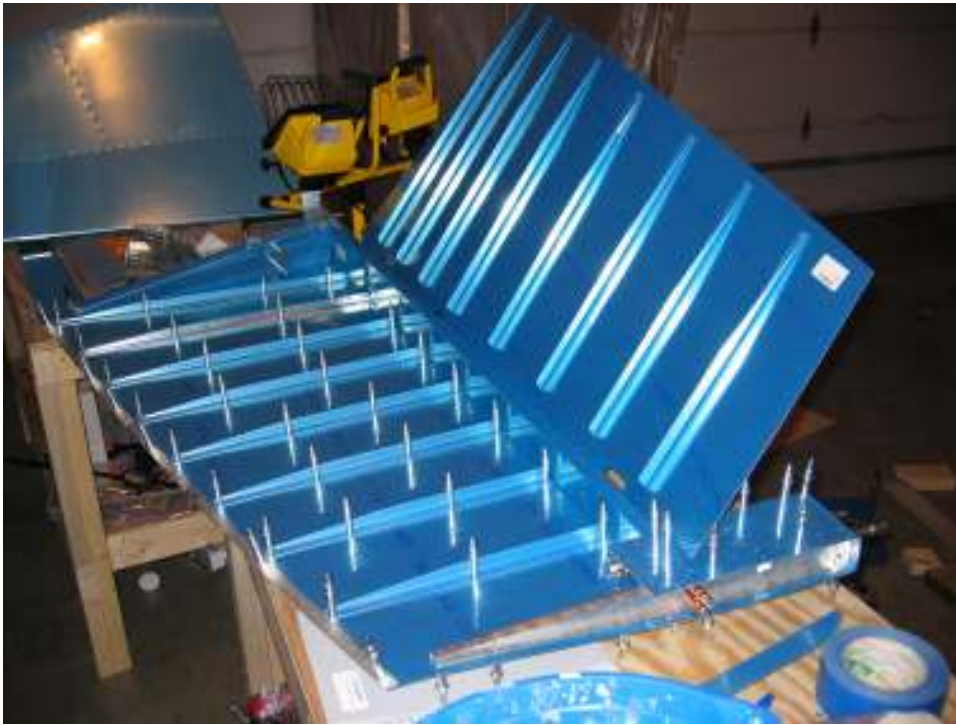
Total time: 4 hours (69 hr)

11/20/2004, Saturday  
Finish riveting right HS  
Dimpling VS skin, spar and ribs



Clecloing rudder





Total time: 8 hours (77 hr)

11/21/2004, Sunday

Clecoing left elevator (partially)

Drill all matching holes in rudder

Dimple most holes except those in the ribs (too narrow)



Total time: 5 hours (83 hr)

11/22/2004, Monday

Dimple holes in the ribs (use rivet dimpler and rivet dimple die placed on the edge of C-frame dimpler to dimple very narrow areas)

Sand and Scotch Brit wheel stringers

Use Scotch Brit pad to sand all shinning surfaces, prepare for priming.

Total time: 6 hours (91 hr)





11/23/2004, Tuesday  
Prime all parts in VS and rudder  
Total time: 4 hours (95 hours)

11/24/2004, Wednesday  
Assemble VS





Total time: 5 hrs (100 hrs)

11/25/2004, Thursday

Dimple trailing edge on the rudder skins (forgot to do it before)

Clecoing rudder together

Total time: 3 hrs (103 hrs)

11/26/2004, Friday

Checking rudder parts and assembly

Assemble counter weight

Riveting spar

Total time: 4 hr (107 hrs)

11/27/2004, Saturday

Back riveting stiffeners

Riveting rudder skins

Countersink trailing edge insert

Match drill aluminum angle

Total time: 7 hrs (114 hrs)



11/30/2004, Tuesday

Put in MK139-BS and CS4-4 blind rivets in rudder

Match drill a level with trailing edge and test clecoing together trailing edge.

Glue together the trailing edge

Match drill top side of the left elevator

Total time: 4 hrs (118 hrs)



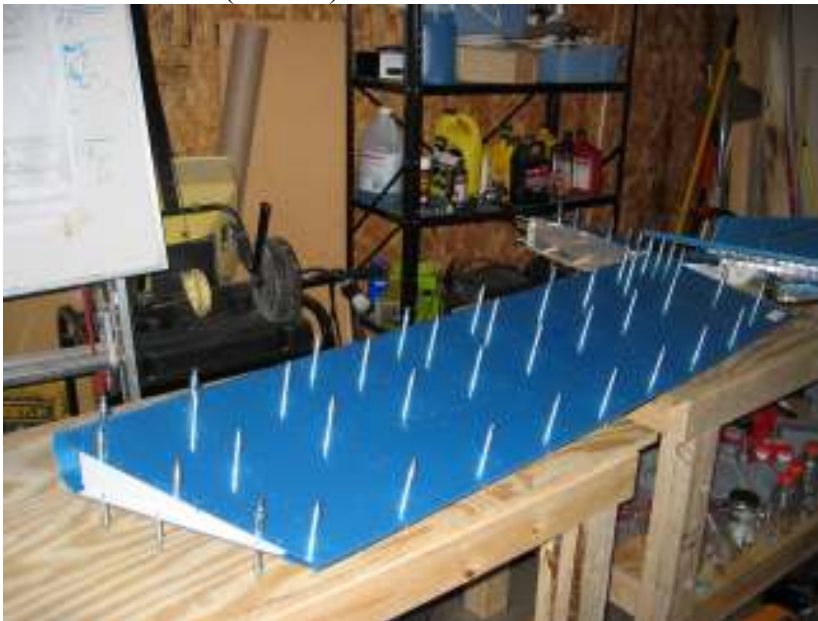
12/1/2004, Wednesday

Match drill lower side of the left elevator  
Build elevator trim, match drill all holes (still need to drill for hinge and spar)  
Total time: 4 hrs (122 hrs)



12/2/2004, Thursday

Match drill trailing edge of left elevator  
Disassemble left elevator  
Assemble and match drill right elevator including trailing edge and AEX edge  
Disassemble right elevator  
Total time: 5 hrs (127 hrs)



12/3/2004, Friday

Deburring and dimpling elevators  
Total time: 6 hrs (133 hrs)

12/4/2004, Saturday

Continue to debur and dimple elevators  
Total time: 4 hrs (137 hrs)

12/5/2004, Sunday

Continue to debur and dimple elevator (almost done, only skins need to be done)  
Total time: 4 hrs (141 hrs)

12/6/2004, Monday

Prime all elevator parts except skins  
Dimple both skins  
Total time: 8 hrs (149 hrs)

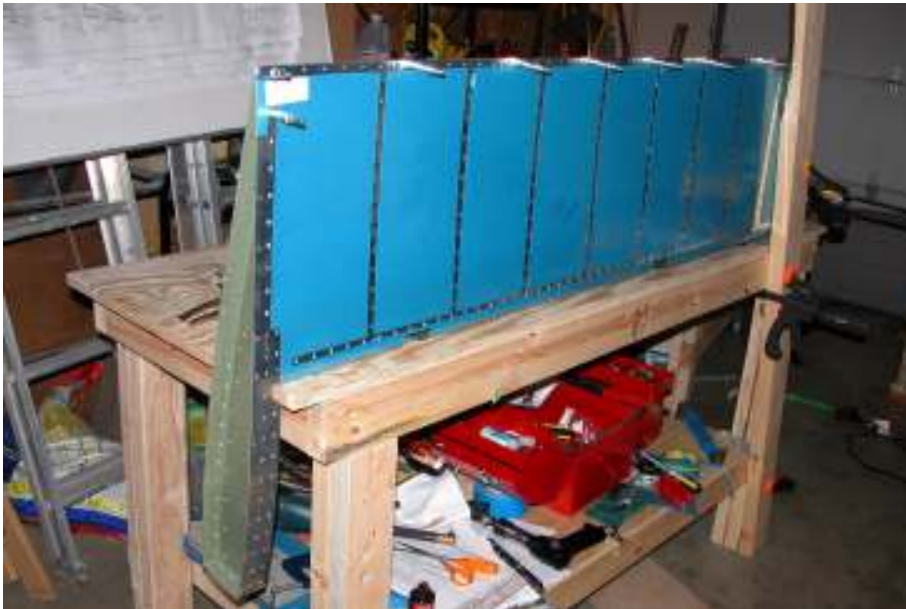
12/7/2004, Tuesday

Prime both skins  
Cut elevator counter weights  
Rivet trailing edge of rudder  
Rivet reinforcement plates to elevator spars  
Roll the leading edge  
Total time: 8 hrs (157 hrs)

12/8/2004, Wednesday

Rivet the rudder leading edge  
Trim fiberglass top tip for rudder, drill holes and blind rivet it to the rudder  
(rudder only need to add bottom tip)  
Rivet trim tab top skin to the spar  
Glue foam stiffeners to the skin, clecoing close and set in the cradles  
Rivet ribs and horns to the spars (both elevators)  
Rivet right elevator top skin to the spar  
Total time: 9 hrs (166 hrs)





12-9-2004, Thursday

- Drill out counterbalance ribs from the skin and spar
- Back riveting stiffeners on the bottom skin
- Blind rivet bottom skin to the spar
- Rivet counterbalance rib ribs to the spar and the skin
- Glue and cleco AEX wedge to the trailing edge
- Leave right elevator to cure
- Total time: 8 hours (174 hrs)



12-10-2004, Friday

- Assemble left elevator
- Rivet rib, control arm, and spar together
- Back rivet stiffeners to the top skin
- Rivet spar to the top skin

Rivet top edge of the counter balance ribs to the top skin  
Rivet control plate to the bottom skin  
Rivet stiffeners to the bottom skin  
Close the bottom skin and cleco it to the spar, rib, trailing edges



Total time: 7 hours (181 hrs)

12-11-2004, Saturday

Blind rivet bottom skin to the spar  
Drill out the top skin and the trim spar  
Countersink the bottom trim spar  
Rivet bottom skin to the trim spar  
Prepare AEX wedge, glue it to the trailing edge  
Total time: 4 hours (185 hrs)



12-12-2004, Sunday

12-13-2004, Monday

Study Avionics need

Total time: 5 hours (190 hrs)

12-14-2004, Tuesday

Study avionics need

Total time: 5 hours (195 hrs)

12-15-2004, Wednesday

AutoCAD layout panel

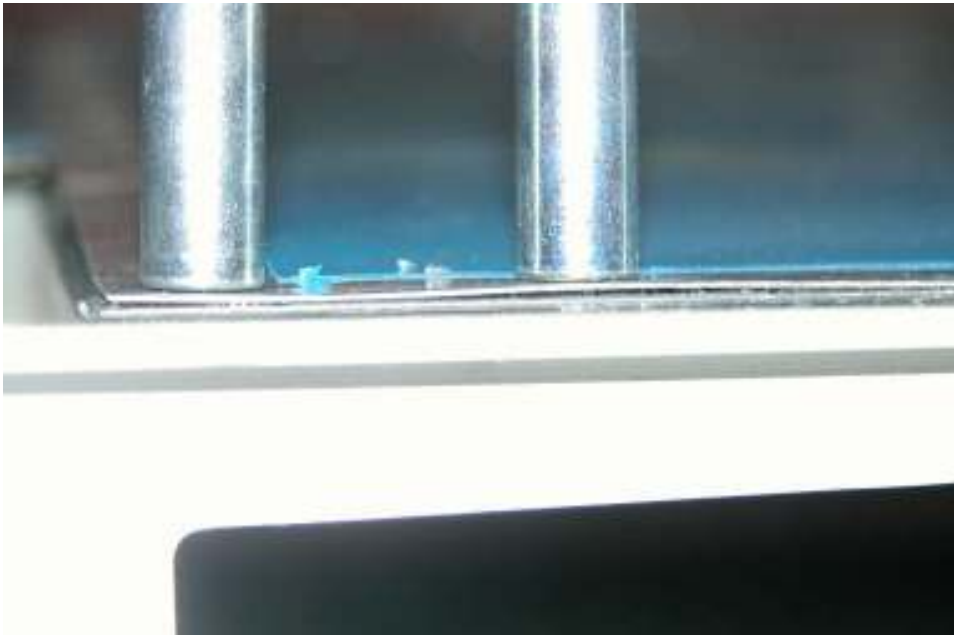
Send pictures and questions to Van for trailing edge and tore HS rib



Tore rib web on HS (Van's said okay)



Rudder trailing edge after riveting



Elevator trailing edge  
Total time: 4 hours (199 hrs)

12-16-2004, Thursday

Received reply from Van's  
Experimenting with heat gun to remove the glue  
Remove AEX wedge from left elevator  
Remove glue from trailing edge and wedge  
Enlarge countersink from all AEX wedge holes  
Total time: 2 hours (201 hrs)

12-17-2004, Friday

Remove AEX wedge from right elevator  
Remove glue from trailing edge and wedge  
Enlarge countersink from all AEX wedge holes  
Total time: 3 hrs (204 hrs)

12-18-2004, Saturday

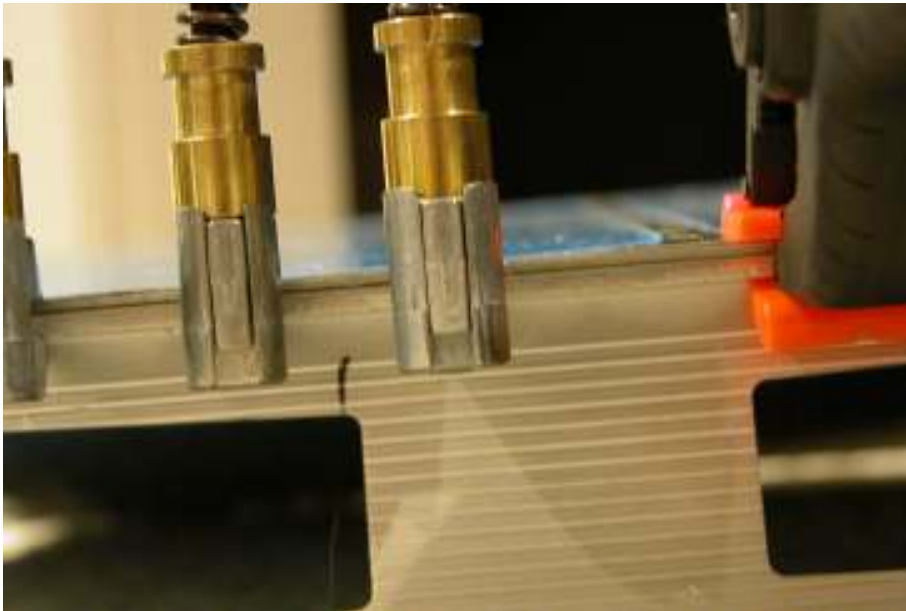
Drill out all rivets from the rudder trailing edge  
Remove AEX wedge from rudder  
Remove epoxy glue from the wedge (partially done)  
Total time: 2 hr (206 hrs)

12-19-2004, Sunday

12-20-2004, Monday

12-21-2004, Tuesday

Remove epoxy glue from the rudder wedge  
Clean left elevator wedge and trailing edge  
Glue and cleco left elevator trailing edge  
Total time: 3 hrs (209 hrs)



Left elevator new trailing edge

12-22-2004, Wednesday

Glue together right elevator trailing edge

Rivet control and side closures for elevator trim

Readjust dimples and countersinks in rudder

Rivet left elevator trailing edge (two edges separated and need glue again)

Total time: 5 hours (214 hrs)



Right elevator trailing edge

12-23-2004, Thursday

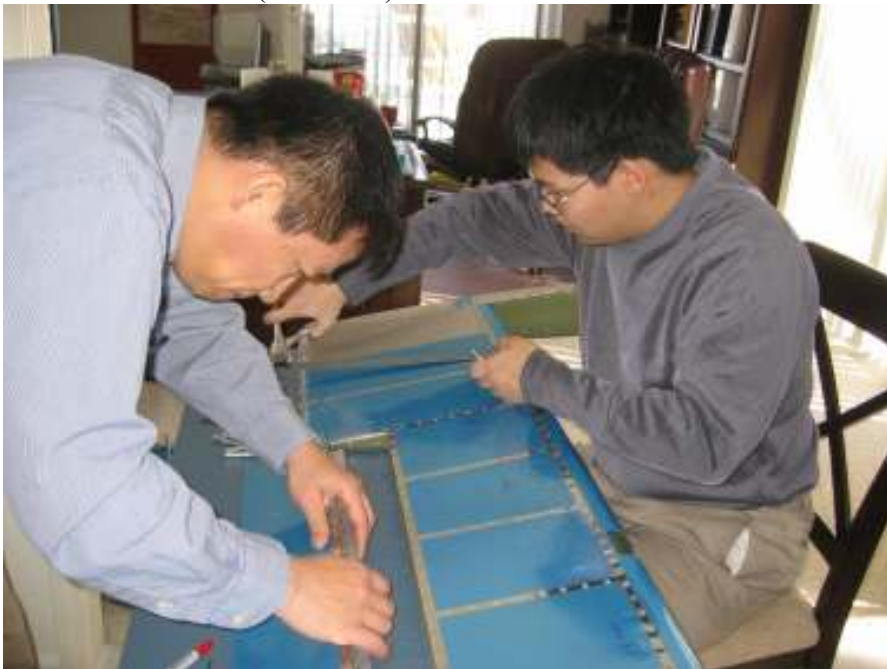
Prepare rudder trailing edge

Glue together rudder trailing edge

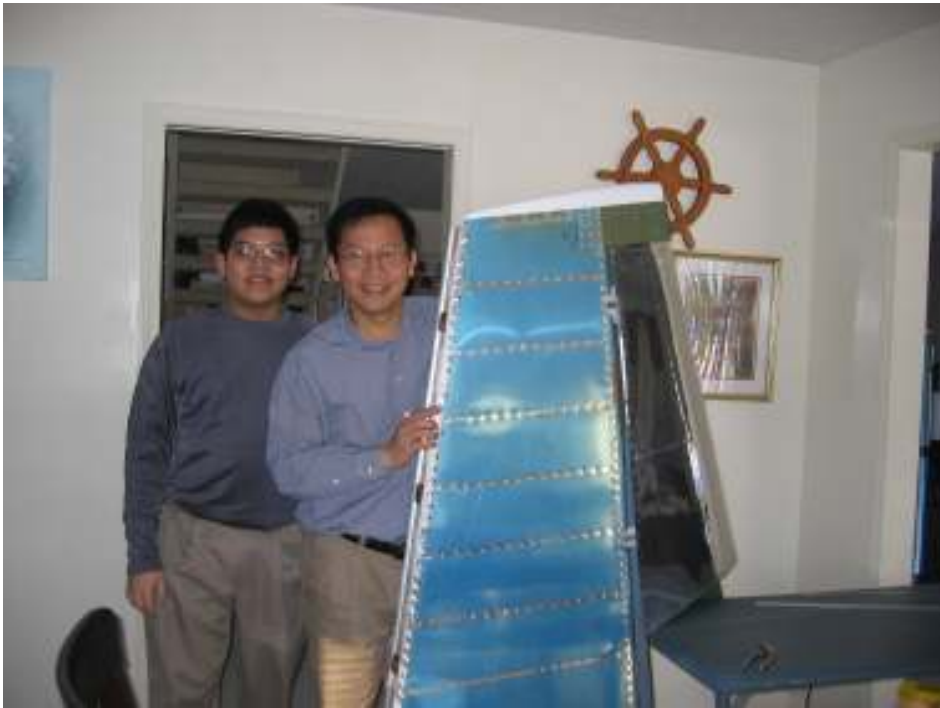
Study electric systems (Aero Electric Connection) 2 hrs  
Total time: 2.5 hrs (216.5 hrs)



12-24-2004, Friday (outside -6 degree)  
Match drill hinge to the elevator trim and left elevator, debur  
Put in bolts for elevators and rudder  
Test assemble rudder to vertical stabilizer  
Total time: 3 hours (219.5 hrs)



Match drill hinge for trim



Rudder and vertical stabilizer (VS plastic cover removed, reflect the table color)

12/25/2004, Saturday

Drill holes and debur hinge

Countersink holes on the trim tab side of the hinge

Assemble together empennage (testing)

Research panel design (time not logged)

Total time: 2 hours (221.5 hrs)



1/15/2005, Saturday

Cut fiberglass elevator tips

Total time: 3 hrs (224.5 hrs)

1/22/2005, Saturday

Cut fiberglass rudder bottom

Total time: 2 hrs (227.5 hrs)

2/5/2005, Saturday

Set trailing edge rivets on rudder

Total time: 2 hours (229.5 hrs)

2/6/2005, Sunday

Set trailing edge rivets on elevators

Adjust eye bolts heights on rudder and elevators

Total time: 4 hours (233.5 hrs)

2/12/2005, Saturday

Trim right elevator counter weight

Match drill right elevator tip

Cut reinforcement strip for tips

Trim right tip for HS

Total time: 4 hours (237.5 hrs)



2/13/2005, Sunday

Trim left tip for HS

Match drill and countersink holes for both right and left HS tips

Dimple tip holes on HS

Total time: 3.5 hours (241 hrs)