

Owner Name:	Michael Elliott	Kit Manufacturer:	Van's Aircraft
Owner Address:		Kit Model:	RV8A
Owner City/State/Zip:	Olympia, WA	Kit Serial Number:	82748

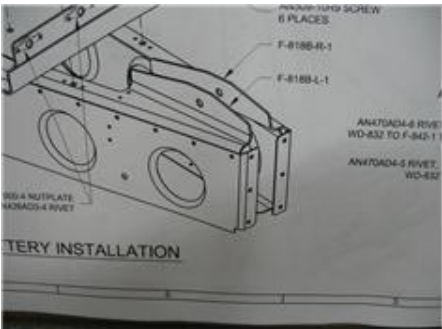
Date	Category	Hours	Manual Reference #	Partner
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10/27/2008	Dynon Pitch Servo	1.50		
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I have created a separate category for the installation of the Dynon autopilot pitch servo since it may help others. Dynon made the brackets based on the older non matched hole kits. In those kits the bell crank brackets were riveted to the baggage floor ribs, the Dynon brackets are substitutes for those brackets. In the newer kits the bell crank mount is formed into the baggage floor rib so that it is all one piece (see Photo 1 and 2). There is some work involved to get the Dynon bracket to work with the new kits. This write up will illustrate how I accomplished the task there may be other ways but I hope my explanation helps.

My plan of attack is to fit the Dynon brackets so that they will nest into the existing bell crank mounts. First I cut the forward end of the brackets since the length interfered with the rivets that hold a support bracket that goes between the two floor ribs . You can see this support and the rivets in Photo 3. This photo was taken after I had already match drilled the brackets to the ribs.

The aft end of the Dynon brackets will extend past the F808 bulkhead. The bulkhead is higher than the level that the bracket will sit so I had to trim some of the F808 Bulkhead away. You can see the pen marks in Photo 2 that outlines the area to be removed. Before I did this I called Van's to get there thoughts on doing this and they felt there should not be any issues with this but with the caveat with the fact that they have not seen the Dynon servo brackets before. I feel totally confident that this will in no way weaken the structure but each builder must make their own decisions. Continued on next log entry.....



Blueprint of formed rib/bracket



Note bell crank bracket formed into floor ribs. You can see area I had to cut out to fit brackets



Note support rib rivets on left side of photo, left is forward.

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**Construction Log Report**

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The next step was to radius the back of the Dynon bracket so that it would match the radius of the rib/bracket. I did this a little at a time until I had a tight fit in both planes of the Dynon bracket to the rib/bracket. You can see in Photo 1, I marked where the radius was needed; the part that overhangs does not need a radius. With the bracket clamped in place I checked the alignment of the holes that the bell crank mounting bolt goes through and the alignment was perfect. I repeated the above procedure for the other bracket.

Next I laid out a rivet pattern onto the Dynon bracket and drilled #40 holes using a drill press. I laid out 4 holes 7/8" apart, starting 12/32nd from the forward end. The rib narrows towards the aft end and edge distance becomes an issue with the radius in the outboard edge of the formed rib. The 4 rivets should be more than ample to hold the bracket. I do know of one builder who when mounting a similar bracket for another autopilot only held the bracket in place with the AN5 bolt that goes through the bell crank and the AN3 bolt that mounts the servo; he did not rivet the bracket at all.

After drilling the #40 holes into the bracket, I clamped the brackets in place with the AN5 bolt run through both sides. I then match drilled the holes to the rib to #30. Next I drilled the hole for the AN3 bolt that will bolt to the servo; I drilled a matching hole on the side opposite the servo as well. The brackets are mirror images I guess to give you the option of putting the servo on either side of the bell crank. I will put a bolt on the opposite side just to help hold the upper part of the bracket.



Note: Radius on portion of bracket that nests into existing rib/bracket



Brackets match drilled to rib, you can see holes in the ribs in photo 3 from previous log entry.



Match drilled AN3 holes on the Dynon bracket to the rib/bracket.

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I continued the installation by deburring and priming the brackets. I also touched up the edges of the bulkhead where I cut out for the bracket. You can see in the photo the test fit with the bell crank in place and the two AN3 bolts; there should be no interference with the bell crank. I will rivet the brackets in place using Cherry Max 4-4 rivets; these are kind of over kill but I have them, and MSP 4-4 would work just as well. The brackets will not get much force put on them from the movement of the servo.

The last step was to drill the hole into the bell crank itself for the connecting rod that will attach the bell crank and the servo arm. I have not ordered my servos yet so the rest of the installation is on hold. I should note that you could make your own brackets easily out of .125 angle and then just order the connecting hardware from Dynon; I like the fact that the holes for the servo were already laid out and drilled into the Dynon brackets; I needed this since I have not bought the servos yet. I will post a picture after the brackets are riveted in place but you can see how the fit is from the photos of the parts just set in place.

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Brackets primed awaiting rivets



Test fit with bell crank and AN bolts



Servo rod connection hole drilled

Total Hours : 4.50