

JR XP9303 Sailplane Setup Addendum

By Joe Wurts

The write-up in the manual (by John Adams) on setting up a sailplane for the 9303 is a pretty good one. I'm going to use that as a baseline, but note any differences. This write-up starts on page 42.

My first difference is on step #8, Establishing Flight Modes.

I use four flight modes: Launch, Speed, Cruise, and Thermal. I also set up my radio so that the Launch is on a two-position switch (On or Off), and the remaining three modes are on a three-position switch. When the Launch mode is activated (On), it overrides whatever is selected on the three-position mode switch. I assign the launch switch to the Elev D/R switch (ELE D/R), and the three-position mode switch, denoted in the menu as SPEED, is assigned to the left three-position switch (L3P), just to the right of the Elev D/R switch.

One other thing, I'm hardwired for having the switches be as physically representative as possible, so when I want to pull down the trailing edge for launch, I want to pull the switch down. The default is that the launch switch is activated when the switch is up. The way that I fixed mine was to take off the back of the Tx and swap the two end wires going to the Elev D/R switch. Leave the middle wire where it is, and swap the two outer wires, and you have reversed the switch!

Minor note on Step #14

For clarity, the "crow" (aileron reflex with flap deflection) is governed by the SPOI FPRN 0 value. I typically run about a 15% to 20% value here, just enough aileron reflex to preserve good roll authority, along with no adverse yaw. If the plane has adverse yaw with full flaps, use a little bit more reflex, and vice versa. I tend to want just a shade of proverse yaw to assist in last second corrections for landing.

Also, note that the default SPOI offset of +170 results in no deadband in the flap stick. I am using a value of +156 for the SPOI offset, so that when I am putting in rudder inputs, I don't accidentally get a little flap deflection.

Step #16

Make sure that you have full-span camber for launch. I've had very few planes that launched better with the ailerons deflected less than the flaps. Get the optimal TE setting and use it for the whole wing, flaps and ailerons. Also, most people use too much reflex for speed. The most needed (dependent on the airfoil) is typically about two degrees. A sanity check is to use a straightedge on the lower surface. The ideal is that the straight-edge contacts at the trailing edge, the hinge line, and another point in front of the hinge line. If the straightedge can rest on the hinge line in the reflex position and rock back to touch the TE, or forward to touch the forward part of the airfoil, there is too much reflex. For reference, my thermal ship has 14 degrees of launch camber, -1.5 degree reflex for speed, and 3 degrees of camber for thermal mode.

Step #17

I do something unconventional here. For the thermal flight mode, I use a significant reduction in the throw for both elevator and aileron. Also, it is the only time that I use exponential. Typical values are about 50% for the D/R in thermal, along with about 30% of exponential. As will be noted later, there are a few other things that I do in the thermal mode as well that are not typical.

Note: This is where you "orient" your 3-position flight mode switch. Scroll through the gain values, until you get the AUTO to pop up (maybe insert a pretty picture here?). I set the Cruise

(CRUI) to Pos1, Speed (SPEE) to Pos0, which leaves Pos2 for Thermal. This should match the results from Step #8.

Step #19

I put all switches at Pos 0, which makes the aileron>flap mix active all of the time. Again, not normal, but something that works for me.

Step #20

One thing that should be typical for most fliers is in using a large amount of differential for launch. I typically use 75% to 90% aileron and flap differential for the launch mode. This is because in the deflected trailing edge position, the result of adding more deflection is just additional drag (which shows up as adverse yaw). Without a lot of differential, every time you use ailerons on launch, you get adverse yaw, which make the plane handle very weird on tow.

I use the least amount of differential for the speed and thermal modes, typically in the 20% range, with the cruise mode in the 30% range. The low differential in thermal mode is counter-intuitive. At low speed and higher lift, the wing is working pretty hard. A large amount of differential will result in the upward-going aileron producing massive drag, as the trailing edge gets far away from what is necessary for low drag. Something that will show up later is the missing massive aileron>rudder coupling that I use for the thermal mode.

Step #21

I set all values to be the same (camber slider works the same in all flight modes), as well as camber mix. I do not use any delay in switching between functions.

Note: the manual references [CAMBR mix], which can be found in the Tx as: [Flaprn MX]

Similarly, [CAMBR ADJ] is really [FM Delay] in the Tx.

Step #22

I use typically maximum possible for both thermal and launch modes, with speed having just a little (10–15% depending on the mechanical setup), and cruise typically using about double what the speed is using.