

Transmitter Programming and Aircraft set up

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I will be covering the basics with [Futaba](#), [Spektrum](#) and JR Radios. All of the radios have their own little secrets, but once through them, they all work about the same. Even though computer radios have a lot of advantages to the old generation of radios with mechanical slide trims. They will not make up for poor and sloppy mechanical set up of the flight controls. It is extremely important to get the mechanical set up of the plane, as though you didn't have a computer radio. Depend on the computer radio to *ONLY FINE TUNE* the set up of the plane and final trimming of the flight controls after the maiden flight.

On any of the radios, you need to determine first, if you are going to have your dual rates on one switch or three designated switches. With [Spektrum](#)/JR radios, it is one of the first thing that you have to go in and switch. You will also have to turn "OFF" switches on the channels, so that they can be mated, as with two channels for ailerons, elevators, rudder servos, or a rudder and a nose gear servo. I will be covering [Spektrum](#)/JR radios first.

First you need to get into the "Secure Program List". This is accomplished by either holding down the rotating roller dial on the right side of the screen on the 9303, [DX6](#), [12X](#), or the two buttons on the left side of the screen on the [DX7](#). Once into this program listing, you can Name the model, double check to make sure it is on "[Acro](#)" for planes, the trainer system, and able to go into Flight Modes on the 9303 or [12X](#), OR select "Flight Mode" if the "Dual Rates" are on one switch or all three switches. With the 9303 and 12X, you can actually have 3 or more rates. Most of the time, I set up students with only one switch for dual rates to reduce confusion of the switches. I normally choose the top right switch. Easiest way out of programming, is to cycle the power "Off" then "On" again!

Once this has been accomplished. Turn on the radio again. You should be on the Main flying screen. Verify that you are on the correct model with the name listed.

REVERSE FLIGHT CONTROLS - Verify ALL flight control direction of movement to make sure each of the controls are moving in the proper flight direction. You must do this NOW! Otherwise, it will mess up the sub trims later. Simply press the left two buttons next to the screen to enter the "Adjustment Menu". List button on the 9303. Press left rocker up or down until you get to the "Reverse" screen. Press the select button or the roller dial on the other radios.

SUB TRIMS - Enter the Sub Trim program through the left rocker switch to adjust each of the flight controls to neutral setting. On tapered flight controls, CENTER is in the imaginary line from the leading edge to the trailing edge....this is called the "Cord" of the flight control. Use a straight edge on the ends of the wings or elevators to center. UNLESS it is a flat flight control, don't put a flat edge on the top/bottom surface to trim. Exit by pushing both buttons together on the left side of the screen.

END POINTS - Enter the End Point Program, just as you did on the previous program. Here is where adjustments to the throws of the servos and flight controls. Make sure there is no binding on any of the push rods. You want to reduce the percentage to stop the servo chattering or noise. On [3D](#) planes, you can actually adjust to a higher number, provided that the servos doesn't chatter or the flight control isn't moved beyond it's limit. On the Primary Flight controls, AVOID having the servo arm move almost perpendicular to the flight control on it's largest movement. This could cause the flight control to lock in that position in flight. Whatever number is set, this will be your "Highest Rate" on High rates. IF AFTER, adjustments, the high rates still look to be too high, then reduce the End Points evening more to the manufacture's settings for control movement. The biggest mistake that I see on radio set up and on a maiden is to have TOO HIGH of rates!! Everyone thinks that more is better, when actually more just gets you into trouble!! I have seen this mistake made by both beginners and experienced pilots. The Throttle is next to set. (Retract, flaps, valves controlled by servos, are basically done the same way as the throttle). Reduce the end points on the Throttle to around 50% both high and low. You have to move the throttle stick to move the arrow from one adjustment to the next. This will hopefully prevent damage to the servo or linkages as we set them up. With the TX and [RX](#) "ON", center the throttle stick on the transmitter. Next, put the servo arm on perpendicular to the throw of the push rod 90 degrees to the servo. On a "GLOW" engine, adjust the barrel to be open to half throttle. Tighten the barrel adjustments. On a "GAS" engine, adjust the [carb](#) baffle until it is about a third open. Tighten the push rod adjustment on the servo arm. Slowly open the throttle until the [carb](#) is full open. If more or less throw is needed, adjust the End Point just until the [carb](#) is fully open, or the servo stops chattering if reducing the throw. This will hopefully provide close to a linier movement on the throttle.

Dual Rates - Use the left rocker to the D/R screen. If using one common switch for the Dual Rates, it will be your Aileron D/R switch. Otherwise, they will operate on the independent switches. Once in the D/R program, use the left round button to move the arrow. When setting the Expediental, [Spektrum](#) and JR use a +(positive) input and [Futaba](#) uses a - (Negative) input. Adjust the Low rate Expo to 15%, and adjust the High to 25%. On a [3D](#) plane, you may use as high of an input as 75-85% Expo. Do this on all of the primary controls. If the End Points are adjust correctly, set the Low D/R at 75% and the High at 100%. Again, on a [3D](#) plane, the Low Rate might actually be down at 20%!

Futaba Radios: The biggest difference is that the the "MODE" button is used to get into the menus. The rotating dial is used to select the programming as well as the two buttons next to it. Think of the "Rotating Dial" as the "Enter button" on your home computer. D/R switch selection is determined on the D/R page setup. You have to go into "Parameters" to turn off the switches if you are going to mate different channels. The Timer can be set on the Throttle stick, so that you don't have to remember to turn on at Take Off!

AFTER ALL ADJUSTMENTS HAVE BEEN MADE, BIND THE TRANSMITTER TO THE RECEIVER AGAIN!!! ON SPEKTRUM/JR TRANSMITTERS, EITHER PLUG THE BIND PLUG DIRECTLY INTO THE BIND POSITION ON THE RECEIVER, OR YOU MUST HAVE A 3-WIRE SWITCH TO BIND!!! ALWAYS

TURN "OFF" THE RECEIVER AFTER THE BIND, SO AS TO NOT LOOSE THE BIND, BEFORE REMOVING THE BIND PLUG!

****There might be a few mistakes here and there on this tip sheet. I did this all from memory without a radio in front of me.