

The Dead Zone: Before we get into the set up for 3-D, let's discuss flying with huge throws and some of the things to understand before you try flying with 3-D throws the first time. With a little bit of exponential, or "expo," and some experience, this Extra can be flown with any amount of control throw. I fly mine on full maximum 3-D rate all the time. That includes takeoff, landing, and everything in between. The only time I switch out of 3-D is to fly a precision flight where I want more exacting control of the airplane.

For a while I was starting to think that the model couldn't be induced to snap with elevator alone and that anyone could fly it in 3-D mode, but I was brought back to reality when I let a friend fly the airplane. My friend was an experienced pilot who I trusted completely, but he had never flown an airplane set up for 3-D.

At first when I handed him the transmitter set to precision rates, he had a ball doing rolling loops, knife-edge circles, and multiple snaps: you name it, and he was doing it! He became comfortable with the airplane and started to try some of the 3-D stuff that he had seen me do. "You can't do those things in low rate," I said. "I'll switch to 3-D for you." I hit the switch, and the smile on his face started to relax; he was beginning to look worried.

Suddenly just controlling the airplane through a loop was difficult, and he snapped the model without provocation within a couple of seconds. "Shut it off!" he yelled and I hit the switch back to low rate. That episode made me realize that, without knowing it, I had become used to flying the Extra in a manner that worked with extreme surface deflection, but the model could still be a handful to pilots who are just learning 3-D.

Don't get caught in the trap. Some of you may read the preceding account and think to yourself, I'll just tone it down a bit by reducing the control throw and work up to more throw as I get comfortable. That's exactly what can get you into *more* trouble.

The secret to entering and exiting 3-D is to have the pitch authority to power past a stalled attitude and hold it with massive surfaces, deflection, and a powerful propeller blast. If you tone it down by lowering the surface deflection and try the maneuver, the airplane won't have the required pitch authority and will stall. I call the lowered surface deflection "the dead zone." The dead zone is too low for 3-D and too high for precision control. The dead zone will get you into trouble in a hurry.

Flying 3-D: When flying the model, remember that you need to be committed to getting into and out of a high-alpha (HA) attitude. It's important to have enough airspeed or power to transition into a high angle of attack. I've noticed people get into trouble when they move too slowly into the transition or don't use enough elevator deflection or engine power.

I'm not saying you need to perform 3-D maneuvers with a higher airspeed, but if the speed is low you must use the power from your engine to move the airplane's tail into position. Indeed you can slow the model to a stall as long as you keep inducing the power needed to keep the tail below the airplane. At that point you can transition into a hover with no forward airspeed. Inversely, you can transition into HA with power off if you maintain the airspeed to pop your model into position, but once into position you need to power up to hold altitude.

Learning to fly into and out of HA safely is the beginning of learning to fly 3-D; it's not hard to do, but it takes a little finesse. If you're not getting it quite right, the aircraft will let you know with a nice wing drop or an all-out snap.

My recommendation, even if you're experienced, is to start slow and use the rate switch. Have enough expo dialed in to keep the airplane controllable and only switch into 3-D mode in order to execute a specific 3-D maneuver, then switch back to low rate to fly out. Set your elevator to 45° for 3-D deflection. The dead zone for the elevator is 27-37°; try to avoid those settings. For the ailerons, you can 3-D nicely at 25-30° deflection, and the rudder should be 45°. There is no dead zone for the rudder or ailerons.

Remember that these rates can get you into trouble fast and are not recommended for beginning pilots. If you have to significantly reduce the travel on your radio from 100% to get the ailerons down to 30° of deflection, I recommend moving the control rod mounting position on the servo arm inboard toward the output shaft until you get the desired deflection with the radio programmed to 100%.

