



# Launch Techniques and Power Trimming Patterns

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The Apache series of E-36 models offer great performance once they are trimmed for optimum climb and glide patterns. A big part of being successful with the Apache is developing a good set of launch techniques as this is often what makes all the difference in flying this model to its fullest potential.

A real time and money saver for free flight pilots is an RDT system. There are several on the market, and the *Apache II* is intended to accommodate one as an integral part of the design. You can go without, but you are advised to be very conservative in your early flight attempts on the model.

This instruction is more about illustrating the launch techniques that have been used by Stan Buddenbohm, Ralph Ray and myself over the past few years flying the various design iterations that have emerged on the Apache. In fact, getting a model that launches consistently and is well balanced in your hand was one of my main design goals after a certain point in testing the model. For the *Apache II* you can launch with one hand only if you wish-I located the timer such that the start button is about where you would naturally grip the model for an overhand launch technique. A two handed launch is even more comfortable with the launch hand holding the model and your other hand in front of it free to push and hold the button for launch as most are used to.



*Apache II* one handed grip for an overhand launch-note the angle of the model to the horizon. You want to push the model firmly up at this or slightly steeper angle. The index finger on the far side is against the side of the pod just under the wing, thumb is on the timer start button, the little finger needs to support under the chin of the pod for positive control of the model attitude. **Caution note:** it is very easy to brush the start button upon release and kill the motor inadvertently. Use care with this launch technique for this reason.



Here is my two handed grip for an overhand launch. There is very firm control over the start button and an even more stable grip on the upper part of the pod directly under the wing using both the thumb and index finger on the opposite side. There is more crowding of the model due to having to reach over with your opposite arm but ergonomically is very comfortable. You lose a tiny bit of time by releasing the model after you start the timer, so practice being in the right position when the release moves are being executed.



Stan Buddenbohm holding the model with the two handed grip that feels right for him. Note the difference between my direct index finger contact on the start button and his that encompasses the launch hand as part of his way of stabilizing the launch attitude of the model.



In position for an overhead launch using the two handed technique. Keep the model pointed UP and give it a firm but controlled push. It's best to have the wing tilted down slightly toward the turn direction you want the model to transition into.



Overhead launch position-showing the RDT transmitter held onto my arm with a electronic sports arm band modified to have clear access to the kill button. After I release the model my right arm crosses over to finger position directly above the kill button as the model climbs out. It's a very natural and easily memorized move that can save the model from problem launches. These devices pay for themselves rather quickly, so investing in an RDT system is a good move for anyone flying free flight models such as this.



Position for underhand VTO launch-model is 70-80 degree angle to the ground, and tilted to the side the power pattern turn is intended for, in this case I'm showing a position for a left hand climb pattern. Wing is about 5-10 degrees low to the horizon to get the model transitioning into the climb turn after launching. A firm push up is all that is needed-don't just let go and expect it to climb perfectly out of the hole. I started flying the Apache with the underhand VTO to start, then went to overhand with experience. I suggest the underhand launch as probably the safest to start with. Not shown: with your other hand, push up on the end of the tailboom as you hold the model pod in the other. This really adds stability in wind and a way to energize the VTO push in the release. Do this once you are fully comfortable with the model and it is flight trimmed.



Underhand VTO launch to the left, looks like a turn to the right from underneath. Pay attention to this optical illusion-it will get you at first! Wind is always at your back launching like this.

APACHE36 Left climb, Left glide pattern  
 Patterns assume that the model is launched up 45 deg. and banked left

Best climb pattern, model makes up to 2 circles during 15 second climb



At the beginning of the launch, even if you launched it straight, the model should start bearing to its left. At this early portion the model is not fast enough for the flying surfaces to be in control, instead thrust, torque, and your throw are in control.

FIX: If the model does not show this tendency to bear left at the beginning, add more left thrust. A .007" shim might be enough. A good way to test for this is to let the model go straight up VTO style, with just a little push. If you javelin throw the model should need a little more left thrust than when you VTO. This is because your javelin throw is powerful and overcomes some of the left thrust.

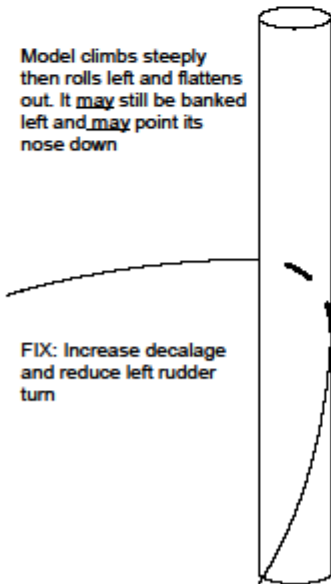
Don't be fooled by a bad launch. If you have launched it to the right the model will climb to the right for a while even if the adjustments are correct.



Model makes too many circles. Reduce the decalage.

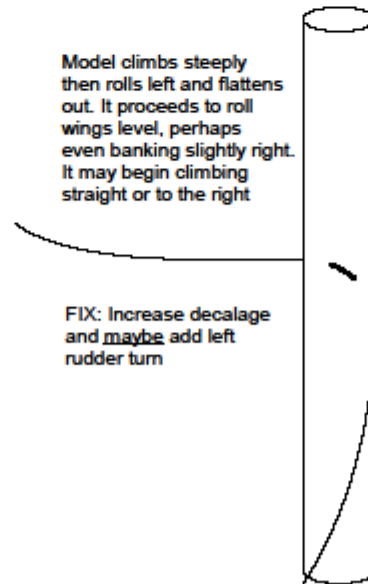
A note about washin: Apache seems to like a normal amount of washin, about .090 in the left main panel. However, getting just the right amount is a matter of adjusting. The way to do this is by skewing the wing (Something I learned from Ralph Ray). For more left wing washin skew the left wing tip forward a very small amount at a time. I do this by using .007 shims between the wing keys and the fuselage.

Model climbs steeply then rolls left and flattens out. It may still be banked left and may point its nose down



FIX: Increase decalage and reduce left rudder turn

Model climbs steeply then rolls left and flattens out. It proceeds to roll wings level, perhaps even banking slightly right. It may begin climbing straight or to the right

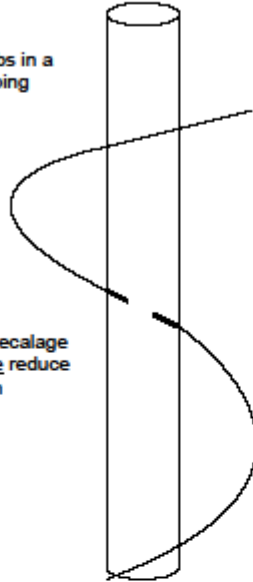


FIX: Increase decalage and maybe add left rudder turn

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Model climbs in a wide sweeping spiral

FIX: Add decalage and maybe reduce rudder turn



If your model is a fast climber and you just can not seem to get it to cooperate, the wings may not be stiff enough. You can test this by slowing the model down, use a weaker motor or a weaker battery. If you do not have wing tiplets then adding them can counter the wing's tendency to wash-out at high speed.

You launched the model without any bank, it climbs straight and then begins rolling to the right

FIX: Add left thrust, .007" at a time



During a 5 second motor run the model climbs steeply, a little to the left, then makes a fairly sharp left turn. It seems over-banked but transitions well into the glide. This is a good trim for the 5 second motor run, I call it going knife edge. It is achieved by using a little extra left thrust, a little less decalage, a little more left rudder tab, and a little more left wing washin.



One pattern not shown: the model climbs steeply almost in a straight line. When the power runs out the model is still on that line with its nose pointed up. Now it has to fall until it gets enough speed to pull out.

FIX: Add decalage and a small amount of left thrust. The model may also need a bit more left rudder tab and a bit more left wing washin

Model makes a sharp left turn very early in the climb, it may or may not begin climbing again. You feel that your launch was at least okay. This is always due to too much left thrust.

