

"T"URBULATOR

Newsletter
of the Rio Rancho
Radio Control
Flying Club
AMA Club #2770

WATERMAN FIELD

ELEVATION 5840 FEET

35° 17.2'N 106° 44.8'W



PRESIDENT'S CORNER

"Da Prez Sez"

Another nice spring month has passed without a lot of flying at the field. The month of May was one of the windiest I can remember in a long time. We also had many cold mornings. In the past we also did some float flying during May, but not this year. Let's hope for some more favorable flying conditions this June.

The Monday indoor flying at the Star Center was great with a good turnout, and a chance to get inside out of the wind. See U all at the field for the June meeting.

Coming Events

1. Next Meeting Saturday 3 June 1000am at Waterman Field
2. Maloof Kids Day and Swap Meet 16-17 June

Trimming Procedure for Aerobatic Aircraft

by Peter Goldsmith

For Precision flying Peter would expect our model to be running between 12 to 15 degrees of elevator throw. If you need more than this, check your exponential because it may be too high. Peter believes a 35% expo is a linear feel.

Sequencing: Peter's concept of sequencing the trimming process is simple. He can't emphasize enough that it is crucial to trim your model in the correct sequence to make sure each adjustment has no effect on the previous adjustment.

1. CG is first. You can't move ahead until you have a CG that you're happy with. If you change the CG later, you will need to start over and check your entire trim setup. Differential, knife-edge flight, and down-line tracking will be affected by the CG. Same if you change your propeller.

Balance: How do you know the correct CG for your model? If in doubt, read the model's instruction; that's usually a good place to start. For precision flying, forward is better but too far forward can be a problem.

Forward CG: When entering a spin, your model musses and kind of slides into the spin no real stall visible, your CG may be too far forward. Another sign of forward CG is excessive down-elevator needed for inverted flight.

Rear CG: Some obvious clues are that the model is sensitive in pitch, unpredictable around the stall, or climbs when on an inverted 45 degree line.

NOTE: Peter recommends at least 10-15 flights before making the commitment to where the CG needs to be if you're trimming a new model.

Dynamic Balance: Okay, you're happy with the CG. The next trim setup is dynamic balance.

Procedure: Put the model into a vertical dive with the throttle back minimum of three to four seconds and pull a hard corner at the bottom. No matter where the wings are in roll, when you pull to level the wings must be level. It really doesn't matter where our model's wings are. As you pull to horizontal flight, the

wings must be level. If you go from Vertical to horizontal, not only will the engine thrust have no effect, but your wings can be anywhere as you're on vertical down-line. If you notice that one wing consistently drops then add some weight to the opposite wingtip.

Note: Make sure you only use elevator through the corner. Perhaps just for the trimming process you can increase the aileron stick tension to ensure that you don't accidentally input a bit of aileron with the elevator and that the elevator track correctly when you pull the stick back.

Thrust Angles: It's time to put ascetics aside and get the thrust correct.

Procedure: Make sure your wings are level before pulling vertical. Fly directly overhead, into the wind, where you can clearly see the wings, and then pull to a vertical up-line. We are only trimming for the first 1000 feet.

Trim the rudder left or right until the airplane tracks straight for 1000 feet. Land the plane and use a protractor to see how many degrees of rudder were required for a straight vertical. Whatever it is, divide it by two and that will be what you need to add to the right or left thrust.

Differential: Aileron differential is required when the drag of the down-going aileron does not match the up-going aileron.

WARNING: Make absolutely sure that you are not getting surface blowback. You will never get your differential correct if you are. How do you check for blowback? Push to a vertical down-line and roll to the right, stop rolling for a second and then roll again. The roll rate should be the same. If it is slowing, your model's surfaces are not reaching their intended throws. Another way to check is if the up-line roll rate is faster than the down.

Either increase the servo power or improve the geometry by reducing the servo-arm radius and or by increasing the distance the control-horn pickup is from the hinge line. You could need more servos.

Procedure: Checking differential is simple. Fly directly overhead and away from you. This time pull to 45 degrees up-line, making sure you are flying either

directly into the wind or directly downwind. Using full aileron deflection, roll to the right. If the aircraft “Walks to the right,” you have too much down travel on the ailerons. If the model “walks to the left,” then you roll it to the right, you have too much up travel in your ailerons. Repeat the process to the left as well until you are satisfied that your model is tracking true in the roll axis. Don’t expect your model to continue to roll for 5000 feet on a sting. If just can’t be done.

Throttle-to-Aileron Mixing:

Procedure: The first way is to climb your model to a high altitude, simulating a typical top-of-the-box altitude, and fly it directly over your head and into the wind. Roughly 50-100 feet out from yourself, push down. Watch carefully to see if the model is rolling on the down-line. Most models will roll slightly to the right as the aileron trim set for full throttle will be too much at low throttle as the torque effects will be greatly reduced.

The second way to check is to fly along at level flight, medium height, and reduce the throttle. Watch carefully and see if your model is rolling: chances are that it is. Add Aileron mix to throttle to correct the problem.

Throttle-to-Rudder Mixing:

Procedure: To check for this, use the same technique as the throttle to aileron setup. Fly the model above yourself, directly into the wind, and push down in front of yourself and watch carefully. You will be amazed, especially at the start of the down-line. If you haven’t gotten any throttle offset to rudder, you are most likely flying around the problem. And where I find it most challenging is in figure 9s and vertical and horizontal 8s.

Something you may want to experiment with in both of these scenarios is where the mix is activated. For a low-throttle left-rudder mix, I like to have the stick offset start at least above half and let it progress from there as I reduce the throttle. It seems to be the best balance, and I am not getting a sudden mix input; it progresses more or less with the model’s speed. This

will vary from model to model, but try to keep the mix activation well above an idle setting. Add Rudder mix to throttle to correct the problem.

Rudder-Aileron Mixing:

Procedure: In most cases, for rudder-aileron mix, a linear P-mix is all that is required. What I mean by linear P-mix is that you don’t need a progressive value to the mix; i.e., less at the start and more at the end. The mix will be linear.

What causes adverse roll or perverse roll coupled to the rudder is the incorrect dihedral. Most modern designs, with the exception of biplanes, are really close and only require a small amount of rudder-aileron mix. Some like to put their models on knife-edge, but I like to just do a flat turn, simulating rolling turn inputs.

Rolling turns require more precise mixing than sustained knife-edge flight. In a contest your model doesn’t do much flying on its side, but it sure does a lot of rolling turns. So I like to do the flat-turn thing. Doing a simple inside rudder turn to the left, using left rudder, the model should just yaw, with no roll effect. If the roll rolls to the left, you need to mix 2%-5% right aileron to left rudder. Repeat the process with right rudder.

Note: Now vary the speed at which your aircraft does flat turns. If you find that the mix becomes too much as you increase your model’s speed, you could be getting surface blowback.

With insufficient rudder power, when you apply a P-mix for roll, or pitch for the matter, the mix value will become too much as the rudder throw reduces because of aerodynamic pressure. This could be why you have your mix perfect for knife edge, but you chase your aircraft everywhere doing rolling circles

Rudder-Elevator Mixing:

Procedure: As with the previous rudder aileron, start by doing a flat turn to the left and see what happens. If your model pitches down when rudder is applied, mix a small amount of up-elevator: if it pitches up, apply a small amount of down-elevator. In some

cases, even without blowback, the mix value will not be exactly correct for all throttle settings.

Don't panic because, as with most modern radios that are suitable for aerobatics, you can use what is called a curve mix. It allows you to have multiple points along your mix curve to increase or decrease your mix value at different rudder inputs.

Trim Step	Maneuver To Fly	What To Look For	To Correct:
1. Center of Gravity	45° Up-line, roll inverted	Nose rises towards the sky Nose slowly falls towards the horizon Nose falls quickly	add nose weight, C.G. is aft Your in the zone add tail weight, C.G. is forward
2. Lateral Balance	Pull to level flight from a downline	Wings should always be level. Look for one wing always lower than the other	Add weight to the high wing tip
3. Thrust Angle	Vertical Up-line into the wind	Model drifting to the left	Add right thrust
4. Differential	45° Up-line into the wind, full Right aileron	"Walking" to the right "Walking" to the left	decrease downward travel on left aileron decrease upward travel on right aileron
	45° Up-line into the wind, full Left aileron	"Walking" to the left "Walking" to the right	decrease downward travel on right aileron decrease upward travel on left aileron
5. Throttle → Aileron Mix	Vertical Down-line into the wind Horizontal line, slow from a high speed	Rolling to the Right Rolls right when you slow down	use left aileron trim at low throttle use left aileron trim at low throttle
6. Throttle → Rudder Mix	Vertical Down-line into the wind	model yaws to the right	Use Left rudder at 1/2 throttle and below
7. Rudder → Aileron Mix	Flat Rudder Turns	Airplane drops a wing	correct with mix (2%-5%)
8. Rudder → Elevator Mix	Flat Rudder Turns	Model pitches up or down	correct with mix (2%-10%)You might need a curve mix for this.

Credit: [Peter Goldsmith](http://www.flagstaffflyers.com/images/PGoldsmithTrimming.pdf) http://www.flagstaffflyers.com/images/PGoldsmithTrimming.pdf

MEETING MINUTES

Minutes from the May 2017 Club Meeting

Called to order @ 1100am with 11 members present
Minutes accepted as published.
Treasurers Report accepted as presented.
Membership Report” 37 2017 Members
Field Report: 1. Asphalt patch and tools are located in the storage container. If you have extra time at the field repair a crack.

2. Clean up went well. Thanks to Garry for weeding the parking area.

Safety: Stay Safe. Be careful when retrieving planes from the fields as there are many Prairie Dog holes which will cause you to fall into and possibly break a leg.

Unfinished Business: 1. Garry is still looking to host a float fly at his Elephant Butte home.

Members should look at their schedules and be prepared to talk dates at the next meeting.

2. The next indoor fly is 22 May.

New Business:1. Family Day is on Hold til later in the summer. Dons' wife(who does the shopping) is going in for knee replacement and won't be able to complete the shopping. It was discussed for other volunteers to take the shopping over. It was finally decided to postpone family day until

Ruth recovers.

3. Bart Boricious passed at the End of March. He was 99 and living at an assisted living facility in Colorado near his sons. Bart was a founding member of our club. Bart had a long successful career at the the Labs as a Nuclear Physicist.

The meeting adjourned at 1135am.



**FLY-IN
SWAP MEET & KID'S DAY**

Swap Meet - June 16th 4 PM to Dusk
Kid's Day - June 17th 9 AM to 2 PM
Fly-in - June 17th & 18th All Day

Sponsored by the Albuquerque Radio Control Club. The events will be held at the George Maloof Air Park in Albuquerque.

Swap Meet: Come and find a great deal and/or bring your own table, no fee.
Kid's Day: Try your hand at flying a Radio Controlled Model. Instructors will be available. One lucky kid will win a \$100 airplane ready to fly.
Fly-In: Both days will have lots of open flying. Helis & drones welcome.

Maloof Air Park features a newly paved 800ft runway, a heli/drone area, and shade covered tables. Lunch concession available Saturday and Sunday. Limited camping, no hookups. Landing Fee: \$20

AMA Sanctioned event. AMA membership required for Fly-in.
C/O: Vic Newton
vicnewton@comcast.net
505-263-5736

Map to field available online at: www.arcc.club

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RIO RANCHO RC CLUB

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www.rioranchorcflayers.org

Next Club Meeting

June 3rd 10:00am at the
Waterman Field