

## Simple Trim Sheet For Pre-Built Planes

Condensed from six trim sheets and guides -- Roy Pettit -- July, 2006

- Make adjustments in sequence listed. Do not proceed to next test until previous tests are good.
- Use the same propeller for all tests. If change prop, start over again at top.
- Visually insure model is "square" before starting: stab//wings, rudder 90°, no warps/twists in fuse or flying surfaces.
- Insure minimum gaps at hinges, and minimum control linkage play, and good centering on servos.
- Test under calm wind conditions.
- Do each test at least twice.
- These are only to get trims close. Depending on wing design, incidence, pilot preference, may want to adjust.
- Steps 1 thru 4 are required on all planes. Steps 5 thru 7 are useful on aerobatic planes, optional all others.

Seq	Trim Setting	Flight Test / Fly	Look For	Adjust	Notes	Other Tests / Confirmation
1	Center of Gravity	Inverted S&L with neutral elevator	Plane should descend ever so slightly, requiring only a very slight down elevator input to maintain level flight	+ CG forward if climbs + CG aft if descends abruptly	+ For PA set CG slightly forward + Usually 25% to 35% Mean Aerodynamic Chord	+ Vertical downline with throttle closed & neutral elev - should be no pitch change + No pitch sensitivity during maneuvers and landings + Nose/Tail doesn't drop in vertically banked turn + Rolls should be axial, not barrel
2	Lateral Balance	Vertical dive for 3 secs; pull hard corner (elev only) to S&L with neutral aileron	Roll divergence – one wing drops	+ Add wingtip weight to wing opposite drop	+ Increase aileron stick tension to insure elev only	+ Fly S&L; roll inverted; release aileron stick – one wing should not drop
3	Thrust Line Left-Right	Vertical upline with neutral rudder @ ~ ¾ throttle	Yaw divergence – right or left	+ Decrease right thrust if right + Increase right thrust if left	+ 2-3 degrees of right thrust is normal for PA + Can use throttle to rudder mix in lieu of thrust change	+ Should not pull left or right at top of a loop
4	Thrust Line Up-Down	Vertical upline with neutral elevator @ ~ ¾ throttle	Pitch divergence towards canopy or landing gear	+ Decrease down thrust if pitch towards landing gear + Increase down thrust if pitch towards canopy	+ Can use throttle to elevator mix in lieu of thrust change	+ Fly S&L; Change throttle high and low; should be little or no pitch change + Should be little/no elev trim change after throttle change
5	Aileron Differential	Vertical dive with throttle closed; do a constant roll	Axial vs Barrel roll	+ Reduce downward aileron deflection to achieve axial rolls	+ May or may not be required for plane to roll axially + May be done via mechanical (servo arm angle) or electrical (computer TX functions)	+ On 45° climb, directly up or down wind, roll right with full aileron deflection. Plane "walks" right: too much down travel, "walks" left: too much up travel. Repeat with left roll + Fly toward you, pull vertical upline. Neutralize controls, then half roll. No heading changes, differential is OK, heading change opposite roll – increase, direction roll - decrease
6	Knife Edge Coupling	Apply rudder only from S&L flight	Pitch or roll divergence	+ First mix out pitch coupling using rudder to elev mix + Second mix out roll coupling using rudder to aileron mix	+ Also known as sideslip coupling + Applies to aerobatic planes only - Trainer and Sport planes thrust line does not equal drag line and/or dihedral converts rudder to roll + Must have a computer TX to make these adjustments, otherwise change CG or wing incidence + Coupling may vary right/left	+ Fly S&L, roll to knife edge, both left and right, use only rudder to hold level flight – pitches to canopy: mix down elev to rudder, pitches to landing gear: mix up elev to rudder
7	Roll Rate	Full aileron deflection roll on high rates	3 rolls in 3 seconds	+ Adjust control horns, ATV, dual-rates as necessary	Normal PA roll rate is 1 per second	