



Training: Bob Juncosa

"The First Flight Checklist"

The planes that make up our personal fleet can come from lots of different sources. Hand-me-downs, swap meet purchases, ARFs/RTFs, kits, foamies, and scratch builds just to name a few. Whether new or old, before any airplane takes to the skies under its new ownership, it is a good idea to go through the plane to be sure it is flight worthy before fuel is pumped into the tank or the motor is energized for the first time. Whether you are a new or well-seasoned pilot, going through a First Flight Checklist can prevent that first flight from becoming a harrowing adventure that might end badly.

- **Structural Integrity**

When I go over a plane for the first time it seems like I am giving the aircraft a rather personal physical examination. This especially applies to older planes that have not seen the light of day in many years. Feel around the entire structure. Flex the wings and control surfaces. You are looking for soft spots in what is supposed to be solid wood and weakened structures caused by cracked ribs, spars, sheeting or disconnected glue joints.

- **Covering**

Check the covering for holes, rips, tears. Make sure it isn't coming up from around any edges. This should also include any trim. Loose trim waving in the breeze can definitely change the flight characteristics of an airplane.

- **Wheels and Undercarriage**

Check that the undercarriage is securely attached to the fuselage. Make sure that the wheels spin freely and that they are properly secured such as with wheel collars.

- **Linkages**

Check that all control surfaces have their control rods (or cables) properly and securely attached to the control horns and the servo arms. Make sure the clevises are properly fastened and that they rotate freely in the hole in the servo arm or control horn. Make sure that whatever linkage is used to connect the servo arm to the clevis moves freely back-and-forth but does not move side-to-side.

- **Fuel System (Nitro and Gas)**

Make sure that the tank is clean, the clunk is secured to the internal tubing, and that the tubing is still flexible. Make sure that the fuel tank stopper has not degraded and still maintains a good seal. Make sure that all fill, drain, and carburetor lines are secured, clean, and flexible. Check that all fuel tank seams are good and that the tank can hold pressure and does not leak.

- **Engine (Nitro and Gas)**

Check that all bolts and screws that attach the engine to the mount and the mount to the plane are secure and tight. Make sure that the muffler is properly attached to the engine and that the fuel tank pressurization line is connected and in good shape. Check to see that the prop rotates freely and that the

engine has good compression at top-dead-center. If a four-stroke, check and adjust the valve clearances as needed.

- Motor (Electric)

Check that all bolts and screws that attach the motor to the fuselage are secure and tight. Check to see that the motor rotates freely.

- Battery and ESC (Electric)

Make sure that the battery and ESC are properly rated for your plane. Make sure that all wires are properly routed through the plane and will not be pinched when the plane is assembled. Disconnect and examine all connectors. Replace them if any are charred or pitted. This is a sign of arcing caused by poor connections.

- Radio and Servos

Check that all servos are connected to the correct receiver channel, e.g. that the elevator input from the transmitter moves the elevator. Make sure that all servos are securely mounted in the airframe and that all arms have tight servo screws. Check to see that there are no interferences between the servo arms when they move throughout their entire range. Make sure that the receiver is securely mounted and that the antennae are straight and in the proper orientation(s). Check to see that none of the servo wires interfere with the movement of the servo arms or other linkages.

- Radio Batteries

If you are using NiCd or NiMh batteries, perform a discharge and charge cycle on them to be sure that they can hold their rated capacity. Measuring the voltage when fully charged alone is not good enough. Old batteries may have the ability to reach their rated voltage level but may have little capacity to sustain that level under load for any appreciable amount of time. Lithium batteries generally do not suffer from capacity loss and discharge memory but it is still a good idea to cycle them as well. Make sure that all cells can meet their ratings.

- Control Surfaces and Throws

Give a gentle tug on all control surfaces. If any hinges are bad or missing, it is better to have the control surface come off in your hand than in the air. With your radio set to the correct model, make sure that all surfaces move in the correct phase, e.g. right rudder input does indeed result in right rudder movement. Check to see that the amount of travel of each surface (the “throw”) is what the manufacturer recommends for normal flying.

- Propeller Balance

This is an oft overlooked item, especially with smaller planes but don't take it for granted. Out of balance props can result in inefficient thrust and excessive vibration that can lead to hard-to-detect damage to the internal structures. On larger planes, after balancing the prop, be sure to then balance the hub.

- Airplane Balance

Lastly, and maybe most importantly, check the balance of the plane and make sure it is set to the manufacture's location. If it isn't, try moving batteries and servos fore or aft if possible. This will move the CG without adding extra weight. If the balance is still not correct, add weight where it will have the greatest effect. For nose heavy airplanes, add weight as far aft as possible. For tail heavy planes, add the weight as far forward as possible. For forward weights, add them to any cowling only if you are sure that the cowl is very securely attached to the plane. The extra weight will increase the effects of vibration and may compromise the cowl mounting.

I hope that you will find these suggestions helpful. Feel free to add more items to this list for your particular situation.

Happy Landings

Bob Juncosa

bob.juncosa@gmail.com