



Homebuilt Before First Flight Build Checklist

These are the items, organized by area, that are easy for builders to miss, and cause the most problems in the first five hours of operation. Items that are red on the checklist are the things you and your TC, FA, and other "lookers" should double check. Don't think that after checking the red items you found everything. Go through the whole list after you've paid special attention to the red items.

If everything looks great and you do not have to flag anything once you go through the red items, the chances are good that the other items will check out okay. But DO use the objective inspector mentality to go through the list more than once.

FUEL SYSTEM

- Correct fuel hose for the type of gas you're running? Do you know how old/new it is?
- Clamps and connections of the right type? Are they tight?
- Is venting system design correct?
- Is there a backup fuel vent in case the system clogs?
- No fuel or water traps in vent lines?
- Vents for each fuel tank?
- No chafing of fuel lines, and protection through firewall and bulkheads? Fire sleeve where required?
- Selector clearly labeled? Easy to move with a detent at each position?
- Selector easy to locate and operate from your seated and belted position? Can the passenger reach it?
- Fuel filters are recommended type per the manufacturer? Filter material other than paper? Mesh size passes fuel flow test?
- Filters easily accessible for change-outs?
- Can you reach and operate all drains (gascolator if installed) and sumps?
- If engine is fuel injected, do you have the recommended fuel pump and filter combination along with a bypass and cockpit indicator?
- Keep a close eye on fuel filter debris and change often in the first 200 hours.
- Sump drains at low points in the system?
- Are all placards installed and correct?

ELECTRICAL SYSTEM

- Are connections clean and tight?
- Check integrity of crimp connections. Pull on several. If there's a problem, you've got some work to do throughout the aircraft.
- D-sub connector housings correct?
- Harness bundling correct and secured?
- Wire gauge correct in each circuit?
- Ground wire correctly sized and secure? Give a good tug on it to make sure.
- Is there an accurate wiring diagram?
- Wiring protected against heat in engine compartment?
- Single point of reset (breaker or fuse) in each circuit?
- All circuits labeled?
- Panel breaker switches labeled?
- Coax connections strong and correct?
- Battery secure and vented if necessary?
- ELT installed if aircraft has two seats or more?
- ELT orientation and hookup correct?
- ELT on?

HARDWARE AND COMPONENT INSTALLATION

- Check the flight controls at their full range of movement to detect for possible interference with radios and equipment, electrical wires, instrument lines, and engine controls.
- Do the flight control surfaces move in the correct direction?
- All cables routed correctly? Did you check for full travel?
- Inspections: Remove as many access panels and covers as you can, and use a flashlight or boroscope to see as much of the inner subassemblies as you can.
- Check seat and shoulder harness/seat belt installation for strong anchors.
- Check canopy and/or door latching system for proper operation and security.
- Torque seal used? While not required, it's great for visual inspections.
- Check for correct nut and bolt per plans or design; check all hardware security systems – cotter pins, safety wire, clips, nuts, and washers.
- Check for side guards on cable pulleys.
- Check that exhaust components have adequate clearances from fuselage, wiring, fuel lines, and other items per the plan or instructions.

BRAKES AND GEAR

- Check brakes, fluid, and solid feel of pedals/controls.
- Check for hydraulic leaks.
- Check for air in the system.
- Check for smooth gear operation.
- Do you know what the tire pressure should be?

PANEL AND INSTRUMENTS

- Are systems – fuel, senders, pressures, and temperatures – all calibrated to your gauges?
- All glass panel electronics and engine systems calibrated?
- Everything clearly labeled? Wiring bundles under panel labeled?
- Static ports clear?
- Are radios working?
- Are radios noise free (no grounding problems)?
- Panel fuses all labeled?

STRUCTURAL COMPONENTS

- If sheet metal, are rivets correctly spaced and driven? Are there any that are missing?
- Wings, tail, ailerons, and trim tabs all secured correctly?
- If fabric, is rib lacing correct and spacing correct for V_{NE} ?
- Correct weight of fabric?

ENGINE INSTALLATION

- Is exhaust system secured and not chafing on anything?
- Is there a single secure electrical engine ground?
- Are mounts correct and secure?
- No leaks anywhere?

PROPELLER

- Bolts torqued and safetied? No crushing or cracking on wood prop?
- Was tracking checked and is it correct per the plans?
- Is spinner securely attached? Are all the fasteners the same?
- Is the prop itself in good shape without nicks or damage?

DOCUMENTATION

- Does the data plate match what you're seeing in the aircraft documents?
- Any service bulletins, letters, or ADs that apply? Complied?
- Operating limitations in the aircraft?
- Are N-numbers the correct size for the airplane category?
- Weight and balance in the aircraft?