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Is My Aircraft Right *for* Flight?

The Importance of Preflight Prep

What's that weird noise? I think to myself as I prepare for departure. I just finished my run-up, ready for take-off, and there it is again — that deep knocking sound — three times now — “knock, knock, knock.” But I just shut this airplane down 30 minutes ago — quick stopover, I needed a break. Now I'm running late, so I skipped the preflight check completely. But I always do a full run-up on every start-up, so it should be good to go without a preflight check, right? Don't leave anything to chance.

Last year, 384 people died in 238 general aviation accidents. Powerplant system and component failure was, and is, the third most common event for fatal accidents, and maintenance errors were not to blame. Inadequate preflight preparation was cited as a contributing factor in many of these accidents.

“A” in PAVE

Preflight preparation of your aircraft is one of the most important steps you can take to ensure that your aircraft is fit for flight. It is a critical function of the “A” in the personal minimums PAVE checklist of **P**ilot, **A**ircraft, **E**n**V**ironment, and **E**xternal Pressures. It is one of the tools pilots use to assess the risk of a flight by evaluating the presence of risk factors in each of these four areas.

The PAVE Checklist works like any checklist that you would use in your aircraft. You should expand the use of the PAVE to your flight planning as well, and take special consideration on each line item before your final decision to fly.

To help with the “A” in PAVE, I've highlighted some simple steps you can take to evaluate your aircraft prior to takeoff.

Step One — Is it Airworthy? To be airworthy and safe to fly, the aircraft must meet two primary conditions. First, it must conform to a type design. Second, it must be in a condition for safe flight.



Photo by H. Dean Chamberlain

Type Design

An aircraft must conform to its type design, which includes not only its equipment but also *documented* compliance with all required maintenance inspections. The Type Certificate Data Sheet (TCDS) for the aircraft provides a formal description of the aircraft, engine, or propeller, along with limitations and information on items such as airspeed, weight, and performance limits.

Condition for Safe Flight

To be in a condition for safe flight, all required and installed equipment must be in good working condition. Any repairs and modifications must be correctly documented. Your aircraft needs an FAA Form 337 any time it has undergone a major repair or major alteration, as any changes to type design require approval through a supplemental type certificate (STC) that documents the FAA's approval of a product (aircraft, engine, or propeller) modification.

Additionally, your aircraft must meet the requirements of certain inspection cycles. You should be able to find aircraft maintenance log entries for completion of the annual or (if applicable) 100-hour inspection, which includes verification of any applicable airworthiness directives and any required equipment checks, for example, the VOR and altimeter/pilot-static system, the transponder, and the emergency locator transmitter (ELT) battery strength.

After maintenance, check systems thoroughly, or ask qualified maintenance personnel to help reinspect the aircraft to ensure all systems are a go.

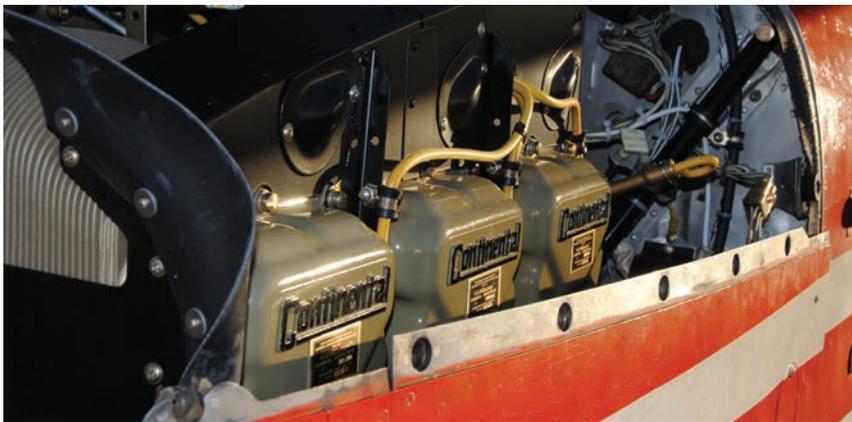
Step Two — Is it My Type? Know your experience level flying that particular aircraft type, and know your aircraft's performance abilities and limitations.

Step Three — Gas in the Tank? Know your fuel reserves. For more detail, see "Fuel Gauge Systems" in this issue of *FAA Safety Briefing*.

Step Four — Checklist Checked? Preflight checklists are your friends — use them! It is important for you, as a safety-minded pilot, to make use of a physical preflight checklist. Never work from memory. In this way, you can ensure that you do not skip or misevaluate the items you are checking. Always exit the aircraft and move around it methodically, avoiding interruptions and distractions during your external inspection.

Go one step beyond the official checklist items and develop an additional items checklist to be used in conjunction with the aircraft's preflight checklist.

Photo by Tom Hoffmann



Take a look at the FAA Safety Team's (FAASteAM) Advanced Preflight pamphlet for guidance on developing an additional items checklist to add to your preflight arsenal. It's available on their website at <http://go.usa.gov/x8CkF>.

Preflight preparation begins and ends on the ground, and is one of the most important steps you can take to ensure that your aircraft is fit for flight.

Bring Your "A" Game

Another way to check your "A"ircraft, and to proactively assess risk for a given flight, is with a Flight Risk Assessment Tool (FRAT). A FRAT helps pilots make better go/no-go decisions by asking a series of questions that generally follow the PAVE checklist. There are an abundance of FRAT options to choose from, they are simple to use and many are available as apps on your smartphone or tablet. Check out "Assessing Risk in the Palm of Your Hand" in this issue's Angle of Attack department for more details.

Remember This

With safety in mind, following proper preflight procedures plays a critical role to ensure the airworthiness of your aircraft prior to takeoff. The steps you take before your aircraft leaves the ground will pay huge dividends towards your piece of mind while in the air.

And that weird knocking sound we heard earlier? Well, that was just your aircraft reminding you to do a thorough preflight check. Fly safe! 

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Learn More

FAA Safety Briefing Mar/Apr 2012, "Advanced Preflight, Take Your Preflight Inspection to the Next Level"

<http://go.usa.gov/x8CAK>

Advanced Preflight after Maintenance Flyer

<http://go.usa.gov/x8CAJ>

Link to FAASteAM Safety Materials

<http://go.usa.gov/x8CsZ>