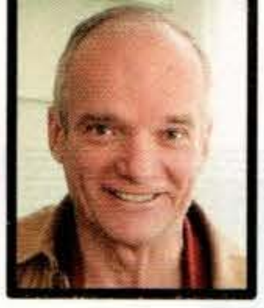


CHARLIE PRECOURT
COMMENTARY / FLIGHT TEST

Impacting E-AB Accident Rates

Ongoing maintenance is key to safety

BY CHARLIE PRECOURT AND VIC SYRACUSE

A 2011 NTSB STUDY *of experimental amateur-built aircraft led to several EAA initiatives to improve accident statistics. We have made tremendous progress since then; accident rates are dropping, and in November 2017 there were no fatal E-AB accidents. The study noted powerplant failures and loss of control as the biggest accident contributors. Structural failures are rare, indicating builders are doing good work in construction.*

The study noted a large proportion of accidents occur shortly after an aircraft changes ownership. Furthermore, E-AB aircraft are growing in numbers while traditional manufactured aircraft numbers are remaining flat or declining. Van's RV series just surpassed the 10,000 mark for aircraft built and flown, a tremendous achievement. This growth likely will drive greater numbers of nonbuilder owners. However, many kitbuilt aircraft provide little ongoing maintenance information, and much of the E-AB fleet is aging, demanding extra attention.

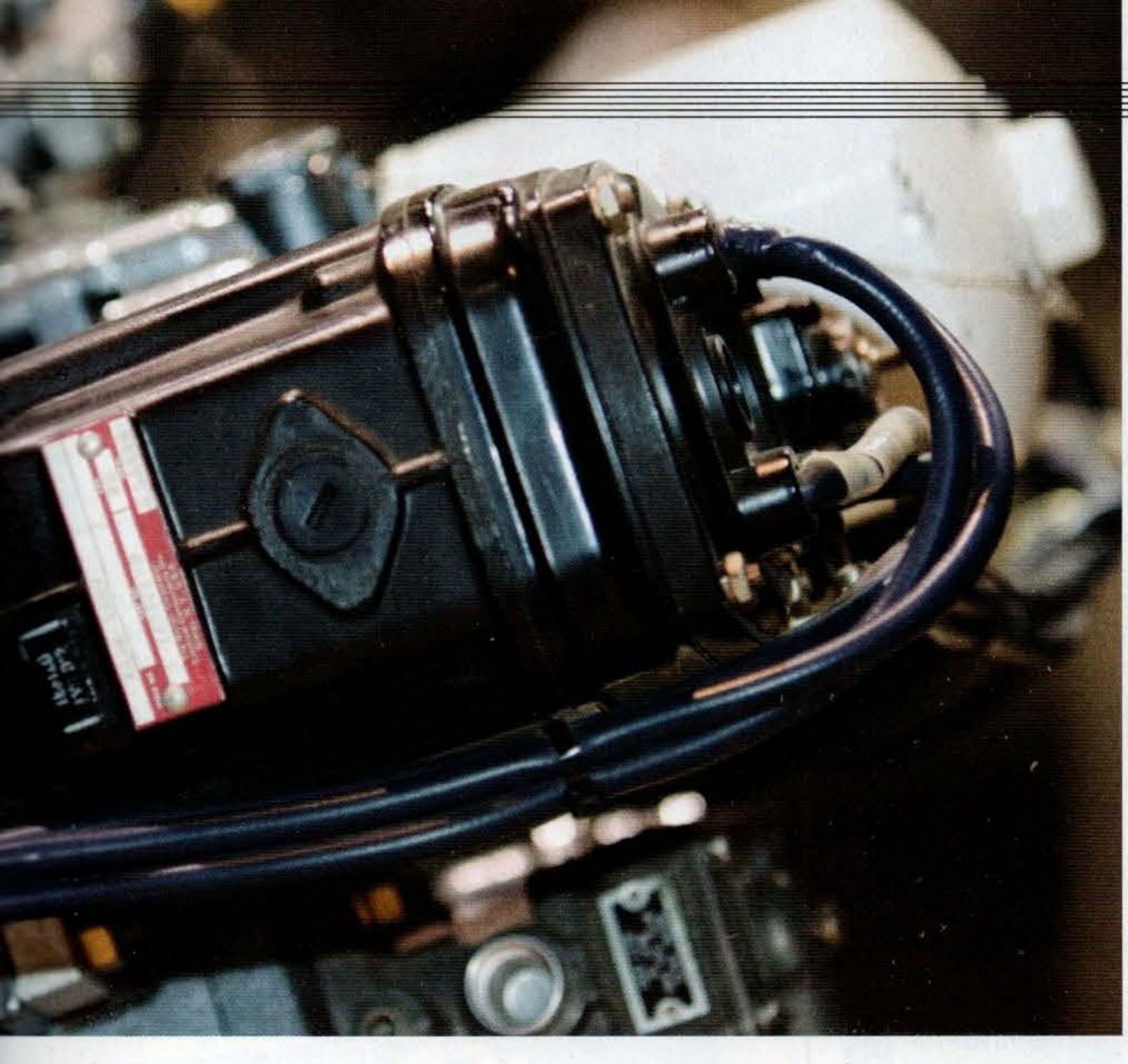
I'm pleased to share this month's column space with Vic Syracuse, EAA's Homebuilt Aircraft Council chairman, who emphasizes the maintenance needs unique to amateur-built aircraft. With proper focus, we can prevent increased accident rates caused by aircraft maintenance issues, aging, and ownership changes. –Charlie

When many of us first earned our pilot certificate we were told it's license to learn. I'm a firm believer that the same can be said of a new builder's repairman certificate. Unlike other certificates and ratings, the repairman certificate requires only that you state you built the aircraft. There are no classes and no training materials. Take your builde logs to the local flight standards district office (FSDO) and you walk ou with your certificate. Effectively, this means a first-time builder of something as complicated as a Lancair IV-P or an RV-10 has just been anointed worthy of signing off the annual condition inspection.

I am not advocating we change the requirements for the repairman certificate, but as amateur-built aircraft become increasingly more capable and prolific, we need to emphasize the importance of good, ongoing maintenance if we are going to keep improving our safety record. Some of the popular kits today have great instructions for building the aircraft, but they are often just assembly manuals tha don't provide ongoing inspection information. Gone are the days of blueprints, finding a machine shop to fabricate a part, or learning how to weld. Even the firewall forward kits include everything to completely install and run your engine. No prior experience needed.

Aviators who come from the certified aircraft world are used to having their A&P mechanic perform maintenance. Depending upon the yearly usage of an aircraft, it is not unheard of to see the mechanic only when the annual inspection is due. Having built 11 airplanes over 37 years, and having inspected hundreds of others, I can tell you that maintenance requirements for E-AB aircraft tend to be a lot higher, especially during the first 100 hours. It is important during this period to regularly inspect the aircraft to determine the wear patterns and potential problems specific to that aircraft. Even with all of the super-detailed kits out there, I have yet to see two of them built exactly alike, even.when completed by the same person.

PHOTOGRAPHY BY BONNIE



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So, how does one learn how to maintain a wly constructed aircraft? First, check the line type forums you most likely used dur- g the build process, as some of them are a od source for ongoing maintenance. ining a local *active* EAA chapter is a really od idea, as is making friends with a local &P. Google it and you'll find a plethora of uTube videos and other information, but careful as there is plenty of misinforma- n out there. EAA has many archived line videos on maintenance, and the omebuilt Aircraft Council is currently rking to improve this resource.

Since the nonbuilder owner segment of creational aviation is among the fastest owing, we need to educate the A&Ps in the ld who are increasingly asked to maintain AB aircraft. Only two people can sign off e required condition inspection: the lder of the repairman certificate (only sued to the original builder) or an A&P. No spection authorization (IA) is required in the amateur-built world. This presents a big challenge. Most A&Ps can find applicable airworthiness directives (ADs) on certified aircraft, but when it comes to E-AB aircraft, where do they go? For example, recently an AD was issued against certain NavWorx boxes installed in E-AB aircraft. How does the A&P know if it's applicable?

There are some maintenance items that should be high on the priority list.

First, give lots of attention to the fuel system. Hopefully, you built the aircraft according to the plans in this area, as the No. 1 cause of E-AB aircraft engine stoppages is modification of the fuel system. During the build process, it is very easy for contaminants to get into the tanks and downstream lines, especially on composite aircraft. I have seen metal flakes in aluminum aircraft 10 years after they first flew! Take the time to clean or replace the fuel filters during the first 10 hours of flight time, with follow-up at 50 hours and annually.

Brake pads tend to be a high maintenance item for pilots new to a specific type of aircraft, such as those with castering nose wheels. New aircraft engines sometimes have the idle set a little higher than normal during break-in period to facilitate smoother running, and it can creep up more as the engine breaks in. Unless one pays attention and adjusts the idle speed, the usual impact is higher wear on the brake pads. Unlike automotive brakes, which have wear indicators, the only wear indicators on aircraft brakes tend to be the rivets digging into the discs, at which time the damage is already done. Learn how to regularly inspect the brakes, and then ask someone knowledgeable to help you re-line them the first time.

Even with the proliferation of electronic ignition systems on E-AB aircraft, most still have one or two magnetos, which are certainly reliable, but they can fail. Learning how to check them for proper timing can seem magical at first, but once someone shows you how to do it, it is surprisingly easy. I have seen more than one overheating problem due to mistimed ignition systems. Check them prior to first flight, even if the engine came new from the factory. Slick magnetos have a 500-hour service bulletin that needs to be complied with.

As an EAA technical counselor and designated airworthiness representative, I like to see Torque Seal or some other indicator used on all nuts and fittings. If you haven't used it, you really need to check critical fittings like fuel line B-nuts after the first 10 hours. Be careful not to over torque them, as it is very easy to crack aluminum flares by doing so. A leaking B-nut on a fuel line can cause low fuel pressure, as it is much easier for the pump to suck air than fuel.

Given the growth in the E-AB fleet, we need increased focus on proper maintenance. If you plan to sell, you can help. If you plan to buy, you know where to ask. *EAA*

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Vic Syracuse, EAA 180848, is chairman of the EAA Homebuilt Aircraft Council and is currently building a Just Aircraft SuperSTOL. He is a designated airworthiness representative (DAR) and EAA technical counselor and flight advisor.