Chapter 526
SpotLight

Steve Jahr

Arion-Lightning

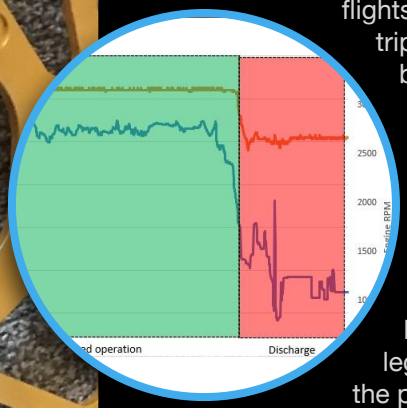
Steve Jahr with his Arion-Lightning

Introduction:
As an accomplished pilot Steve had always been interested in building his own Arion-Lightning but with the rising kit prices and pandemic supply chain issues, Steve opted to purchase a used, ready-to-fly, Arion Lightning from a private builder.

Rotec Alternator Kit

By doing so, Steve figured he could get flying quickly and satisfy the need to exercise his skills to build/innovate. Anyone who has built an aircraft knows there is always more work to be completed and as it turns out, this purchase was no exception.

The Flight Home:
Steve, is located in Northern California and purchased the plane from a private owner/builder in Kansas City, meaning his first long flights in the plane will involve a multi-day cross country trip. Steve logged 15 hours of transition training before taking a commercial flight to do a final inspection, pick up the plane, and now the excitement begins.



The first time he tried starting the plane it would crank over, but it just wouldn't start. Steve had to charge/jump the plane to get it going and flew his first leg to Dumas, Texas. The next morning he headed to the airport ready to tackle the next leg but the plane again wouldn't start. They jumped the plane for him and because of weather delays, he arrived in Gallup New Mexico later in the evening than he originally planned.

As he arrived into Gallop, NM he was looking straight into the setting sun trying to locate the airport. As a result he was a little high on final so he pulled the throttle back and the engine quit. Steve was able to restart the engine on final, but during the engine restart, the Electronic Flight Instruments went black and started the process of rebooting. These events happened

Water Damaged Prop

quickly, like the links in a chain headed for disaster so he performed a go-around, waited for everything to reboot, waited for things to settle down, and brought the plane in for landing. The good news, he arrived safely and the plane started the next morning.

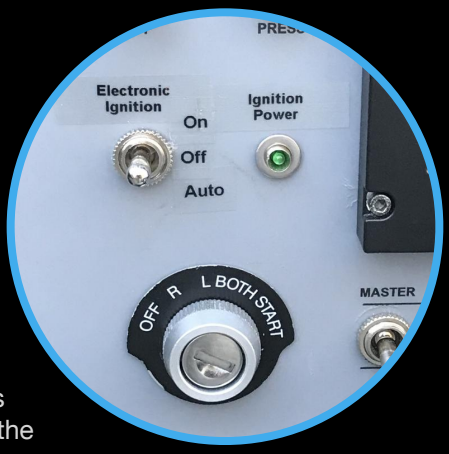
The weather had been fantastic during the trip until reaching California. After a fuel stop he continued to Visalia, California and along that leg it started raining. After landing in Visalia he took one look at his prop and couldn't believe what he saw. That evening after a lot of investigation he learned what you see illustrated on the previous page, is considered "normal" wear and tear of a wood prop in rain.

It was an exciting start to aircraft ownership but despite these surprises, Steve got the plane home safely and now the real fun begins… to solve these problems and apply his skills to make the plane his own.

Fixes and Upgrades:

Alternator and Ignition Systems:

The Jabiru engine is very lightweight but it comes with some limitations. Remember those problems having to charge/jump it to get started? After more research and testing, because the engine uses a Dynamo Alternator, it doesn't start charging the battery until the engine is running at 1,800rpm or greater. So what that means is that during startup and taxi, the plane is running off the battery. The fix is to install a proper 40A alternator. Steve purchased a Rotec belt drive alternator kit - problem solved … but there's more.



The engine uses simple lawn mower type ignition coils and they don't produce a spark until the engine is cranking at 300rpm. The fix for this is a Rotec Electronic Ignition system that's enabled, or turned on, via the oil pressure switch. Replacing the Dynamo Alternator with a standard Alternator meant he lost his Tach signal, so upgrading to an electronic ignition system solved multiple issues at the same time.

Electronic Flight System:

Remember the Electronic Flight Instrument System (EFIS) rebooting during flight? This shouldn't happen, but it happened to Steve because the backup battery was dead. The previous owner didn't really understand how the system worked and provided Steve with an incorrect startup check list. The proper way to startup the plane is to start the EFIS using the backup battery. Once the plane is started/running, then switch on the master avionics.

Tires:
It might seem like a minor fix, but it was very difficult to properly inflate the front wheel. After taking a closer look, the routing of the valve stem wasn't correct so he took the wheel apart. The wheel had the proper tube installed but it was installed backwards. Steve replaced the tire and tube correctly - problem solved.

Stuff Happens:
As you have read, purchasing a plane built by someone else has had its challenges. As the old saying goes, "you don't know what you don't know"… but slowly these issues are becoming evident. As they pop-up, it's time to figure out why, upgrade, or design and implement a solution.

And as they say "stuff happens". Steve was headed out for a flight and halfway down the runway noticed he didn't have any indicated airspeed. He decided to continue the roll, took off, and continued to the next airport because it was bigger, safer, and offered more services if he needed them. Without an airspeed indicator and possibly because of the increased attention, Steve enjoyed a fantastic landing and cleaned out the pitot tube.

Returning home, Steve unfortunately landed hard bouncing the plane, breaking the front nose wheel strut, and as a result several other expensive items. There's no question it was a hard landing but the nose wheel strut broke because the original builder drilled a bolt mounting hole in the wrong location. The mounting hole was supposed to be in the middle of the overlap area and horizontal, to run through the load neutral axis – not vertical at the top of the overlap area causing a stress riser and the resulting failure.

Hopefully this will be the last surprise but either way, Steve has a plane that he's always wanted, had an exciting trip flying it home and he's busy repairing/improving and innovating to make it "his plane".

Pilot/Owner: Steve Jahr

Aircraft: Arion Lightning

Engine: Jabiru 3300 Gen3 Engine

Prop: Sensenich 2EOU5 Carbon Fiber ground adjustable prop

Panel: GRT Sport/EIS 6000 Garmin SL30/Garmin GTX327