

99 and still flying - an interview with Ultralight legend, Leonard Milholland

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It was a hot Wednesday afternoon when I made my way down to the Ultralight Area to interview Leonard Milholland who was on the verge of his 99th Birthday. Leonard is a legend in the Ultralight arena, with a deep aviation history. Not only is he

known for his Legal Eagle and Legal Eagle “XL” but also his 2-seat Double Eagle and Cabin Eagle. An active Senior, Leonard is not letting moss grow underneath his feet as he has a [YouTube presence](#) where he discusses many of his projects including a folding wing option for his ultralight designs, and his V-Twin Briggs and Stratton engine conversion.

Q. Leonard, it is an honor to interview you Sir. Could you give us a bit of your background for the GlobalAir.com audience, the airplanes you've designed and built over the years, and what you're currently doing aka, an update on your V-Twin engine conversion for your Legal Eagle and Legal Eagle XL Ultralights?



Leonard and friends at AirVenture

A. You bet. Way back yonder, in 1997, 1998, I was having trouble passing my medical and so I decided I wasn't going to stop flying. I was going to build me something that was an ultralight. I didn't like the ultralights that were on the market, and I didn't copy any of them. I wanted it to look like an airplane, so I made mine look

as much like an airplane as possible. The limit for part 103 ultralight is 254 pounds, and I came in at 244. But I made the fortunate mistake of putting it in a magazine as a completed project, and everybody in the world wanted one! My phone rang off the wall for months, people wanting plans and I didn't have plans, all I had was sketches. So, I had to make plans for an airplane that was already flying, and he knows how hard that is. (Leonard referring to Mike Kimball, sitting in a group of people around Leonard during the interview) Mike's a good friend from Oregon, he made plans for an airplane, it was fine, and I bought a set, and that's how I got acquainted with him. I've known him for now for 50 years, it's long time since the early 70s! So, I had to sit down and draw a set of plans and that's how it started. When I started selling Legal Eagle plans, I limited the pilot to 220 pounds.

Well, heavier people kept calling me to build one for me build one for me, I got a lot of that. So, I built it, the "XL" for extra-large. There's a larger cockpit, it's taller and wider. To make it legal, I had to put aluminum cylinders on it and hardly any instruments at all. My legal Eagle XL has all pressure gauges out on the engine, which is the Better Half VW engine developed years before for another airplane. The only thing I have on the instrument panel is the switch for the ignition, a meter for the battery, and an airspeed indicator. The airspeed is a washer that blows up inside of a tube so it's really light. Like I say, you have to look out on the engine to see the oil pressure and that just barely got into the 103-weight limit. Pilots that build the XL have a real hard time getting the weight down like it's supposed to be. Some of them think they can add whatever they want on it. But there's nothing you can add you can't add anything.

Q. Are a lot of your builders using Oratex (a lightweight fabric covering) to try to get in there under that number?

A. Oh yeah, it's very popular, and there's a gentleman in Australia that uses Oratex on his and he has a real nice video of it and shows where he broke a rib and he patched it. It's worth looking at it up to see it, he did a beautiful job on the airplane. The XL has been built by a lot of builders and they seem to be willing to put their flying experiences on YouTube and everybody can see them, and that just makes more people want one, it's sort of feeding on itself so to speak.

Q. I've been following your airplanes over the years, I have friends with plans, chatted with builders, and I get the impression you've a pretty friendly user community.

A. The Legal Eagle builders are great, and they love the way the airplane flies. I just had two gent over at the tent (Legal Eagle Ultralight Forum, tent K18) to tell me how nice the airplane flies. I did a lot of calculating and everything, but I had a lot of luck.



Q. Leonard your 99 years old, Correct?

A. Yes, I'll be 99 Saturday.

Q. Well, Happy Birthday in advance! At 99, tell us what you've been developing for the last couple of years.

A. Volkswagen Engines have been getting scarce and expensive, and I wanted an alternative for people, and the really big feature of the Briggs and Stratton is you have an electric start (vs hand-propping the VW). You just turn the key and it starts, it fired right up, cold hot, whatever it is running when you turn the key, you can't get your hand off the key fast enough to keep it from running! And it's more of a buy, bolt on, and fly than the Volkswagen engine is. There's nothing wrong with Volkswagen, but this is an alternative If you don't want to build a Volkswagen engine. I recommend that you buy my information for to Briggs and Stratton, it's very complete even to the even to the plans for the motor mounts, and all kinds of information about the reduction speed, engine speed, and tables and graphs and it's really a good source of information.

Q. It's kind of dropped off the radar screen, but at one time people were experimenting with the 1/3rd Corvairs, (an ultralight engine derived from a Corvair by making it a 2-cylinder engine from 6 cylinders) how did it work on the on the Legal Eagle?

A. Yes, we had a Legal Eagle here with a 1/3 Corvair and I flew beside him in mine and it's really about the same as my Volkswagen. But Corvair engine is a ton of work (to build). Somebody that wants to do it, it can be done, but it's not easy. Back to the VW, I want to say that the great thing about Better Half Volkswagen was not cutting the case. Originally, plans came out to cut the case, and then you have to add a mounting flange on the back of the case, you have fill up the holes, and it cut right through the oil for drain and it's a big mess when you get it all done.

Q. With the full case you end up with is a giant oil sump for heat dissipation is that correct?

A. Yes, you do. It's a lot of work to cut the case in half, and it's not worth it. So, it's better to go ahead with the Better Half VW and use the existing VW engine mount, which mounts directly onto the number one station on the airplane. Now back to Briggs and Stratton. I paid full price for the engine, and I'm sure that if you know a lawnmower guy, you can probably get that engine much cheaper than I paid for it. I paid \$1,600 for it, and the reduction drive from the ACE aircraft in India is \$750. That's standard you're going to pay for the Re-Drive, and it takes about a month to get one. But it turns out that that's about the best Re-Drive on the market. They are used in pusher type Gyro's and other types of Ultralights, and they are getting good service out of them. It's the same engine they use on zero turn lawn mowers, and they roar all



day long, and for the entire season too!

Q. From what I've read Briggs and Stratton has entered the UAV market (see link below).

A. I wouldn't be surprised, Yeah, they have a special factory and Alabama producing these engines, and they are not made in China like people think, they're made here in the United States.

At this point our interview was ended by the AirVenture afternoon tradition of the National Anthem being sung with the Parachutist bearing the American Flag had begun, it was hats off, and we all stood up in respect. I thanked Leonard again and we said our goodbyes.



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