

ADVENTURE NEWSLETTER #2
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GOIN' PLACES The Adventure prototype attended the new national fly-in at Tullahoma, Tennessee at the end of September. We had a great time and met a lot of very nice folk. We're looking forward to attending the 1980 gathering as well. This was the first year for Tullahoma and considering the really stinko weather, it was a great success. The tullahoma fly-in is run just like Oshkosh and

it seemed like a lot of familiar EAA Headquarters faces were in evidence.
The winter weather has begun to sour the flying in Kansas and by January the weather will be a complete loss. Adventure will be coming home to spend January and February in the Garage. Hopefully, the time at home will give us a chance to clean up some loose ends that always seem just a bit too much of a hassle at the hanger. We'll be back out of the barn in early March to begin getting ready for the Sun-N-Fun fly-in. See you there.

PLANS The Adventure plans are progressing nicely but not as fast as I had hoped. At the current rate of progress it will be into January before the finished plans are available. The plans format is essentially identical to the Vari Eze plans, relying heavily on words and sketches rather than emphasising engineering drawing. The adventure plans will have a complete glossary of terms used (like Flox, Dry Micro, etc.) but it will not contain the very complete education section that the Eze and Quickie plans did. If you are a novice to the Glass/Foam/Glass construction technique You can try to find a Quickie or Eze project to gain experience helping on, or you can buy Rutan's "Moldless Composite-Sandwich Aircraft Construction" manual for \$14.50 (R.A.F. Box 656 Mojave, CA 93501).

ENGINES FOR ADVENTURE Deciding which engine to use and where to find one without getting ripped off seem to be two of the homebuilder's major concerns. I hope that this discourse will help.

A number of different engines are compatible with the adventure airframe. I'd like to discuss the different engines which are available and what to expect from each in performance, weight, and cost. Initially I plan to restrict my approval of engines to the small Continental four bangers; the "C" series and "A" series engines of 65 to 85 horsepower. Perhaps in the future there will be other acceptable engines, but for the near term I'll ignore that possibility.

Continental Motors Corporation "A" and "C" series engines are actually only two different basic engines with a whole slew of different accessories which can be combined to produce over 20 different designations. The "A" series are all 173 cubic inch displacement and the "C" series are all 188 Cubic Inches. The detailed differences come in rated power and RPM, carburation, ignition timing, propeller drive flanges, and available goodies like starter and generator. I'll try to pass along some of the jargon that comes with these engines. There are "tapered" shaft and "flanged" shaft engines which simply means that some crankshafts were made with the propeller driving flange an integral part of the shaft and others (tapered) were made to accept a separate drive flange.. The only practical difference comes when you find out too late that you didn't get a drive flange assembly with the engine you bought and have to shell out an extra \$85 for one. The vast majority of these engines were simply carbureted with gravity feed fuel systems. There were a few models which had fuel injection and a few which had carburetors set up for pressure feed from an engine driven fuel pump. If you buy one of the odd ones make sure that you get all of the gear that it needs to run. The "A" series engines can be characterized as the bottom line in simplicity. The "A" series (A-65, A-75, A-80) engines don't offer starters, generators, vacuum pumps, or anything else not basic to propelling the airplane. These engines are consequently less popular and less expensive than the "C" series which offer a more complete selection of goodies. Some "C" series engines offer starter, generator, vacuum pump, fuel pump, and shielded ignition while others offer nothing more than the "A" series did. Just because options are available doesn't mean that you are obliged to install them. The engines function very well with the starter, generator,

vacuum pump, and fuel pump pads all covered with aluminum plates. The weight of these accessories is quite significant and can really eat into your useful load. To simmer all of these infinite variations down into a managable form, I'll oversimplify things a bit and say that the simple engines have a dash number following the model designation of eight (A-80-8, C-85-8, etc.) while the more complicated models have a dash number of twelve. This is a bit oversimplified and there are lots of other dash numbers, there aren't many of these engines around but there are a few. If you run into a strange dash number or a string of letters following the dash number check the C.M.C. overhaul or maintenance manuals for what those markings mean before you buy.

Which engine is best? The free ones are the best but there aren't many left. The lucky ones are home free but the rest of us have to decide what we expect from our aircraft and how much we're willing to pay to get it. Some engines do make better sense than others, for example the A-65, A-75, and A-80 engines all are the same weight and seldom are priced much differently, but your Adventure will have a lot more snort on 80 horsepower than it will on 65. The same comparison holds true for the C-85 and C-75 models. If you buy a basket case engine and rebuild or have it rebuilt, you can choose, at little additional cost, to convert your engine to the highest horsepower model of the line. If you're out to buy an off the shelf ready to run engine, you don't have that freedom. My preference, which is based on price, power, and weight, is as follows with the best first: A-80, A-75, C-85-8, C-85-12 without starter and generator; C-85-12 equipped, A-65, and dead last the C-75. My only complaint against the A-65 and C-75 is that they can so easily be converted to the higher power models. If, for some reason, you have convinced yourself that you need a starter (generator and battery go along for the ride), then you have only one choice: the C-85-12. The 60 pound increase in empty weight caused by all of that extra equipment limits your useful fuel load quite a bit.

The following table will give you a brief summary of the performance differences in the Adventure with different engines.

<u>ENGINE</u>	<u>HORSEPOWER</u>	<u>TOP SPEED</u>	<u>MAXIMUM RANGE (Sm)</u>
A-80	80	189	800
A-75	75	185	800
C-85-8	85	193	730*
C-85-12 bare	85	193	700*
C-85-12 complete	85	190	550*
C-75-8 or -12 bare	75	185	700*
A-65	65	173	800

*Range decrease reflects the loss of usable fuel load due to the higher empty weights.

In newsletter #3 (Jan 80) I plan to continue the engine discussion by addressing some details to watch out for in "overhauled" engines and some buck saving compromises that I accepted in the prototype's A-80.