Team Rocket Newsletter 3-28-2026

State of the kit industry - the bad & the good news
By Vince Frazier

The bad news:

As you may have already heard, another relatively big player in the kit aircraft industry declared bankruptcy yesterday. Sonex LLC owner, Mark Schaible, stated that unless a miracle occurs that Sonex is shutting down all operations effective immediately. https://avbrief.com/sonex-shuts-down/

Compare this to what happened to Van's Aircraft recently. Van's is coming out of their bankruptcy, and I am very glad for that, but it would be dishonest to say that what happened to them didn't have very grave and severe impacts on many of their suppliers, some whom I know very, very well.

And consider the comments on the industry made by Paul Dye, who as we all know is deep into building his own F1 Rocket.

The good news:
I want to comment on the state of things here at Frazier Aviation Products LLC, dba Team Rocket Aircraft (Indiana). I want everyone to know that I'm very optimistic that we will continue to be around for the long haul.

As any reader of our newsletter knows, we (Vince and Tammy Frazier) moved our home and shop from Mount Vernon, IN to Cutler, IN a little over 2 years ago. We (Frazier Aviation Products LLC) have a far more capable shop now and have recently added on another 1718 sq ft so that we can have some breathing room. The new addition was 99% complete as of last Friday... yeah.... brand new space for future growth!

Last year we added a brand new 11' CNC press brake, 12' x 6' CNC router, computer network, compressed air and water for the shop, and several other upgrades. The shop is in good shape for the future. And it's attached directly to my home, so I have few excuses to not be fully present. Paul, Scott,

Larry, Toby (after he finishes moving into his new, nearby home) and I are working as quickly as possible on a wide array of Rocket/Raider projects.

We have no bank pressure, because we aren't using any bank funds. This is a GOOD thing for everyone. Sure, we could go faster if we borrowed a bunch of money, but the risks are too great. We're the tortoise, not the hare.

That brings up the down side of being cautious. We're slow. Nonetheless, we're moving forward. Repair parts are going out the door, we're working on kits, and we're supporting the existing fleet. We're planning on doing these things for the foreseeable future.

Here are a few of the recent newsworthy items:

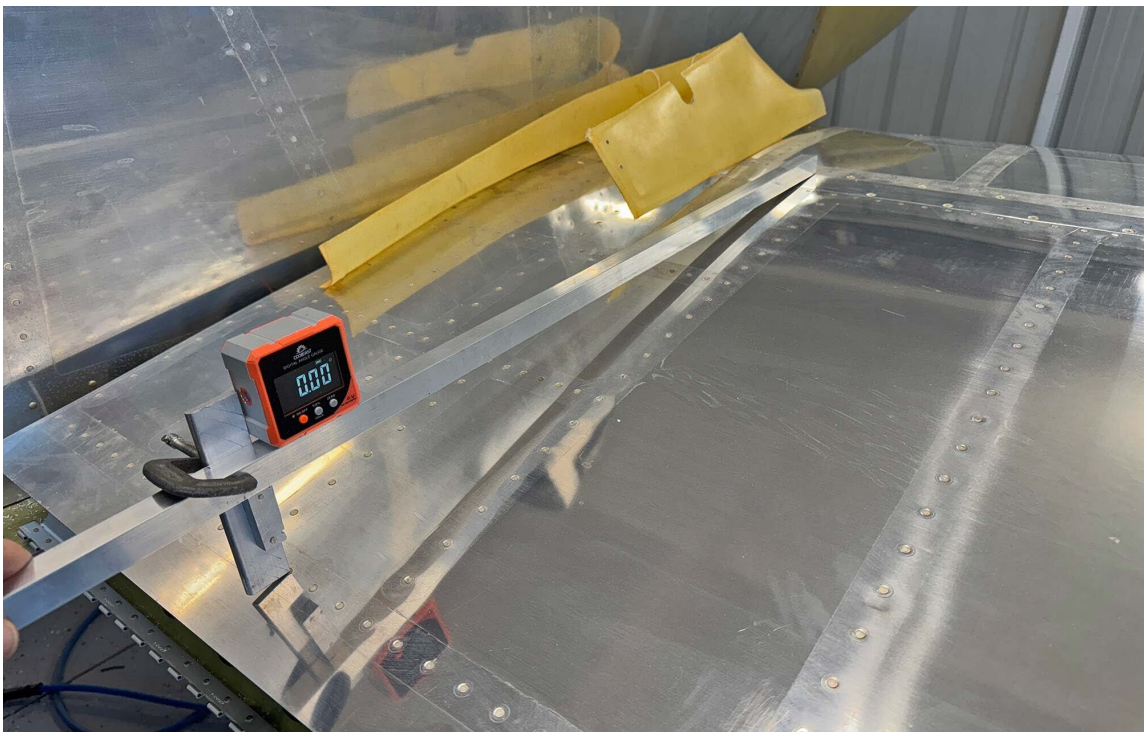
- We retrieved the very important engine mount fixtures from Texas. This means that we can continue to produce the "Indy" mount type engine mounts for the Lycoming 4 or 6 cylinder engines, the "Indy" mount type engine mount for the Harmon Rockets, and the "Indy" mount type engine mount for the Continental 6 cylinder engines. (The "Indy" mount refers to the gear leg/firewall portion of these engine mounts and was the answer to the original Czech made engine mount which was prone to cracking.)
- On a related note, we have a relatively large batch of titanium gear legs in process currently.
- The F-wing, tapered wing, development continues. We are well aware of the long gestation period that this project is experiencing. However, as Paul Dye pointed out in his comments on the industry article "Spaceflight … is hard!" and the homebuilding industry is harder... and with no government funds!
- The most recent F-wing developments relate to the finalizing of the flap and aileron design. This time we mean it, they're really finalized. Pinky swear! Paul, our engineer, wouldn't make any new changes, right?!
- And the F-wing isn't the only project eating up our time. We're putting the new guy, Larry, on Mk3 tail duty. We've been tweaking that production process to try to avoid the need for so many heat treated parts. This means some minor part shape changes, as Van's has done for years, but nothing that would affect the kit overall.
- Scott has been going through the Mk3 CAD and removing some of the dimensional discrepancies that cause problems for producing pre-punched parts. If you're thinking "continuous improvement", you're right.

- Joe, yeah, I didn't even mention Joe above, has been working offsite on drawing a CAD model of the F1 Rocket fuselage, something that has not existed previously. At least it doesn't exist in a form that is useful for our needs. Eventually, we'd like to pre-punch the fuselage also.
- There's a LOT of work in the list above. If we can beat some of those items into submission, we want to begin offering QB kits again.

So, why am I telling everyone our "business model"? As you can imagine, there is a lot of unpleasant stuff going on in the world today. We here in Indiana want everyone to know that we're doing what we do because we love the Rocket series of aircraft. We plan to make every effort to be here for many more years. We plan to NOT take money from banks. The risks aren't worth it. We're not in debt and plan to stay that way. And as we've done for virtually every customer order in the past, we won't even take customer money for an order that we can't fill out of current stock.

Sure, some of these things are slow, and a pain in the backside, but not nearly as painful as having half a kit and no options to get the other half.

Incidence Is Forever
February 2026
By Paul Dye
Used with permission from AvBrief



The leading edge of the "level stick" sits on the main spar, the aft vertical on the aft spar bolt attach rivets. The angle finder was zeroed to the flight deck sill line.

The little block riveted to the vertical is there to make sure it stays square and doesn't slip when clamped. Anyone need a precision 2.95-inch measuring tool?

When installing your wings, no matter what the airplane, you are probably going to have to set the incidence—the angle between the mean chord line and the fuselage—before drilling permanent mounting holes. In the case of an RV-style aircraft, this will probably involve drilling the aft spar bolt attach hole. There are various ways of measuring incidence, and your kit instructions should tell you how the designer wants it done.

In the case of the F1 Rocket, you measure the incidence by leveling the fuselage (flight deck sills level) and then making a long measuring stick. With the leading edge of the stick over the forward spar, the vertical distance between the line of rivets on the aft spar bolt attach and the stick—if the stick is level—is supposed to be 2.95 inches. That is a pretty precise measurement, so rather than simply clamping a ruler at right angles to a level, we used a piece of square aluminum (to ensure it was straight and wouldn't sag) and bolted a vertical with a precisely scribed line—then riveted on a little "step" to make sure that it was square to the stick. This was then clamped in place, and our digital angle finder used to match the stick to the flight deck sills. These little angle finders have a resolution of 0.05 degrees—the long-established method of leveling things with a bubble level isn't quite that close, so it's a good device. You raise and lower the aft edge of the wing to get level, clamp, then drill. Make sure to do each wing separately—don't trust them to be symmetrical, or identical!

(Spar) Bolts-R-Us!
February 2026
By Paul Dye
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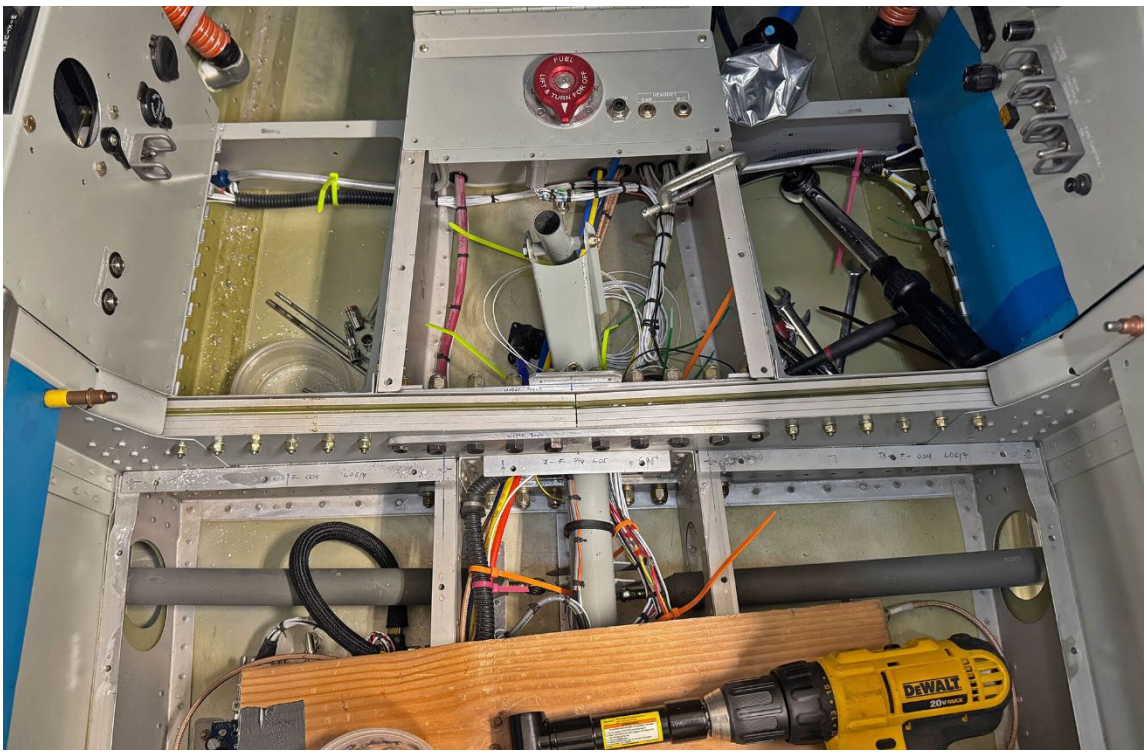
The dry-lube spray dries quickly and gives just enough lubrication (without being messy) to install the close-tolerance bolts.



That's 54 bolts installed, only four little ones left to go on the top sides. But that was enough for one day!

If you are building an early RV (the RV-4 was the progenitor of the F1 Rocket that we are finishing up), you are probably familiar with the main spars that go halfway through the fuselage and are mated to the cockpit structure with steel splice plates and scads of bolts. Newer designs have heftier center sections and the stub spars don't go as far into the fuselage—so there are a lot fewer bolts to install when stabbing the wings.

Cantilevered wings must fit tight—no bracing to complete a truss triangle is allowed. That means that the holes that attach the spars together with their splice plates must be precision-drilled and use close-tolerance bolts. The F1 uses 20 close-tolerance bolts for the assembly—16 AN6 bolts and four AN4s—and then a bunch of regular AN3s outboard of the splice plates whose holes are a little less critical. Close-tolerance bolts can be identified by the "dish" in the head, and if that's what is called for, that is what you must use. The spars and splice plates are drilled "in assembly" using a precision reamer, and you aren't allowed to "chase" the holes at assembly time to make the bolts fit. Taper-tipped pins (made on a lathe from long bolts) are generally used to install the wings initially, then they are replaced with the final bolts. Close-tolerance bolts can be hard to install, since there is—by definition—no slop. In the past, I have used dry ice to chill bolts down overnight, shrinking them an almost infinitesimal amount. Oddly enough, no dry ice was available in our nearby city—the state capital of Nevada—so I tried the first bolt after giving it a coat of Fast Dry lubricant spray. Tapping the

bolt in with a small hammer and using the bolt to drive out the taper pin (think about the final bolts' direction when installing the pins) worked so well that I stopped thinking about cold bolts and got all the main fasteners installed in an hour.

If you're familiar with the old guideline that aircraft bolts should be installed with "heads up and forward," you'll look at our picture and wonder why I didn't follow that pattern. The answer is that first—it is a guideline, not a hard-and-fast rule if there are other considerations. And second—the floor that goes aft of the spar has to be removable for inspections, and bolt heads are shorter than bolt tails and nuts, so this gives us better clearance for maintenance. "Other considerations …"

Last tip: I like the lubricant spray for the body of the bolt but didn't want it on the threads because it can affect the torque. So I drilled holes in a chunk of handy wood (all builders have a scrap pile … right?), inserted the bolts, and sprayed them down with the threads hidden. It's quicker than tape.

Drilling Nuts for Safetying
February 2026
By Bob Hadley
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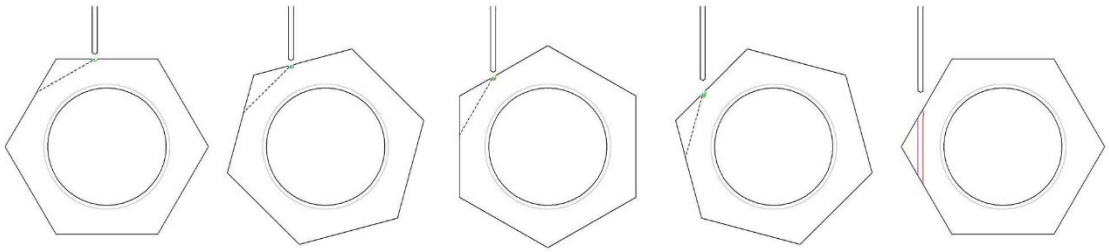
Recently, my neighbor Paul asked me if I had a good way to drill nuts for safety wiring. The landing gear on his F1 Rocket project is fixed with large hex nuts and he wanted to safety wire them.

DIY drilling of bolts for safety wire is made simple by many aftermarket jigs. Since the hole is usually drilled perpendicular to the face (re: hex bolt) or square to the tangent (re: socket head cap screw), drilling is no sweat. But drilling nuts for safety wire is another story. You can't drill them square to the face (well, I guess you could, but …). Nuts have to be drilled diagonally from flat-to-flat. This is a challenge because whenever you're drilling other than square, twist drills tend to deflect. Even when drilling square, smaller diameter twist drills tend to "walk" off-axis and deflect. That's why center-punching or spot drilling is considered essential for precise layout.



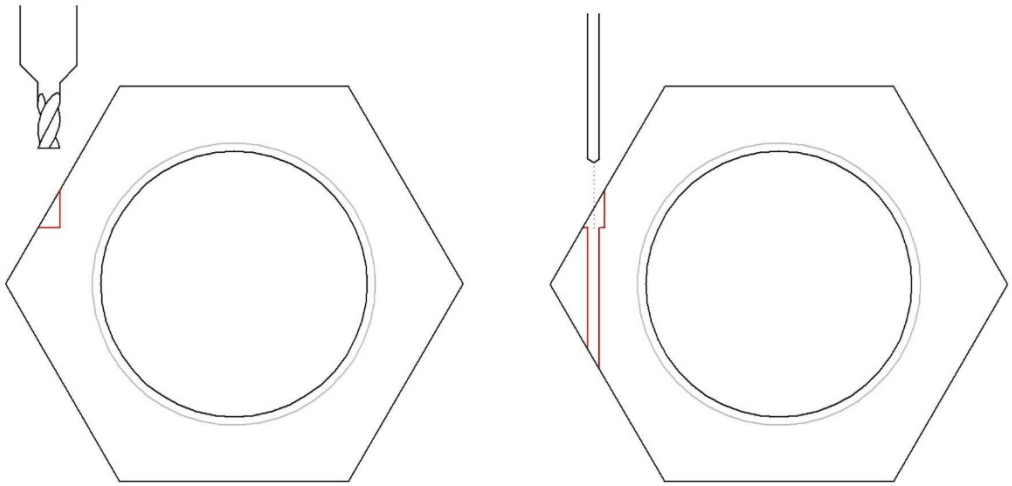
This sequence shows the idea behind the "peck and rotate" drilling method.

One way to drill a nut for safety wire is to start by pecking, or dimpling, with the face square. Then, progressively angling the nut and re-pecking the same spot. Eventually the dimple will get angled enough to drill the desired hole without deflecting. I watched a video on YouTube of a guy doing this and it worked, but he was drilling a much larger nut and using a much larger drill bit than anyone would use for aircraft safety wire.

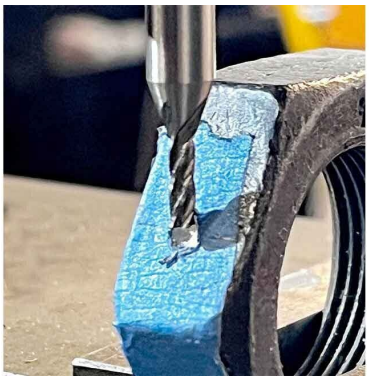
Even so, we gave that method a try and found that the 0.050-inch-diameter twist drill was much too flexible for anything other than dead square. I suppose with enough patience, we could've got the "peck and rotate" system to work. But it seemed like a lot of fiddling with no guarantee of a good outcome.

Plan B was to use a miniature end mill (0.098 inch [2.5 mm] diameter with 6 mm shank, available on Amazon) and my milling machine to plunge cut a shallow pocket (aka spot face) and then drill the through-hole with the 0.050 twist drill.

The setup was simple: With the entry and exit points marked across the corner of the hex, the nut was positioned in the mill vise and the cutter lined up. Once the pocket was milled, the end mill was swapped for the 0.050 drill bit. A shot of WD-40 was used as cutting fluid.



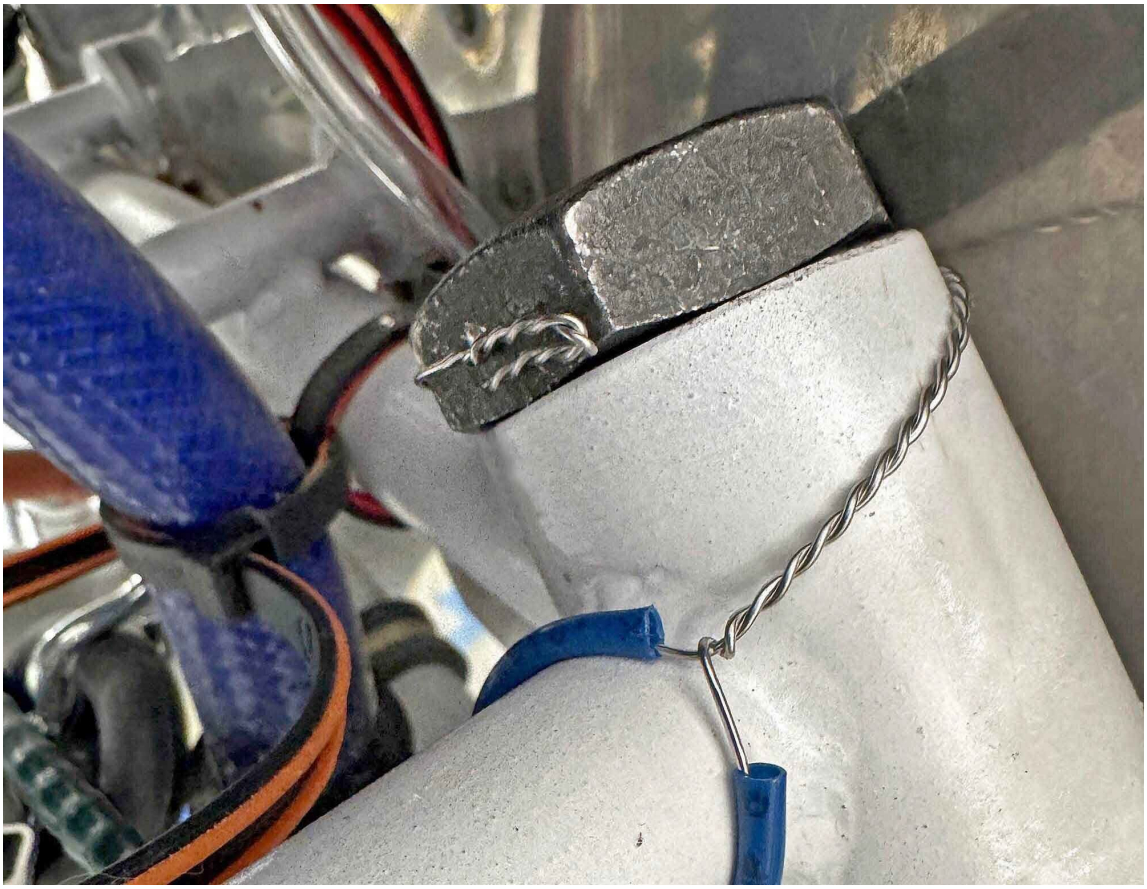
This sequence shows the spot face method. In addition to being able to precisely locate the workpiece, the milling machine is infinitely more rigid than a drill press for doing this type of operation.



Left: *With the nut secured in the mill vise and the 2.5 mm end mill in a quarter-inch collet, the workpiece was lined up with the layout lines (blue masking tape was used to make the lines more visible).*
Middle: *The milling machine spindle speed was set to 2,000 rpm and the cutter was fed very slowly into the workpiece.*
Right: *With the end mill and collet swapped for a drill chuck and 0.050 drill bit, the nut was drilled through.*

There you have it. Questions or comments are always welcome.

(Note: Advisory Circular 43.13-1B, chapter 7, sections 3 and 4, cover the types of and uses for aircraft bolts and nuts but offer no guidance for DIY drilling for safety wire.)



After drilling, the holes were deburred with a chamfer bit and rustproofed. One of the first things a DAR will note when looking at a new build is the quality of the safetying. Do it like this and you'll impress everyone.

F1 Rocket project for sale

Bryan McCartney has an F1 Rocket project for sale. As this was very fresh news as I prepared the newsletter, I don't have all of the details. However, I believe that he has the Sport wings and fuselage to the QB stage. And a Mk3 tail to go with them.

Contact Bryan McCartney for more details.

(561) 578-1446
mccartneybryan99@gmail.com

HR2 items for sale - (still available!)

My father bought a kit from John a number of years back. Unfortunately, he has fallen ill and will be unable to complete his build. I have the following parts available. I'm hoping to sell the entire lot and give some up and coming Rocket builder a hell of a deal on the whole lot. I believe the parts are almost $21,000 in total new. All of the parts are unused and still sealed/packaged for use. Parts are located in Sacramento.

- EDS -2IP Built In Pulse Demand Oxygen System
- Cleveland 199-15200 Aircraft Wheel And Brake
- Grizzly 3 in 1 sheet metal tool
- Whelen Model Strobe Kit
- Andair Duplex Fuel Selector Model #2 FS25-20-D2-6F
- Andair Positive Stop Fuel Valve- Fuel Selector Model #7 FS20X7-T
- Tail Mate Aircraft Hoist
- Military Stick Grip Infinity Aerospace - Aircraft Spruce Left & Right
- Carbon Monoxide Detector
- Safety Trim Controller
- Check Corporation - (2) Seat Heaters
- Flap Controller
- Transfill Adapter - TA 380-S
- The Claw - Aircraft Tie Down System
- Plastic Epoxy
- Screw Down Kit - Tie Down
- Copper fuel/air line

Photos of some of the items can be viewed here.

Contact:

Michael Cann

916-805-1610
michael.cann@gmail.com

NOTE: *All items listed for sale are at the buyer's risk and discretion. Frazier Aviation Products LLC is not involved in these sales and takes no responsibility for them.*

Previous Newsletters

Previous newsletters can be found HERE.

Please note: Do not hit "**reply**" to this newsletter. I appreciate the emails, but replies to this email add a copy of EVERYTHING ABOVE and every reply adds it to the same email. It gets to be very cumbersome, very quickly.

To send a reply, start a new email (without the above info) please. vince@f1aircraft.com

Thanks, Vince

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