

VELOCITY VIEWS

Volume 13

Factory Fly-in & Workshops Big Hit!



Martin Hadley conducts his workshop covering "Electrical Basics"

November 1st saw a Velocity weekend fly-in to kick off a program that features an open house at the Sebastian, Florida, factory each month. About 45 Velocityites attended the event – in spite of foul weather, which prevented most pilots from flying to Sebastian from the north. Three Velocityites did manage to fly in from south Florida, with the rest of us driving in.

Until notified otherwise, mark your calendar for future open houses on the first Saturday of each month. Starting at 10:00 am, and continuing to about 3:00 pm, workshops of interest to Velocity builders will be held. If you plan on attending an open house, please call the factory to register. You can also check at that

time to find out what workshops will be running.

"We plan on rotating a series of composite and maintenance type workshops at each open house," explained Scott Swing. Topics for workshops include: electrical, avionics, annual / 100 hour inspections, maintenance, composite construction, composite molding techniques, interiors, engine installation, and just about any other topic a builder might suggest.

Each monthly Saturday open house will start off with coffee and donuts served in the hangar at 9:00 am. A cookout (burgers & dogs) is served at noontime, allowing time for one more workshop after lunch.

Workshop highlights continue on next page

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Corso Speaks out at Velocity Dinner

Our November weekend factory fly-in included a Saturday night dinner get-together at the Vero Beach Club. Our dinner speaker was retired Colonel Philip Corso, Sr., who authored the intriguing book "The Day After Roswell". Col. Corso fielded lots of questions and delighted Velocitites with his sincere nature and good humor.

Col. Corso's military career was very impressive. Among his many assignments, he served on the White

House staff for President Eisenhower and, during the 60's, was in charge of foreign technology at the Pentagon. While at the Pentagon, various articles that were recovered from the Roswell NM 1947 spacecraft crash were given to Col. Corso. His mission was to place certain items recovered into the R&D divisions of American firms such as Bell Labs for "reverse engineering". Many of the high technology products that we take for granted today were engineered from items recovered at the crash site. Kevlar and

micro chips are two examples of such products. Get the book and read it. You too may become a believer.

How on earth did we get a best selling author to speak at our little dinner get-together? This is especially interesting when you find out that Col. Corso just does not do speaking engagements. Well, some of you may know Col. Corso's son Phil Jr. Phil and Liz Corso are Velocity builders and offer a professional repair and modification service for Velocities in Ft. Pierce, Florida. Duane had read Col. Corso's book, and called Phil, and – with some arm twisting – talked him into getting his dad to our dinner. At one point, we even had **Burt Rutan** coming too! Seems Burt needed to meet with Col. Corso for a one-on-one interview. Burt ended up meeting with the Colonel during December.

See you at the next fly-in open house on February 7th.

Rick



Pictured left to right are Phil Corso, Jr., Colonel Phil Corso, Sr., and Duane Swing.



Duane reviews inspection and maintenance items that every builder needs to be aware of. This workshop is aimed at the Velocity pilot who either bought an existing flying Velocity or had someone else build his plane for him.

Velocity Banquet for '98 Sun N Fun

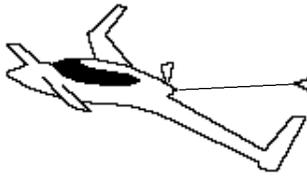
The 1998 Velocity Sun N Fun Banquet is all lined up for Monday April 20th. The social hour starts at 6:00pm, with the buffet dinner starting at 7:00pm. The cost is \$20 per person.

Dinner includes: Carved Top Round, Fried Chicken, Red Bliss Potatoes, Salad Bar, Green Beans Almondine, Strawberry Shortcake, Cherry Cobbler, and Coffee / Tea.

The banquet is once again held at the Imperial Golf & Racquet Club's Ball Room. The club is on 6 Country Club Lane, Lakeland Florida. If you need a map, refer back to Volume 5, page 4.

You will need to call the factory to RSVP as soon as you know that you are going. Be sure to RSVP as soon as possible, but no later than April 10th. Thanks.

Bonnie



FACTORY NEWS

by Duane & Scott Swing

We continue to be busy with the shipping of the XL and have been able to maintain a backlog of orders for about 3 to 4 months. Of specific interest is the fast-build fuselage for the XL. We are able to install all the bulkheads, keel, side ducts, firewall, main landing gear, nose gear, rear side windows, windshield, top to bottom fuselage joining and glassing, and the two doors pre-fit and hinged. In addition, the upper fuselage has the access door pre-molded in and the cover plate pre-molded as a separate piece. We do the same thing with the nose gear flange and nose gear doors which are now a separate molded part with the reinforcement molded in. This will add \$5,000.00 to the total price of the kit and represents about a 300 hour reduction in the build time.

I have petitioned the FAA for a review of the fast build kits (wings and fuselage) to be included under the 51% ruling. It normally takes a couple of months for the approval. As most of you know, the FAA has been taking a hands off approach to the fast build options and we expect no change to this until we get the official approval.

N97XL "BUBBA"

We continue to put hours on the XL and the hobbs now reads 185 hours. This airplane is a delight to fly and has become our demo of choice. About the only thing we do is change the oil every 25 hours and are about ready to change the main tires for the first time. We do a lot more landings than the average Velocity due to the 30 minute demos and replaced the brake pads (Matco) at about the 175 hour mark. I checked the plugs on the last oil change and have yet to do anything with them. Not even a cleaning or re-gapping has been necessary. I aggressively lean the engine when powered back to 65% or less (50 degrees lean of peak EGT) and this is

probably why we never see any lead deposits in the plugs. We still struggle with the Stormscope and cannot get it to work properly when the Electroair electronic ignition is on. It works fine on the mag, but not using both. I show a storm in the 150 mile range at about 40 degrees and another at 150 miles at about 220 degrees. The build-up is so intense that the screen will reach a saturation point and not function properly. We also had a problem with the elevator getting stiff. This was traced to rust building up where the offset torque tube goes through the fuselage and also at the center bearing block. These were cleaned up, painted and greased and has not been a problem since.

FACTORY WORKSHOPS

Remember, the first Saturday of every month is a factory workshop open house. Many of you forgot that we had one on December 6th. We had about 25 or so here for the hands-on workshop on composites and a maintenance review of the procedures and process of properly maintaining your airplane. We managed to consume about 25 cups of coffee and two dozen donuts along with about 25 cheeseburgers and several hot dogs before we called it a day at about 4:00 PM.

We will continue to have these meetings until the attendance dictates otherwise. If you don't have anything else to do on a first Saturday, stop in for a cup of coffee or a sandwich and get to know some of your fellow Velocity builders. Remember, everything is free, including the drinks. It isn't important that you come to learn anything, just come join the fun. The next one will be Saturday, February 7th. See you then.

FAA Manual / Inspection & Repair

Everything you ever wanted to know about the Acceptable Methods,

Techniques, and Practices of Aircraft Inspection and Repair. This is contained in FAA manual AC 43.13-1A Change 3 and AC 43.13-2A. This is the bible for aircraft mechanics and is required reading for anyone working toward an FAA mechanics license. Such things as AN bolt torque values and head identification, proper safety wire procedures, Mil spec wire identification etc. etc. Unfortunately, you will not find anything about our composite airplane repair, as these manuals were written long before fiberglass was used in airplanes. We have just ordered a batch of these manuals for sale at our cost. The regular price is \$17.95, your cost is \$7.18 plus shipping.

Engine Book

Want to know more about your engine? Kas Thomas has published a book that explains the ins and outs of air-cooled Lycoming and other aircraft engines, in a way that any pilot can understand. If you are going to maintain your engine yourself and want to know more about how it works, I highly suggest you purchase this book. You can get one by contacting Kas directly at TBO Advisor Books, Box 477, Wilton, CT 06897. The cost is \$22.95 plus \$3.00 S&H. Visa and MC accepted. Kas also publishes a newsletter called TBO advisor which comes out bi-monthly. He covers everything pertaining to engine maintenance and has no fear in telling things as they are, as he does not accept advertising money. I read this publication cover to cover and I consider it the best source for engine information available anywhere. It is available from the same address at \$79.00 per year including postage.

Angle of Attack Indicator

We're in the process of evaluating an angle of attack (AOA) indicator in our XL. In case you have never heard of an AOA indicator, they are used in virtually every business and commercial jet sold in the past 30 years and cost in the thousands of dollars. Its purpose is to provide the pilot the proper approach angle

Continued on the next page



Views from the West

By Mark & Nancy Machado

By the time everyone receives this, we'll all have done the New Year's resolution bit and be well into the period of not doing any of them! Nothing like a new year! Given that it is the beginning of a new year, Nancy and I thought a little review of our "Mission Statement" here at Velocity West would be in order.

Velocity West is Velocity Inc.'s representative here in the West, providing sales, service, promotion and builder's support for Velocity flyers, builders and prospective builders in our territory. That territory includes the states of Alaska, Arizona, California, Colorado, Idaho,

Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming, as well as British Columbia, Alberta, Saskatchewan, the Yukon Territory, Baja California and Mexico. While our activities are primarily directed toward those individuals residing within the boundaries of our territory, the builder's support aspect of our "mission" is worldwide. We make no distinction as to where a particular builder might live if he or she has a question that needs resolving.

In addition, Velocity West is a Service Center. The Service Center offers builders an opportunity to work on their projects right here in our facility, under the watchful eye of the Velocity West staff. Currently we have five Velocity projects in our facility, with builders coming and going as their time allows. We have both full-time and part-time builders working on their projects here. In some cases, a builder might only be here for a short period of time (enough just to get him or her off to a good start) and with others, they're here for the long haul!

Enough said about our mission. Now let's talk about what we are actually doing and planning:

1. ALTERNATIVE ENGINES: John Kiss, one of our resident in-house builders, has recently ordered a Marine version of the Chevy V-6 for his 173 RG. He has placed the order through Northwest Aero in Auburn, Washington, and expects delivery soon! The package will include an engine with aluminum heads, a complete dual ignition system, Holley carburetor and belt-drive prop reducer. He intends to couple the engine with an IVO prop, similar to what Tim England has done to his Velocity in Canada. At this point, I'm sure I can speak for John and advise you he can't answer any questions about the installation because with no engine in hand yet, it's mostly

theory! Rest assured, as the project develops, and hopefully successfully, we'll publish the details.

Along the lines of alternative engines, we are also attempting (I repeat, ATTEMPTING) to develop an automotive conversion specifically for the XL's. Currently on a test stand here in the shop is a modified Chevy V-8 High Output engine, being configured for use in our own (Nancy and my) XL. At this point it's not much more than a beautiful monument! Each day we set aside a few hours (mostly at night) to work on the details and hope to have it running quite soon. The fuel system, ignition, engine mount, gearbox are all complete, with the finish details of the cooling system and exhaust still being developed and built. Hopefully, if all goes well, a complete test program will be initiated and completed on the test stand before the engine ever sees the rear end of a Velocity, if ever!

Like John's project above, not much of actual fact can be said about either of these two alternative engine programs, until we're done and proven. We may end up proving it can't be done! On the other hand, these engines could be the best thing since chocolate was invented. We'll keep you posted. In the meantime, hold off on the cards and letters full of questions until we give the "all clear". Rest assured though, we're working on some alternatives for you!

2. VELOCITY WEST FLY-IN: Nancy wants to have a party! Around here that is no surprise! So, she tells me the event will be May 16, 1998. Our plan is to sponsor a big BBQ for the Saturday night (right here on the field) and have a guest speaker to provide us with a little entertainment. In addition, we'll be making arrangements in the local area for lodging, so all the domestic stuff can be dealt with before you arrive. Nancy will be sending out flyers on the event shortly, with much more detail, RSVP requests, etc. Look for it in the mail! Trust me, she throws a good party!

Enough of what we're doing

Factory News

Continued from previous page

regardless of the weight and CG of the airplane. Remember that the indicated stall speed of our canard will go up as we load the canard more, whereas the stall angle does not change. Therefore, angle is a more important indicator than speed. This proper angle is by way of a series of lights positioned horizontally just above the glare shield in plain view of the pilot. As one slows down, the number of lights increase until at about 5 knots or so above canard stall, all the lights are on and flashing. This will visually warn of too low of an approach angle (high speed) and will visually warn if the angle is getting too high. (low speed canard stall) It's all in the direct vision of the pilot without his actually looking at it. We feel that if it provides proper pilot awareness, it may become standard equipment on our airplane. Price should be in the \$350.00 range.

If you're interested in seeing how it works, call us and we'll send you a video with in-flight "stuff". Our full evaluation and comments will also be there.

Duane

here; now a little bit of editorializing. I get asked the question often "What's the difference between an Experimental class airplane and a Certified one?" My first gut reaction is to say absolutely nothing! Why? Because of what I see going into many of our planes and when we allow ourselves to fly them! Would any of us rent a certified airplane and fly it if most, if not all, of the airplanes warning systems buttons, horns and lights weren't working? Probably not. For one thing, you'd be violating a law (or at least a regulation), aside from the fact that you would be placing many others in danger, besides yourself. Would you start a certified airplane without first clearing the gascolator of any contaminants? Probably not. Would you fly your Velocity for the first 20 hours and not assume the fuel filter is potentially on the verge of clogging up due to unnoticed fiberglass particles being uprooted in your brand new fuel tanks from sloshing fuel around? Some do! Then again, some don't!

The difference between the "doers and the don'ters"..RESPECT! When you respect what you have built, you give it the same attention to detail you hope those mechanics did on that jumbo jet to Hawaii you're in. We must be willing to ground our airplanes whenever you would expect the same thing to be done on a certified airplane you're renting or an airliner you're taking a family vacation in. It's tough, but must be done! The future of our being allowed to build and fly experimental airplanes, with the freedom we have today, may just depend on it. Take Care...

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Factory Workshops in Sebastian Florida

*The first Saturday of each month,
Coffee on at 9:00 am, first workshop
starts at 10:00 am, with Lunch @
noon, ends at 3:00 pm*

Short Circuit



by Martin Hadley



Just a quick personal note to Wes Rose in Zeeland, Michigan: thermometers in Sebastian, Florida, don't go below 35°F!

It has been 10 issues of *VELOCITY VIEWS* since I started to contribute to the collective knowledge of aircraft electrical systems. I decided to go through the archives the other day and noticed that my limited wealth of knowledge has been tapped out. Well, maybe not completely.

In any case, this issue I offer a recap of all the things I have written about in the *VIEWS* since Volume 3...

Volume 3 is probably the most comprehensive thing that I have contributed. It has 5-1/2 pages of wiring "How To's", techniques, and a discussion on proper supplies and tools needed for an aircraft quality electrical installation.

Volume 6 covers pointers on selecting avionics gear, including some of the bells and whistles.

Volume 7 has a quick primer on using a volt/ohm meter and some of the pitfalls that you may encounter using it. It also covers the many types of diodes used in aviation, their applications and limitations.

Volume 8 talks about Compass corrections and requirements in your aircraft. I deviated a bit from electronics and discussed proper safety wire techniques (man, have I seen some lousy safety wire jobs in the experimental market!).

Volume 9 concerns inadvertent gear retractions on the ground and steps to eliminate the risk. I also devoted an entire page to many general tips and "rule of thumb" guidelines used by A&Ps and anyone who has had several years in the industry to learn them.

Volume 11 is devoted to discussing 100% electrical panels and aircraft systems.

Volume 12 deals with techniques that enable easier troubleshooting down the road as your airplane starts to age.

Volume 14...if there is anything that you would like to have me write about, I would certainly be glad for your suggestions. Not that the well is dry, it is just that I have been drinking from it so long! Maybe one of you has a thirst!?

As always, safe and speedy construction!

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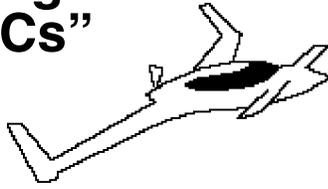
Owners Flight Manual

We have published a new owners flight manual, with 2 different versions, covering all our airplanes, that is 8 1/2" high and 5 1/2" wide.

It has room for all your weight and balance information along with the normal 100 hour/annual inspection procedures, emergency procedures, engine starting procedures etc. etc. This new manual will be shipped to all our new customers as part of the construction manual. If you want one for your airplane, it is available for our cost of \$8.00.



Kit Plans Changes “KPCs”



Note: Check the date at the bottom of your page. If it matches the “Date of Change” shown in the KPC, your manual has already been corrected.

We Goofed!

KPCs in Volumes 11 & 12 were incorrectly numbered. To avoid confusion, we have reprinted all the KPCs going back to Volume 11. KPCs 062 through 070 replace the incorrectly numbered KPCs from Volumes 11 & 12. Sorry about this mistake!

KPC 062

Affects: All RG’s
Manual Section:
Std. RG: last paragraph on page 8-6
173 RG: first paragraph on page 8-7
Date of change: 15 June, 1997

Change these paragraphs to read:
“Cut two pieces, one for each side, of 3/8” PVC foam, 6.25” wide by about 9” to fit between the top forward edge of the spar cap angling down onto the top of the gear bulkhead at the fuselage flange. Taper these pieces to fit. See Figure 8-4. It fits so that the inboard edge is aligned with the inboard edge of the gear bulkhead.”

KPC 063

Affects: All 173 RG’s
Manual Section: Figure 8-4
Date of change: 15 June, 1997

Change the wording for the horizontal foam bulkhead to:
“3/8” PVC foam fit from bottom spar cap to just below bend in gear bulkhead. Template provided.

KPC 064

Affects: All RG’s
Manual Section: Chapter 9
Date of Change: 15 June, 1997
Add the following information:

“Use only red 5606 hydraulic fluid in the hydraulic system. It can be obtained at any aircraft supply house or your local FBO can help.”

KPC 065

Affects: All Velocitys
Manual Section: 13.3.3
Date of change: 15 June, 1997

Change the second sentence of the first paragraph to read:
“If you are installing just the trim motors, you will need a 5-amp circuit breaker.”

KPC 066

Affects: All XL’s
Manual Section: 4.1.1 and 4.4.4
Date of Change: 20 September, 1997

In order to give more clearance between the inboard elevator hinge and the concentric torque tube, the locations of the hinge arms and hinges has been changed. Note that the new dimensions are referenced from the canard centerline. The new locations, starting from the centerline are:
23”, 43-1/4”, 64-1/2”, 85”

KPC 067

Affects: All models with Elite doors
Manual Section: 11.2.4
Date of Change: 20 September, 1997

Change the width of the hinge recesses from 1-3/4” to 2-3/4”, thus making the recesses 2-3/4” square. This is desirable since the hinges themselves are 1-7/8” wide!

KPC 068

Affects: All XL’s
Manual Section: 15.2.1
Date of Change: 20 September, 1997

The wording in the first paragraph does not match the figures. Change the phrase, “two 6” x 8” pieces of Triax” to “four 6” x 8” pieces of Triax”

KPC 069

Affects: All RG XL’s
Manual Section: 16.2
Date of Change: 20 September, 1997

On the XL’s the Belleville washer assembly should go on top of the fork, not under the fork. Also, the phenolic washer shown in the figure is not used.

Here is the order of components from the strut flange down:
Large washer
4 Belleville washers
Large washer
(steel sleeve within this assembly)
Fork
Large washer
Nylock nut
(see drawing to the right)

KPC 070

Affects: All XL’s
Manual Section: 9.1.2
Date of Change: 20 September, 1997

Since the gear legs are made of stronger S-glass, the carbon fiber reinforcing wrap is not needed in the area of the modification. Change the wording of this section to:
“The gear legs may need to be modified slightly in order to clear the spar in the retracted position. This must be done before the torsional wraps are laid-up on the gear legs.

In order to determine how much of the leg must be shaved, you must first fit them in the fuselage and rotate them to the up position. This will show where the gear contacts the spar and allow you to remove the correct amount. You should have about 1/8” of clearance since you must still put on the torsional wraps.

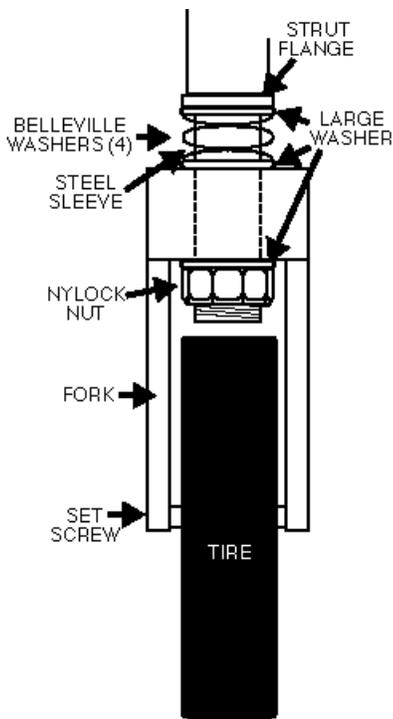
After this has been checked and any modifications done, remove the gear and remove the bushings.”

KPC 071

Affects: All RG’s
Manual Section: 9.6.1
Date of Change: 01 December, 1997

With the molded canard bulkhead it is better to use the following hardware to mount the slide guides instead of sheet metal screws:

Drawing for KPC 069



- (4) AN3-5A bolts
- AN960-10 washers
- MS21083N3 nuts

KPC 072

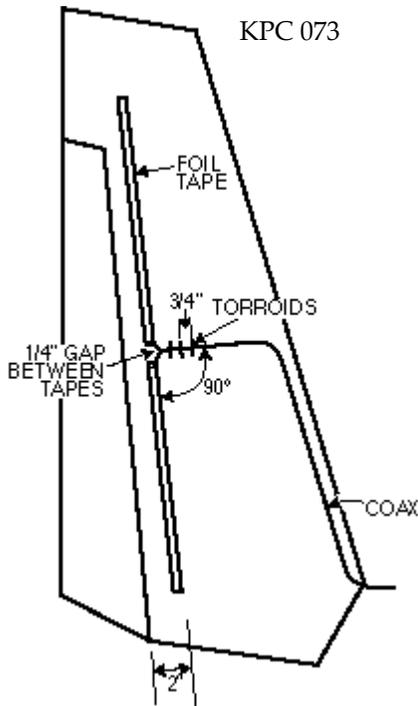
Affects: All planes with Elite doors, including XL
 Manual Section: Chapter 11
 Date of Change: 01 December, 1997

A section about installing the door seal has been added after section 11.4.3. Before installing the seal you must cut a groove between the door lip and the latch pin tube to allow the seal to slip on. See the figure at the bottom of this page.

KPC 073

Affects: All airplanes without Fast-Build wings
 Manual Section: 3.1.3
 Communications antenna
 Date of Change: 01 December, 1997

Change the wording and Figure to the following:
 The copper foil tape runs parallel to the rudder cut line and is 2" in front of the cut line on the outside surface of the winglet. Temporarily masking



tape the foil tapes down onto the foam with a 1/4" gap between them. Do not peel off the backing yet.

Pre-solder the ends of the tapes where the coax will be connected. Strip back approximately 1/2" to 3/4" of the outer insulation on the coax. Comb the shielding to one side, then remove 1/4" of the inner insulation surrounding the center conductor. Pre-solder both the center conductor and the tip of the shielding.

Mark a line on the foam for the coax as shown in Figure 3-3. It must be perpendicular to the copper tapes until it reaches a point approximately 1" behind the leading edge of the winglet. It then parallels the leading edge down to the bottom core joint

line. Burn a channel with a soldering iron on the marked line to accommodate the coax.

Next peel the backing off the foil tapes and press them in place. Feed the coax along the channel and solder the ends onto the tapes. Now press the coax and torroids down into the foam until flush.

The other end of the coax will be routed down the conduit hole in the wing to a quick disconnect at the wing root.

KPC 074

Affects: All Velocitys
 Manual Section: 20.2.3 Wings to Aircraft
 Date of change: 01 December, 1997

Change the torque values of the 1/2" wing attach bolts to 35-40 foot-pounds. This is basically as tight as you can get it with a 3/8" drive ratchet while kneeling under the wing.

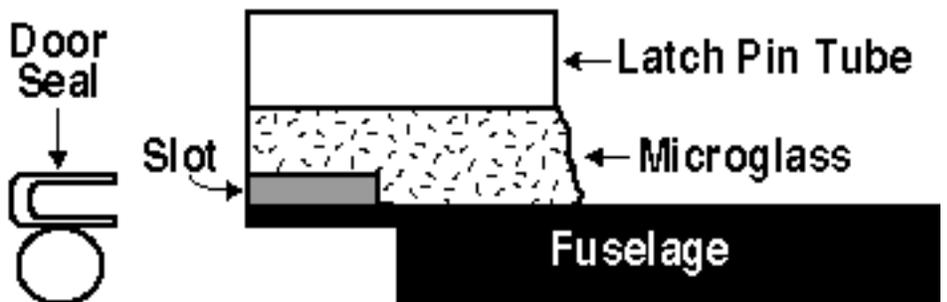
KPC 075

Affects: All RG XL's
 Manual Section: Page 8-6
 Date of Change: 15 Dec, 1997

Delete the following paragraph:
 "Trim the tops of the gear bulkhead to be even with the top of the lower fuselage flange."

The top of the gear bulkhead is actually approximately 3/4" below the flange line.

KPC's continued on next page



KPC 072



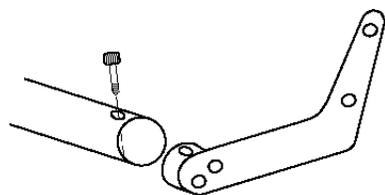
Safety Corner

**Accident & Incident Reports,
Maintenance & Service Difficulties**

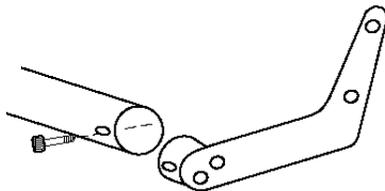
Safety Note

Sometimes I am taken back at what a builder will do on his airplane without a clue as to the potential danger of his action. Case in point:

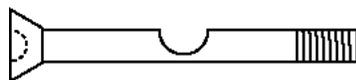
We're doing a pre-buy inspection on a Velocity RG and notice an abnormal amount of slop in the elevator torque tube. We could hold one elevator and move the other one up and down about 3/8". We removed the canard and found a rather interesting condition. As most of you remember, the counter weight arms at the inboard end are slipped into the torque tubes and fastened with a 3/16" bolt that passes through the torque tube, through the aluminum plug and out the other side. The following sketch will clearly show what I am talking about.



In this case, the builder drilled his attach hole at 90 degrees to the previous sketch, like this:



As you can see, the bolt hole was drilled through the two counter sink bolts that hold the aluminum block to the counter weight arm. One bolt was totally drilled through and the other had, perhaps, 1/16" wall left.



It wouldn't take more than moderate turbulence or may be a 2 G turn to shear this bolt.

If this airplane had ended up in a crash and burn, the cause would probably never be found. This is a sobering thought and totally unac-

ceptable for all of us. We must use some common sense in building our airplanes and if your using contract labor, as was the case here, check everything. It's your health and safety that is at risk.

Scott

Fatal Accident Report

MARK, NANCY, AND DAUGHTERS

Scott, Bonnie and I just returned from the funeral of Mark and Nancy Ewart and their two teenage daughters. All were tragically killed when their Lycoming powered Velocity crashed into a heavy wooded area near Florance, South Carolina. This is the kind of thing that makes me want to give up anything that has to do with aviation and live out my life in a rocking chair. It is important, however, that you receive as much of the facts as we know them so that we can learn from their sacrifice. Keep in mind that the official NTSB report will not be available for some time and some of the things that have been said, that may be said in the future, will have to be reviewed,

Continued on next page

KPCs

Continued from Previous Page

KPC 076

Affects: All RG XL's
Manual Section: Figure 9-8
Date of Change: 15 December, 1997

The figure INCORRECTLY shows the 12-5/8" measurement starting at the top of the gear bulkhead.

The 12-5/8" measurement extends down from the lower fuselage flange, NOT from the top of the bulkhead.

Also change the measurement between the two pivot holes from 31" to 37".



Duane talks with some folks about the Velocity XL at the AOPA Convention in Orlando Florida, held this past November

retractions made if necessary, and the facts presented accurately based on the official report.

For me, this story started on Wednesday afternoon, November 26th. At about 1:30 I received a call from Mark asking if I had an electric motor assembly I could ship to him to replace a defective one on his IVO prop. Mark said the pitch was stuck in the takeoff position and he could not make it change with the toggle switch. He said he was going to remove the prop and adjust the pitch to a neutral position and continue his flight as a fixed pitch. He wanted me to send the motor assembly to his destination and he would replace it on Friday. Thursday afternoon I received the news that Mark and his family died in the crash of his airplane at about 4:45 PM Wednesday near Florence, South Carolina. Mark had been in communication with the Florence airport and reported north of the airport that he was experiencing engine trouble and then reported the engine was not running. There was some radar vectoring given to Mark, however, he never reached the airport. There was also little communication during his glide and no indication of any control problems.

The NTSB confirmed that Mark had removed the prop in Savanna Georgia, re-adjusted the pitch manually, re-installed the prop using a torque wrench, and safety wired the prop bolts. There is no way of knowing if the torque was adjusted properly. There was also, apparently, no testing of the torque after a 30-minute ground run as required by IVO. What we do know is that one of the blades of the 3 bladed prop was not found at the accident site. The engine was still attached to the engine mount and the mount to the firewall. The mount had, apparently, suffered some cracking due to the vibration when the blade departed the airplane. This is probably when Mark shut the engine down as the NTSB confirmed the engine was not turning when the plane struck the ground. The NTSB will be conducting tests on the IVO propeller to see if there are any serious problems with the design of the blades and/or

the retention system.

So, where do we go from here? First of all, until all the facts are known, we shouldn't jump to any conclusions. I will, however, recommend that further flights using the Lycoming IO360 200 HP engine and the IVO propeller be terminated. It may be that your history with this combination and your ability to monitor the prop will give you the confidence that I lack at this point. For those of you with the Franklin engine using the IVO, I would strongly suggest you check your prop torque prior to every flight and use the REQUIRED metal tapes between the blades and check them often.

Mark, Nancy and their two daughters will be missed by all of us who knew them. They were all Godly people who have now found a new home in heaven. The angels rejoice.

Duane

IVO Propeller Corp Statement

Duane and I spent about an hour on the phone with Ivo discussing the facts as we knew them concerning Mark's fatal crash. We mailed Ivo a copy of a summary report of prop accidents prepared by one of our builders from info he received from the EAA information service. We also passed on the fears that have been expressed on the internet about the IVO Prop since Mark's accident. We asked Ivo if he would make a written statement concerning Mark's accident, the Ivo Magnum prop and electric hub motor. Below is Ivo's statement.

*From IVOPROP Corporation,
Bellflower CA, 562-602-1451*

The Prop on Mark Ewart's plane was not installed in compliance with our instructions:

- Motion detector tape was not installed. I saw Mark's plane in Oshkosh without the tape and asked him to put it on. So did Duane Swing, with no result.

- The torquing sequence intervals were not followed. That's all we know for sure and anything more than that would be speculation (Pending more confirmed data from the NTSB, a follow up report will be published in the next newsletter).

Regarding the electric hubs (motor) in service: There have been several upgrades to the gears and the motor. Anyone who wants to have his electric hub inspected can send it to us and we will make sure it's up to date.

It was brought to our attention that there has been some anti-Ivoprop propaganda on the internet based on EAA information services prop incidents. About 3 years ago, we encountered a very special individual who managed to plant all kinds of "information" into this service. This individual tried to fly himself with a propeller built out of Ivoprop, by adding a few pounds of fiberglass to the blades and drilling out the boltholes. After he blew this contraption apart, he tried to make us pay for his plane. When we explained to him that we do not make propellers like that, he became disgruntled and started the hate mail campaign which eventually ended up in EAA information services.

It appears that this recent anti-Ivoprop propaganda based on a new version of this information service. The earlier version in 1995 was somewhat different (see next page for a sample of both versions). After we mentioned that it might have been difficult for this person to come to our display in Oshkosh 92, because we did not have any display there, they (EAA) came out with a newer version of the same incident (see next page).

We claim that these incidents are made up or the prop was modified, mis-installed, or had prior damage. Apparently anybody who wants to report anything into this information service can do so. Otherwise it's a great service and we encourage everybody to participate.

Ivo

Continued on next page

Older Version, same incident

The aircraft that the prop was installed on was a Mariner Mono-wing Amphibian with a Rotax 503 engine. It was a 3-bladed 68" diameter Ivo Prop. Both blades cracked and came apart at the roots, and just about fell off before he could land the aircraft. Ivo gave him a "run-around" about these props; he would not stand behind them or refund his money or exchange them. Ivo would not return his phone calls, so he went to the Oshkosh Fly-in on 08/01/92 and 08/02/92 to find the Ivo display and to confront him about these props. When he found Ivo, he showed them the props that had cracked and fell apart around the root of the props. They denied any responsibility and if he pursued this or said anything to anyone, they would sue him. He has not received his money back.

New Version, same incident

7/2/92 IVOPROP THREE-BLADED 68" DIAM - MARINER MONOWING AMPHIB W/ ROTAX 503 The aircraft that the prop was installed on was a Mariner Mono-Wing Amphibian with a Rotax 503 engine. It was a 3 bladed 68" diameter Ivo Prop. Both blades cracked and came apart at the roots, and just about fell off before he could land the aircraft. It is very possible that this prop on an amphibian had the damage from striking water.

Velocity Etiquette

Velocity \ proper noun 1: a four passenger high performance state of the art canard pusher homebuilt composite aircraft
Velocitys \ plural of Velocity
Velocitite \ a person that builds or flies a Velocity
Velocitites \ plural of Velocitite

FAA Paperwork needed prior to your first flight...

by Rick Lavoie

Remember "ARROW" from your private pilot written exam? Well you better remember it prior to your first flight. This acronym spells out the paperwork you must have aboard your plane for your first and every flight.:

A = Airworthiness Certificate

R = Registration

R = Radio Station License

O = Operators Instructions

W = Weight & Balance

Note: Through the efforts of the AOPA, Radio Station License is now only required if you plan international flights.

First off, you should get a copy of FAA Advisory Circular "AC # 20-27D", which is Certification and Operation of Amateur-Built Aircraft. Your local FSDO should have them in stock. If not, try the EAA or AOPA, or the Government Printing Office. This document covers what you need to do to document construction, etc. It is must reading for any homebuilder! Everything that I am highlighting below regarding registration and certification is in this circular in detail.

You will most likely want to reserve special registration numbers. You can call the FAA at 405-954-3116 to see if the registration number you want is available. Or you can write to the FAA and list 5 choices: Federal Aviation Administration Aircraft Registry POB 25504 Oklahoma City OK 73125 Be sure to enclose a \$10 check (good to hold your number for one year).

About six months prior to your first flight, you need to get all the other paperwork going. Prepare AC

form 8050-88 which is the I.D. number assignment and registration of your amateur built aircraft on one side, and on the other side, the affidavit of ownership. Also, prepare AC form 8050-1 (application for aircraft registration). These forms go to the FAA registry with a \$5 check, along with a copy of your Invoice from Velocity Inc. You will receive your aircraft registration certificate from the FAA in about 3 months. You need to have this prior to your pre-first flight FAA inspection.

To get your airworthiness certificate, you will need to have a copy of form 8130-6. I used John Murphy (FAA DAR) for my inspection, and John prefers to fill in the form together. John charges \$200 for the inspection for a local trip. Check with your FAA Inspector or DAR first. Everything on the airworthiness application must match exactly to your registration certificate. When you call your local inspector or DAR, be sure to go over a checklist of items that he or she will expect to check for. John Murphy did this with me and it saved us both a lot of time. In general, your Velocity must be ready to fly, but with the engine cowling off, and inspection panels off. Registration marks must be on (even if in primer), metal ID plate riveted to the fuselage (I put mine on the fuselage (pilot side) below the wing strake, near the gear, "passenger warning" placard and the "experimental" 2 inches tall markings in the interior. Be sure all placards labeling your instrument panel per the Velocity Owners flight manual

Continued on page 18

New Kit Options Catalog Due Out Soon

Velocity's new kit options catalog is due off the press any day now. Be sure to call the factory to get on the list if you want one mailed to you. This options catalog has doubled in size, and has just about everything you will need during construction of your Velocity!

Wes Rose First Flight in his 173 Elite, just 14 Months after Receiving his Kit!

After reading Rick's article on his first flight experiences, I thought I would update everybody on our progress. Our 173 Elite FG made its first flight on September 6, just 14 months and 3 days after the kit was delivered. Yes, we did build the wings and I do have a day job. The plane is in primer and the interior is not complete, but we will finish that this winter when the snow is too deep to fly.

In Rick's article, he talked about being ready for that first flight. I know I was not. Being a low time fixed wing pilot to start with and after spending 14 months building with very little time to fly the Piper Cherokee that I got my fixed wing rating in, I needed to find some help. I talked to a friend of mine, (Wayne Knoth who has over 4,000 hours in about everything except a Velocity), about going to the factory with me for flight training. He agreed and it was time and money well spent. Tom Jeter did an excellent job of preparing us not only for flying, but what to watch for on the first flight. I left there feeling like I would be able to handle the plane if everything worked properly. Wayne received the training he needed to make that first flight

Our first flight wasn't much different from Rick's. The oil temperature started climbing and it took almost full right rudder to correct the yaw. Wayne missed his first approach and went around again. By that time the oil temp was up to 250 degrees, so that ended the flying for the day. Wayne did the first three flights for me. By the end of the third flight, things were working good enough for me to take over. The reason for the oil temp problem was the outlet was restricting the airflow.



Wes Rose's 173 Elite sits after an exciting first flight. Wes took only 14 months to build his plane, including his own wings! Wes must have burned a candle each and every night and all weekend long! I remember that feeling!!!



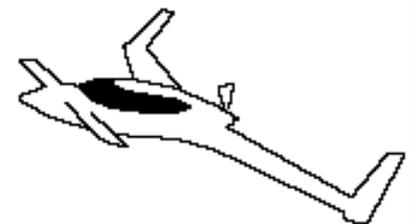
Wes has been having too much fun flying his new Velocity too finish his interior. He plans finishing his bird (paint and interior) when the good flying weather is over. Sounds like a good plan to me!

The left rudder was .160 out at the trailing edge more than the right.

To sum things up, there are a lot of things in that plane that could be a little out of adjustment and lead to big trouble in the air on that first flight. So, get a check-out by the the factory before your first flight, and if you're still not sure you're ready, get someone else to do it for you.

On November 11, I finished flying off the FAA requirements. I am send along a couple of pictures, one of the instrument panel and one of the plane. We wish everyone a safe and Happy New Year!

Wes and Becky Rose, Zeeland, MI



Looking for First Flights and Flying Velocity Stories

When you get your project airborne, send photos and information about you and your Velocity to Rick Lavoie at *Velocity Views* Newsletter.

Builders

Forum

Builders Forum is full of tips, information and letters ("material") supplied to *Velocity Views* Newsletter from individuals that are Velocity builders (or want to be builders). It is provided as "USE AT YOUR OWN RISK" material. Neither Velocity Inc. (The Velocity Factory) nor *Velocity Views* Newsletter (Lavoie Graphics & Rick Lavoie) have endorsed this material, and disclaim any liability for the use of this material. Individuals who use this material for the operation, maintenance, or construction of their homebuilt aircraft do so at their own discretion and at their own risk. Any variance from the builders manual is high risk.

Top Strakes Made Easier

From Jim Willisie, Palm Harbor FL

Although the factory can build them leak-free, the war stories scared me, so I took every precaution possible (probably overkill).

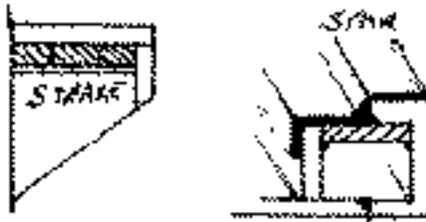
1. The fuel bulkheads surround the entire perimeter except along the fuselage, so I added a 1" wide foam lip along this area for a complete strake platform instead of just a butt joint. I also added a small piece near the front at the door edge for a temporary support.
2. The manual warns against shifting the strake when it's finally laid on, so you won't slide the goop off into the tank and/or create gaps. This is good, but only one dimension. Also important is not to press down too hard and then ease off, because this will also squeeze the goop out. To guard against over squeezing, I made about a six HIGH-POINTS with micro daubs that I filed down to the desired height. This then allows all the pressure you want without the risk of over squeeze.
3. The bulkhead and baffle flanges were next, but I made mine differently. Instead of just wide T tops, I made them V shaped with flexible sides. I did a narrow one fine bid lay-up on each upper side of the baffles that extended about 3/8" above the top. Then later, when it's not sticky but still pliable (we need to invent a word for this stage), I rolled the edges outward forming a V. The cured edges are flexible since they're only one ply and flex to contact to top perfectly.



4. Next, the hardest area to seal (inverted) is the area between the rear fuel bulkhead and the spar (using the 'stick trick').

This headache can be eliminated before the top strake is put on by adding horizontal foam pieces from the back of the rear fuel bulkhead to the main spar (under its top lip). By making this 2 or 3 pieces and steps depending on the length of your forearm, each piece can be completely finished and sealed underneath while it can be easily reached. You can also add the two brace pieces D and B while you're at it.

The final step is to fill, radius and seal the top side, bidding from the inside face of the fuel bulkhead over the new horizontal piece and up onto the spar cap. Now the whole thing is a gas tank and any leaks would have to be back of the spar and easy to fix (rather than inside this access space).

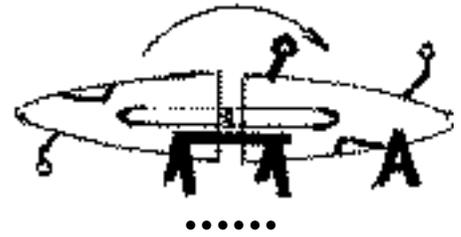


But if you still have to flip the plane over...

5. VELOCITY "OVER-EASY". Rather than invent another weird contraption to bolt to the plane, I tend to look for abstracts and discovered that changing the environment was easier. If you either dig a ditch or use two sawhorses (much easier) the plane can flip on its strake tips like a gyro. First I bolted two 10" x 10" pieces of wood to the outboard wing mount holes to protect the skin edges.

Then simply align two padded sawhorses at the strake ends and push it over. The horses take all the

weight and a third person with a pole (notched PVC pipe) can catch and balance it at the blast off position while the lifters change sides and ease it down onto a third sawhorse sideways at the canard bulkhead.



Sheet fiberglass stock, & other Tips

From Bill Wade, Unity, Maine

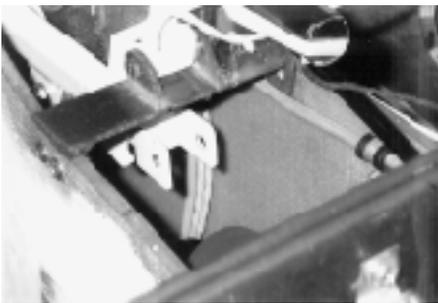


I have found sheet fiberglass stock to be a very useful material for fabricating parts or to provide a former for layers of reinforcement. It can easily be made by waxing a sheet of glass with mold release wax then applying mold release (PVA). It's best to use an unframed piece which will lay flat on a supporting surface. The required number of fiberglass plies are laid up in the usual manner followed by a layer of peel ply, then Glad Wrap over all. I usually use two or more layers of triax. There should be at least a 1" border of prepped glass all the way around and the Glad Wrap must extend beyond the laminate. Then take a rolling pin and slowly roll the excess epoxy from the cloth, working from the center to the sides with progressively slower and firmer strokes, sealing the plastic

with epoxy all around. It is possible to squeeze too much resin out resulting in surface voids. After cure the PVA allows the sheet to peel off the glass easily and provides a protective coating which can be peeled or washed off with water. The peel ply should also be kept on as long as possible. The result is a material which is glassy smooth on one side and prepped for bonding on the other.

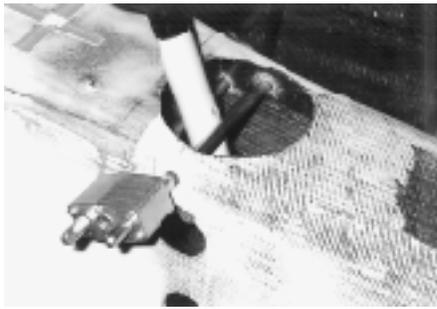
I recently discovered that it can be formed with one or more flanges, which opens up all sorts of possibilities. All you have to do is wait until the sheet is tacky but still soft. Insert a tape knife between the PVA and glass, then peel up the desired amount and bend. I used a duct-taped piece of 2x4 as a form.

Sheets can be bonded with microglass to make massive pieces-



the picture shows my nose gear over-center safety strap, which is made from various thicknesses. It also shows part of the overcenter catch I came up with. Since there is some controversy about this I won't elaborate but if anyone would like more details they can contact me: bill-wade@concentrie.net or 2692 Town farm Rd.; Unity, Me. 04988. The material can be heated and bent and I have used it to form flanges in some areas rather than doing duct tape layups. When doing this I bond a 2-ply triax piece then reinforce with additional layups as needed.

When I flipped my fuselage some hydraulic fluid leaked out of the reservoir and spread through much of the fuselage. Solvents cleaned up a lot of it but left other areas untouched. I found that dust from sanding fiberglass will draw the stuff out of crevices like nothing else- now those sweepings get saved.



I have included a picture of my antitheft device- it's self explanatory. I reinforced the console with sheet fiberglass where the lock passes through. The stick is held full forward in order to keep the nose down in gusts. The lock pokes into your leg so it's hard to overlook even if you were to ignore the lack of aft stick motion.

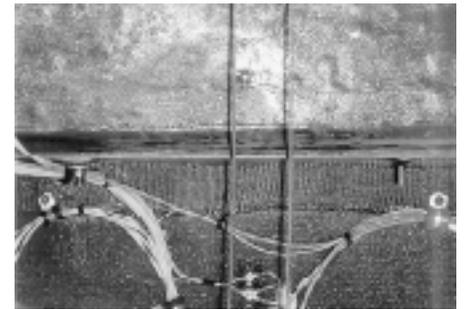
When sanding the wings the dust can help outline low spots. Spread micro dust over the area. Take a long (1 - 2') flexible straight-edge, lay it flat across the contour and draw it sideways, pushing the dust from one side to the other. If done carefully the dust will remain in even very slight dips, allowing the low spots to be traced for later filling.

There are times when a stud is useful for attaching clamps. I rough up the heads on ANS2S screws and tack them to the surface using 5-minute epoxy with some microglass. Then I fill in around the head with Ezpoxy micro followed by two layers of BID, 1 - 1/2" square. The weave can be opened enough to slip



the patch over the stud. One picture shows a gear leg, and in this case the studs are to attach the gear door. Next to them is a brake hose clamp made from a nylon tie threaded through two layers of BID, about 1" square. It's best to form the hole oversize to permit later replacement.

Heatshrink tubing does a very



good job of masking stud threads. It also protects them from damage.

When it came time to install the pitch trim and A/P servo I discovered that it was not very easy to visualize clearances from the avionics. I wanted to be CERTAIN that there would be no interference. I made dummies of the equipment from blue foam, allowing extra



length for connectors and wire loops. These were hot glued into place on the instrument panel as shown. As can be seen, I've opted for a different style of canard cutout. It has made installation of everything in that area much easier.

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A Canadian Version

From Richard Dargis, St. Vincent, Alberta, Canada

1997 is coming to a close and what a year it has been to all of us first airborne Velocityites. Speaking for myself, Velocity 173 RG E C-FZST first took to the skies on July 6th with Tom Jeters at the stick. After 12.5 months of assembling, fabrication, sanding, painting and go for this, go for that, the real thing was heading down runway 08 for its very first flight. This first flight, however, was very brief with one circuit done and grounded for a few hours due to high oil temps. A few hours later, another flight was undertaken with little difference in oil temperature. Tom managed to

climb to 8000', keeping the oil temp slightly under 240j. Over the next few days, Tom managed to accomplish the low and high envelope testing of the airplane.

C-FZST is powered by a new 220 HP Franklin. At the time of my flight testing, we were using a 2 blade wood prop supplied by Scott Swing's kind heart. During Tom's last take-off roll, shortly before rotation, a loud bang was heard by Tom and by all spectators. Without hesitation, Tom aborted take-off and returned on the ramp. I soon realized I had forgotten a pair of pliers on top of the engine at which time they decided to exit when Tom would apply full power. No flights were resumed with the propeller damaged. Sorry, Scott. I owe you one.

Tom had to leave after a few days and the excitement was not to end just yet. Still fighting high oil temperatures, a stiffer spring was installed in the oil cooler by-pass group. This would later prove to increase oil flow to the coolers and reduce temperatures by 35 to 40 degrees. It would also reduce oil pressure by 15 lbs. to about 46 PSI. This was acceptable.

By July 15th, our new Ivo Prop arrived and was installed over the next few days. July 17th, 6pm. This is it. My very first flight looking right at me. The skies are high overcast, wind calm, time to go. Heading down runway 08, the aircraft lifted off sooner than expected with quick acceleration. Soon after, I relaxed a little and the airplane felt like a rocking chair in your living room. The ride was smooth and all functions were normal. The remainder of the flight was fairly routine. I should mention that in March of this year I had the opportunity to get eleven hours of training at Velocity in Florida. It also gave my wife Lois great pleasure to come along to tour parts of Florida and also fly with myself and Tom over the Kennedy Space Center, as well as to spend time with all the great people at Velocity headquarters. The training I received at Velocity with Tom was priceless when the time came for my

first flight.

July 18th, 8:15pm. Everything had gone so well the previous day, it was time to do it again. With calm winds and the sun shining high, take-off was accomplished on runway 26. Gone for an hour of local sightseeing, it was time to return. Crossing the runway at circuit altitude, I performed a quick pre-land check including down on the gear switch. I heard the gear motor start. Everything's looking good regarding my approach turning final for 26. This touchdown was like no other. With a very loud bang and the screeching of fiberglass to a halt was indescribable. You see, my friends, the gear had only partially come down and I was not expecting a belly flop. After the aircraft had stopped, I got out in disgust, looked behind and black smoke was starting to come out of the engine department. Looking inside, flames were roaring against the stainless steel firewall. Panic is setting in. With absolutely no one around the airport this evening, I start running to my truck in front of the hangar so I can call the fire department. Thinking poorly, but thinking a little nevertheless, I realized I had an extinguisher under the seat of the airplane. I returned for it and put the flames out instantly.

After the dust settled, I skidded the aircraft back inside the hangar and went home to bed. The following morning, the military Search and Rescue arm was looking for me. My ELT had been left on and a satellite was picking up a signal. A military aircraft had landed in St. Paul and four military souls were apparently looking through the hangar windows. A friend was able to let them inside to shut down the ELT.

I blame this incident on equipment malfunction and pilot error. I did not observe my two landing gear green lights. Obviously, they were not on. Not being very familiar with the airplane's noises and quirks, I neglected to negotiate a full pre-landing check. Turning final at about 9:15pm, the sun was in my eyes, impairing my otherwise obvious sight of the gear down lights.

Regarding equipment failure, when I heard the pump start, I didn't hear it continuing and stopping. This gear had been cycled at least 25 times in the hangar just days before. I couldn't understand it. One explanation: I had climbed to 10,000 ft. this particular evening where the air was cold, about 33 degrees F. After descent, I feel the temperature of a cold pump with cold switches was a contributing factor. After much troubleshooting, replacing a faulty manual gear down valve, setting the up and down cycle pressures by the book, today the gear pump still will not always bring the gear down on command.

The damage to the aircraft was unbelievably low. A patch about 1 sq.ft. on the underside was worn through, not through the foam, just to the foam. Scratches about 30" long, of course the scoop in the bottom cowl was replaced and those nice new propeller blades. The fire had only melted the manifold pressure hose. It was a set back, both psychologically and time consuming. By September, we were airborne again.

My advice to fellow builders is to get current time in a Velocity before take-off. Always carry and maintain a good approved fire extinguisher. Install a good sheet of stainless steel for your firewall. An ELT is compulsive in Canada and I recommend one for everyone. The above will save you and your airplane.

Our airplane ended up being on the heavy side at 1625 lbs. Since we are not in Florida, in Western Canada provisions have to be made for other variables. Regulations are part of it, e.g.. stainless steel firewall. Our engine is fitted with exhaust heat mufflers on both sides along with fan motor and roof ducting. Our aircraft is a 173, and, although the manual doesn't give a weight, our 173 is at least 100 lbs. heavier.

Thank you Scott, Duane and staff for your help at Velocity. Also thank you to Mark and Nancy Machado for getting us started with their kit as well as all their great advice during our building experience. A special thanks to Tom Jeters

for his professionalism and courtesy. Tom is a dedicated pilot who is alert and polite. Many thank-you's to Rick and Judy Lavoie for their many efforts in finding solutions to the oil temperature problems. Their unselfish actions of communicating all their findings to all concerned is to be commended.

As a final note of interest, Atlas Motors will no longer be importing Franklin engines. Atlas is in default with PZL in Poland.

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More Franklin Engine Info

From Rick Lavoie, St. Augustine Florida

Be sure that you have the most recent editions of PZL's manuals. I had an out of date "Engine Description Operation and Service Manual" dated back to 1991. The newer manual is dated Feb 1997, and has 26.0.197 as its part number. The other two manuals are both dated July 1996. Also, if you want proof that the TBO is raised to 1500 hours, get Service Bulletin PZL-F/58/97.

PZL has promised to send a complete set of their service bulletins that pertain to the Franklin engine to both me and Velocity, Inc. They are in the process of converting them to English. There is one service bulletin that Duane and I received that pertains to installing Slick magnetos on a Franklin "PZL-F/50/96". It covers the parts needed, adapter dimension, installation procedures, etc. Be sure to get a copy if you will go with Slick mags. Duane plans on adding the PZL service bulletins to his Franklin engine installation kit instructions.

Judy and I are in the process of creating our own web site for Lavoie Graphics. The URL is lavoiegraphics.com and it should be up and running fairly soon. I will dedicate one section to *Velocity Views* Newsletter. The reason I'm telling you this now is that I plan to have a section for you to download certain files of interest. For example, I'll scan the many faxes that I have had with PZL and their service bulletins and you will be able to download them yourself.

I have ordered parts direct from

PZL twice now. Their service is very good. When ordering parts or manuals, be sure to follow these steps. Fax your order to PZL-Rzeszow at 011 48 17 625 325 attention Mr Wojciech Kutta, Sales Dept. If you are in no rush, they will mail your order. Regular mail takes 6 to 8 weeks. If you need it fast, specify DHL for fastest service. Payment will be either by an international wire transfer to PZL's bank, or you can "air mail" them a bank check. If you mail a check, be sure to send it "AIR MAIL - Letter Rate" (it costs about \$1). When you fax your order, be sure to list the items, quantity needed, and the part number (see their parts manual). Mr Kutta will fax back to you a confirmation, showing the amount due PZL in dollars. When DHL delivers your parts, you will then pay the DHL shipping cost.

By the way, I now have 92 hours on my Franklin. It still runs great! For those of you into numbers, here they are. These numbers are from a long X-country trip at 9000 ft with a strong head wind (wind at 167° / 26 knots). Outside air temp 59° F, Indicated air speed (not true) 152 knots, True Air speed 177 kts, 2620 RPM, 22.2" M.P., Oil Temp 197° F CHT's (1-6)

355 319 338 379 326 332

EGT's (1-6)

1270 1230 1260 1230 1120 1180

Bat 13.6 Volts

Fuel burn 11.4 GPH

It took me just 2 hours and 30 minutes to fly from St. Augustine FL to Knoxville TN (with a head wind too). Not bad! By the way, my return trip home saw ground speeds of 198 KIAS, with flight time of 2 hours and 10 minutes!

Other Franklin notes:

Sam Muncy reported a problem with his starter (oil getting into his solenoid). He has had to pull the starter to drain out the oil more than once. He is sending me some photos for me to compare against my starter. We are wondering if this is going to be a problem for all of Pat Goodman's starters (or just unique to Sam's).

I recently called B&C Specialty

Products about starters and other accessories for the Franklin. They are in the process of coming out with accessories for the Franklin. That is great news to me, as I used B&C parts on my Long EZ trouble free (starter, alternator, regulator, battery). Give them a call (316-283-8000) to get on their list for Franklin parts

Simon Aegerter has agreed to use his new Franklin powered Velocity for oil temp testing. Simon's plane is here in Florida, so it will be easy for me and Duane to fly to his site. Simon is set up just as I was (1/2" oil lines to cooler, etc.) before I changed to 5/8" oil lines & a bigger cooler. Thus he will be an excellent source for comparable testing. What we plan on doing is to fly the plane as is and record bench mark data. We will then change to PZL's stiffer spring (controls oil cooler by-pass valve) in the oil by-pass housing. Simon plans on his first flight right about the time you have this in your hands (Jan '98). We'll report back in Volume 14. Once we have confirmed what the new spring will do to oil temp and pressure by flight testing, we will report our data to PZL in Poland. PZL plans on issuing a Service Bulletin specific to this installation.

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New Franklin Dealership Negotiations Started

Brian Michalk, a builder of a Velocity FGE has been in negotiations with PZL-Rzeszow in Poland, the manufacturer of the Franklin engine. "At this time, PZL is interested in how many engines I will be able to purchase in the next year. I would like to ask the readers of *Velocity Views* what commitment I can get regarding engine purchases."

"If this new business works out, I'll start out as a dealer; I'll stock manuals, and replacement parts. Customer support will be given a lot of consideration as well. In the future, if everything goes well, I'll expand into offering repair services, engine break-in, and complete installation kits."

Continued on next page

Brian, who resides in Austin, Texas, has other interesting projects on the table. As some of you may know, the Austin Mueller Airport, which has been the main airport for years, is closing in the next year or two and moving its operations to the old Bergstrom airfield. Executive Airport, a reliever for Bergstrom, is closing as well. Since this affects many general aviation pilots, the small airports surrounding Austin have waiting lists that are filled. As a result, Brian is looking at what is involved in purchasing land just outside of Austin and putting in an aviation community.

Anyone wanting to relocate to the beautiful city of Austin, contact Brian! He welcomes any suggestions, warnings, tips, etc. in making these projects run smoothly.

Interested people may write to:
Brian Michalk
2204 Lockwood Cove
Austin, TX, 78723
(512)467-3935 voice at work
(512)928-1112 voice at home
(512)465-7914 fax
michalk@awpi.com

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From Dennis Martin, Provo Utah
**TIPS FROM A ONE-YEAR
BUILDER AT THE HALF WAY
MARK**

Nose gear wheels today. What a rush! It gives you the confidence that you will indeed finish building this plane and THAT YOU WILL FLY.

As I whistled while I worked, I promised to share a few tips that might help future builders. Nothing absolute or empirical here, but these things worked for me. (I whistled most of the time, cussed some of the time).

TIPS ON STRAKES

1) Easy way to fit baffles/bulkheads: Cut three dozen small blocks (rip a 2 X 4 in half) and hot glue small blocks in place on the bottom strake to hold the baffles/bulkheads in place while you mark and fit them. They slide in and out of the blocks easily so you can grind and cut them outside the strake. Don't remove the blocks until you're sure you have a good fit on all pieces and there's no

contact with the top strake. Thank Jim Agnew.

2) The diamond cutting wheels from Harbor Freight (for use in Dremmel tool) are great for trimming off your bulkheads/baffles to fit, but the wheel diameter is too small to cut through the whole "sandwich."
Solution: Force the shaft into the foam so it cuts between the glass sandwich; it will cut both sides of the glass sandwich with one pass.

3) Pre-bedding strakes (a tip I got from Malcolm Collier - Hangar 18) is a great way to go. I haven't pressure tested yet, but everyone I've talked to who used pre-bedding got a bullet proof seal on their fuel cells. Pre-bedding is accomplished by applying duct tape to the top strake lined up with your baffles/bulkheads and leading edge. You "pop the top" after cure and inspect for any voids. Repeat the process until you have nice, wide flat "rails" on top of the baffles that resemble railroad tracks. When everything is mated properly, you do the final bed.

4) Watch out for exotherming epoxy when applying microglass to baffles. I had two batches therm on me, and both drooped and ran down sides of my bulkheads. Mix small quantities depending on ambient temps. I resorted to using no more than 6 to 8 shots from my pump, and that was with OAT at about 75 F. Be careful using Zip Loc bags - they transfer body heat. Also, after mixing your micro, spread it out on the sides of your mixing cup. (Another Malcolm tip). The thinner you spread it out, the less exotherming potential. Hold the cup by the lip to avoid transferring body heat into your micro. Maybe no one else had this

exotherming problem when trying to get micro to "stand at attention" on top of the baffles, but it drove me crazy. Once it starts to therm and run, scrape it off and start over - it's hopeless.

5) How to get epoxy to "stand at attention." It's important to get the epoxy to stand up, fat and tall, on top of the baffles and bulkheads. This worked for me: Mix 1/3 milled glass, 1/3 flox, 1/3 cabosil. Test on small sections and experiment until you

get the right formula.

6) How to get an even bead of micro for the final bedding: Buy a half dozen empty caulking tubes from your local fiberglass supply house. Mix your microglass to a consistency of cold, thick honey. Put it into the tube. My final micro material "stood at attention" on top of the bulkheads perfectly. It never ran or drooped - even on the downhill bulkheads at the leading edge. If you don't have a local supplier for empty tubes, (about 80¢ each) call this number: (813) 327-8117 or fax (327-6691) Tell them Jim Agnew sent you.

NEED FOR SPEED? GET CARBIDE/TUNGSTEN GRINDING TOOLS Back in March I posted a note on the reflector. I needed some good glass grinding tools for my dremel and die grinder. Bill Wade responded. The tips he recommended are MEGA-TIME-SAVERS in my opinion. I don't know how I would have done the fuel strakes (and many other tasks) without them. Call Woodcraft at 1-800-225-1153. Bill told me they last long time and any crud can be burned out of them with a torch. Avoid grinding steel - flattens the burrs. The three tools I used most include a cylindrical shape, a rounded bottom, and a flame shape. All are very useful for roughing up corners when prepping for glass; they leave a nice, rough bonding finish. One of Bill's tips: "I needed some large holes in the instrument panel, so I drilled with a 1/2" bit then opened them out with the 1/4" shaft conical bit."

THREE RECOMMENDED CARBIDE-TUNGSTEN GRINDING TOOLS

1) Silver Burr Coarse F (\$17.99) Part Number: 18N1F Description: 1/4" shank. Has 7/8" diameter cylinder with squared, flat bottom.

2) Silver Burr Coarse E (\$17.99) Part Number 18N1E Description: 1/4" shank. Has 7/8" diameter cylinder with half-round bottom

3) Silver Burr Coarse I (\$11.99) Part Number 18N1I Description: Shank fits dremmel tool. This burr is pencil or flame shaped with 3/16" diameter. I use it a lot to grind in small spaces. It was essential for installing

my fixed gear legs. It allowed me to grind-to-fit a tear shaped hole with the gear legs inside the fuselage. With this tool, I could also install the gear saddles with the gear legs inside the fuselage. No endless up and down with the fuselage. Also, no need to cut the massive hole in the side of your fuselage. Call or email me if you have fixed gear, and want to follow this procedure.

USE CABOSIL FOR STRONG EDGES

The manual called for microballoon to fill the gaps in the speed brake doors, the hatch, and the door frame. I said a few "darns" as the microballoon crumbled and flaked off rather easily. Malcolm Collier suggested mixing cabosil with microglass, and it holds up much better. Tape the edges of your speed brake door with two layers of duct tape. Then, mix cabo and glass (60% cabo 40% glass) and put it into a freezer bag. (Avoid exotherm problems by mixing small quantities with 6-8 shots from your epoxy pump). Squeeze the peanut butter consistency mix into the voids. Test it in one space. If it droops or runs, add more cabo. It wont droop or run with enough cabo in it, and when it dries it will be both strong and hard. Forget the microballoons for any edges that will receive abuse.

USE JEFFCO FCR FOR FUEL TANKS

Jim Agnew got me interested in JEFFCO. He said: Jeffco's FCR is a fuel resistant COATING used in fiberglass fuel tanks on racing boats that is impervious to gasoline, alcohol based fuels and even nitro-methonal. It is not a structural epoxy (I would guess because it has such a short pot life) but it seems to be very strong and somewhat flexible. Off shore racing boats are like roller skating down stairs and they will pound, flex, or loosen almost anything so the FCR must be good.

Insist on Jeffco FCR, and order the gallon kit. It's enough for two coats. Also, before applying the Jeffco, I strongly recommend application of an initial coat (a thick mixture of cabosil and epoxy) to seal the pourous skins. You should do this on both top and bottom section of

each strake. I had a small section of one strake where I forgot to seal with this cabosil/epoxy mixture. It had hundreds of pinholes. I called Malcolm Collier for suggestions: He said to add some cabosil to the Jeffco. This worked really well. It thickened the Jeffco and made it impossible for it to drain down into the pinholes. No more pinholes on the second coat after adding enough cabosil to make it about the consistency of a thick pancake batter. MY TOP STRAKES HAD THE MOST PINHOLES: After applying the first coat of Jeffco to the top strakes, lots of pinholes developed, even though I had primed both of them with cabo and epoxy and let them dry over night before coating with Jeffco. Adding cabo for the second coat of Jeffco eliminated all pinholes. Also, BE SURE TO USE A FLEXIBLE SQUEEGE to apply this stuff. This reduces the pinhole problem dramatically.

WARNING: THE JEFFCO I USED HAS A RELATIVELY SHORT POT LIFE, ESPECIALLY IF LEFT SITTING IN THE MIXING CUP. We let one cup sit 10-15 minutes, and it turned to stone. I followed Jim Agnew's advice: Mix no more than 9 ounces (6 oz. of resin to 3 oz hardener). Then, pour the stuff out on the strake so it is not sitting in the cup. This gives you plenty of time to work with it. I also used a good brush after the squeegee to help distribute the material more evenly. The second coat requires much less material, and it will spread much more easily with a brush. It's good to have a friend to help due to the short pot life. No panic involved, but it does require steady work. I'd be mixing up a second batch while my buddy put finishing touches on the first batch. Jeffco does have a longer pot life epoxy if you want it.

One paradox on pinholes. I had no pinholes on the bottom strake. My theory is that with all the bulkheads installed, the bottom strakes are much more like a bowl and hold more material. To order Jeffco, call (619) 576-9900. They would NOT accept credit cards when I ordered, so plan ahead.

Call or email if you have any

questions. Email: dmartin@cougar.netutah.net or Phone: (801) 225-0702

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Canopy Latching Mechanism

From Manny Lewis, Scotia, NY

What's the worst thing that can happen to a Velocity builder? How about your canopy latching mechanism becoming disconnected when the canopy is locked and you're outside. This happened to me shortly after my first flight. After calming myself down from a few minutes of hysteria, I decided to remove the latch by carefully sawing through the two allen head bolts that secure it to the airframe. After doing that I was able to remove it by pulling it out through the side of the fuselage. At that time it became obvious that the threaded rod that is used to adjust the length of the latching mechanism had become disconnected. I must not have had one of the ends threaded in far enough. I next fashioned a tool out of a soft aluminum tube that had about the same diameter as the hole in the latching mechanism that the rod slides through. By bending the tube into an L-shape I was able to apply enough force to open the latches and release the canopy. You can imagine the relief I felt. It was then a simple matter to fabricate a longer threaded rod and two new allen head bolts. It may be worth your time to verify that you have sufficient threads captured in that adjusting rod.

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FAA's Data Link is Coming

From Rick Lavoie, St. Augustine Florida

Soon you may have the capability to receive aviation weather text and maps through a display mounted in your Velocity's panel. Eventually information available to pilots could include:

- Real time weather and NOTAMS
- GPS outage status
- Special Use Airspace updates
- Airport status and delay info
- 60 second updates of AWOS/ASOS reports

Continued on the next page

Builders Forum

Continued from the previous page



The FAA is currently testing feasibility of accessing such real-time data through the internet. Several data link options are being explored, including "airborne cellular" technology, digital VHF, satellite and multiplexed broadcasts over modified AWOS ASOS VHF voice channels.

Note: Be sure not to use your regular cell phone in the air!

The FAA's internet address for flight information test site is: <http://flightinfo.crown.com/>

This site is in experimental form only. If you want this service, be sure to complete the survey.

"Data Link" entails much more than the internet access experiment described above. Be sure to visit the FAA's Data Link web site for the whole story. For example, the future holds lots of exciting interactive systems involving onboard Mode S transponder with onboard computer display units. Data about traffic information (TIS) will be "uplinked" to the aircraft via mode s terminal sensors (radars) on the ground.

Visit the FAA's web site at:
<http://www.faa.gov/>

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Don't forget to make reservations for the Velocity Banquet at Sun N Fun
See page 2 for details

FAA Paperwork

Continued from page 13

(Operators Instructions) are in place too. All log books must be there (builders log and photo log, engine and airframe log books)! Your Weight and Balance must also be complete. John spent about one hour looking over my engine installation, hydraulics, and overall construction. Although I was nervous, I enjoyed having such a knowledgeable DAR as Johnnie Murphy inspecting my plane. John is a legend in the experimental aviation world, and knows canard pushers inside and out. It was an honor having him sign me off! Don't fight what your inspector or DAR tells you to do. Just do it!

Once you have flown off the required 40 hours, you are eligible to apply for an "airman certificate" for "Repairman Experimental Aircraft Builder" using Ac form 8610-2. This will allow you to perform your own maintenance inspections and sign off your maintenance logs for your plane only. Ask the inspector or DAR where you will need to go for this in your area. Here in Florida, you need to go to the FAA Orlando FSDO 15 with your log book and photo files. You must prove that you built your plane and may be asked questions in this regard. The answer to any question that the FAA asks you is "I will do that in accordance with FAR 43-13 Appendix D". Remember that FAA book that Duane was selling in the Factory News section?

Acceptable Methods, Techniques, and Practices of Aircraft Inspection and Repair. This is contained in FAA manual AC 43.13-1A Change 3 and AC 43.13-2A. Be sure to get it and bring a copy with you.

If you plan on flying outside the US, then you need to get the FCC Radio Station License. Get FCC 404.

Make an inventory of the FAA publications and forms you will need and order them right now before you forget. This is when your membership to organizations like EAA or AOPA pay off big!

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Velocity Views Newsletter

Things you can do to help!

Gift Certificate

Give a friend a gift in the form of an annual subscription to Velocity Views Newsletter. We will mail that person a certificate in your name.

Pay by Check (vs. Credit Card)

Paying by check saves me lots of time and expense. The extra paperwork and labor involved in processing credit cards is tremendous. I originally started to accept credit cards so that international subscribers would have any easy way to pay in US dollars.

Pre-pay future years

When you prepay future years, you lock out any price increase for yourself, and save processing time for me.

Thanks a lot!
Rick

Alexander Sportair Workshops

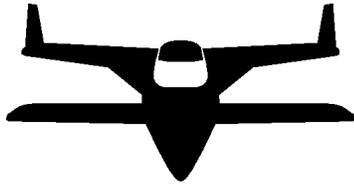
Composite construction is one of six workshops offered by Alexander Sportair Workshops. This is a two day course with hands on training about working with composites. I took this course prior to starting my Velocity and found it very helpful. You can get info from them in several ways:

- call 800-967-5746
- e mail to: workshops@sportair.com
- visit their web site at: www.sportair.com

Workshops are held throughout the country at various dates. The next one is in Sebring Florida January 17 & 18. Others are scheduled in Georgia, California, Washington, and Texas. Cost is around \$230 for a two day workshop. Check it out...

Buy Sell or Trade

Free and exclusive
to all *Velocity Views* Subscribers.



For Sale Velocity Standard RG Elite Project

Wings and winglets have been fabricated, joined, filled and rough sanded. Com and Nav antennas have been glassed into structures. Canard is also fabricated, filled and rough sanded (60 grit). Elevators are fabricated.

Project includes complete airframe kit including molded Elite doors, new construction manual, new fuselage videos, and misc. tools. Excellent, documented, construction. \$30,000 for all. It's like having two thirds of the wing fast build option for less than the cost of an Elite kit!

Contact: John at (920) 725-4252.

For Sale Velocity 173 FG Kit

Work completed: Canard, elevators, wings and winglets skinned, winglets attached. Engine mount powder coated.
Includes: All parts, new manual & construction video tapes, epoxy pump, some supplies.
Options included: 4 into 1 stainless steel exhaust for Lycoming IO-360, headlight kit, molded instrument panel, Whelen strobes / nav lights.
Other info: Can be converted to Elite model with kit from factory.
Asking: \$23,000

Location: Lynchburg, Virginia

Contact: Alex 804-993-3712
eves / weekends.



For Sale Velocity Elite 173 FG

Partial assembly includes:
Professionally built canard, and wings with tips attached.
Bulkheads, Center Spar, Main Gear, Keel with control systems in place, Seat hard points, Tabs to hold instrument panel, Brake master cylinders with brake lines run, Brake and rudder pedals, Landing light

Includes new manual with current newsletters and epoxy pump
Price: \$36,000

Contact: David Fay in Houston Texas at 713-656-6131 (day) or 409-321-5826 (evening)

Builder Assistance

Not enough hours in your day?
Need help building your Velocity?
Contact Tom Wright, Somerset PA of Advanced Composite Technologies at 814-445-3802
Experienced Velocity builders on staff. Competitive labor rates.



For Sale Tip Over Cradle

Have a tipover cradle, a little more beefed up than Dave Black's, for sale \$50

Contact: Jack Connor in Naples Florida at 941-597-6262

Factory Information

Factory & Home Office:

200 W Airport Rd
Sebastian FL 32958
Ph: 561-589-1860
Builder Assist Ph: 561-589-0309
Fax: 561-589-1893
Internet homepage address:
<http://www.velocityaircraft.com>
E-mail address:
info@velocityaircraft.com

West Coast Service Center:
1410-B Flightline Dr
Lincoln CA 95648
Ph: 916-645-6866
Fax: 916-645-6944
E-mail address:
102714.3303@compuserve.com

Future Aviation Europe:
1117 ZS Schiphol Airport
The Netherlands
Ph: 31 23-561-4881
Fax: 31 23-563-1891

New Kit Options Catalog Due Out Soon

Velocity's new kit options catalog is due off the press any day now. Be sure to call the factory to get on the list if you want one mailed to you. This options catalog has doubled in size, and has just about everything you will need during construction of your Velocity!

Delivery Dates

Quarter:	Mailed by:
1st	January 15th
2nd	April 15th
3rd	July 15th
4th	October 15th

Submission Deadlines

Quarter:	Mail Date:
1st	December 1st
2nd	March 1st
3rd	June 1st
4th	September 1st

Listed below are **4 options** for submitting your text. Please send us **photos** and drawings too!

1) Send it on a **3-1/2" computer disk** (Mac or DOS). This saves us from re-typing all that text. Don't format your text, just give us raw text, with no underlining, bold, or any other type of formats. We also can take Zip100 or Syquest drives.

2) **E-Mail** your text file to me: lavoie@aug.com

3) If you don't have access to a computer, then we can scan in your **typed** page.

4) If you **print neatly** so we can read it clearly, we'll intype it on our computer for you!

Note: If you need your photos & materials returned, please include a self addressed envelop.

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