

VELOCITY VIEWS

Volume 37

1st Place Custom Built Composite Award at Copperstate 2003



Congratulations Bill and Whitney Hawley of Salt Lake City, for winning the 1st Place Custom Built Composite Award at Copperstate 2003

AIRPLANES HAVE ALWAYS BEEN A PART OF OUR LIVES.

From Bill Hawley of Salt Lake City UT

I would watch airplanes fly over when I was a kid and dream about flying. I learned to fly as soon as I could scrap together enough cash to do it. I bought an old C172 when I was twenty. It was beat up and needed lots of work. It was the restoring of the interior of that old airplane that set me on the course of building. Twenty years ago we moved "up" to an old C182. Our family enjoyed many long and wonderful cross-country flights. The

building continued on the 182. New engine, new paint, new interior and new avionics were added over the course of the twenty years we owned it. Work and family filled the days. Some of our travel took us to air shows and EAA fly ins. I think Whitney (my fantastic wife) first identified that I was going to build an airplane. She could see that I was hooked.

With the kids out of the nest, I began looking at kit planes. There were so many choices. We limited the list to a few and went to the factories to see what kind of operation

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Copperstate Award Winner

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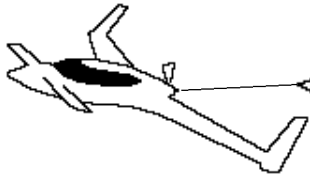
they had. My favorite line from the salesman was “anybody can build an airplane”. We had watched some of our EAA friends struggle to finish their airplanes. Many of them started late in life and didn’t have the ability to finish. With that in mind, we sent Velocity a check. Our airplane (561WH) arrived on my birthday in 2000. I am sure that there was collusion between the factory and Whitney, although I’ve never been able to prove it. The kit was an XL RG with no fast-build options. The XL is a big kit that requires a large amount of space to build. So, we moved it to the hangar where the 182 lived. We held on to the 182 though most of the building. We finally had to sell it to buy the engine for the Velocity. 561WH took nearly 3000 hours to finish. We did all the work with the exception of the upholstery and final painting. We found out that the kit amounted to about half of the work.

The custom interior required many additional lay ups and panels. Whitney was instrumental in the planning because I have no interior design bones in my body. It ended up as a beautiful southwest design done in fabric and leather. Much of the credit also goes to Ron Christensen our long suffering upholster. I designed the electronics and avionics. The avionics power controls and the lights are automated by an electronics package I developed. In normal operation, the pilot does not have to flip any switches to turn on or off the lights or avionics. The airplane is all-electric with two alternators. A UPS avionics stack was installed and has preformed well. A Vision Microsystems system monitors the engine performance. The airplane is IFR and night certified.

We used a Lycoming IO-540 rated at 260 HP. It was decided that a plain vanilla engine was the best choice. The engine installation went

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FACTORY NEWS

by Duane Swing

Williamsburg Gathering

It would be nice if I could tell you that a good time was had by all and show you pictures of the event. However, on that very first day of the event, a hurricane raced through Williamsburg and the surrounding communities causing much damage with the wind and flooding. Bonnie and I were actually on our way to Williamsburg and stopped to check out the path of the storm. It became obvious that the cone center was right where we wanted to go and we decided to call off the event. Those of you who had made plans were,

no doubt, relieved when we announced a no-go decision. It is our intention to schedule another Williamsburg event in the future so stay tuned.

Factory Fly-In Home Coming

Speaking of a fly-in, what about having one in Sebastian? The winters are beautiful in Florida and we could schedule many activities starting right here at home. It is probably a little late to try it this season but what about in the 2004-2005 period. We could schedule a golf day right here on the Sebastian Airport golf course for those who enjoy beating up on little white balls. What about deep-sea fishing from the Sebastian marina? How about a day at the space center? We could also do some factory workshops for those just getting started or provide some needed re-currency flight training. There is always shopping for the ladies at the Vero Mall and Outlet Center. We also have a ton of great restaurants to delight any appetite. We might also want to have an evening cookout under the stars at the Sebastian Park. So much to do and see right in our back yard. I am thinking about a minimum of a four-day event, perhaps more if needed.

If this sounds like something you would be willing to attend, I would like to hear from you. E-mail me at DuaneS@Velocityaircraft.com. Call or send me a note if you don't have a computer. Give me an idea of which month would work out best for you. The weather is ideal from about mid November through the end of March.

Flight Training and Insurance

A record number of flying Velocities have changed hands this

past 12 months and we are constantly getting calls from the new owners wanting a factory check out in order to get insurance. In many cases, the new owner has less than 100 hours total flight time and no complex or high performance flight time in his logbook. In some cases, he can't even get insurance until he meets the minimum flight time required by almost all the insurance carriers. In the case of a retract gear airplane, 100 hours total time and no retract time will just not pass the test if the new owner has an RG airplane. If I were in the insurance business, I wouldn't want to insure him either. Why should the rest of us pay the price when one of the low time pilots with little or no Velocity time make a \$100,000 claim? Believe me it has happened.

We have also received word that at least one of the underwriters for Falcon required a minimum of 500 hours flight time, 100 hours of retract time with the complex endorsement, and instrument rating and a 10 hour factory check-out before he could be covered by insurance. Again, this will help keep the premiums down but Velocity would certainly loose sales if this were common to all underwriters. As always, we will continue to monitor this insurance issue. If you are looking for insurance, you can contact Falcon at 1-800-880-4545. Be sure and ask for someone familiar with the experimental airplane insurance requirements. Also, you can contact Pam Lineberry at AUA Inc. Her phone number is 1-800-727-3823. We have been told that Pam is far more likely to work with you than some of the people at Falcon.

M-T Propeller

Many of you have been concerned about the M-T propeller used on the C1C series 200 horsepower Lycoming engines. M-T came out with certain RPM restrictions that were difficult to accept and shortened the overhaul life of this pro-

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Copperstate Award Winner

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well with help from some good friends. The airplane first flew in December of 2002 in primer. What a great experience that was. It was all at once the best and scariest experience of my life. I would highly recommend it to anyone. We finished the paint in the summer of 2003. The finish work was difficult and time consuming. I put two months into painting prep work. Many thanks go to Glen Olsen who painted the airplane. We were gratified to win first place composite at the recent Copperstate EAA fly in at Phoenix.

We have logged over 100 hours on 651WH. It flies as if were on rails and is a joy to fly. I guess we proved that anybody can build an airplane!

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Factory News

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pellor. In one case, we had one of our customers return his propeller for credit. He, in turn, purchased a Hoffman German made propeller because they (Hoffman) told him they had no restrictions on their prop. M-T has since told me the Hoffman propeller will not last more than 300 hours if operated with no RPM restrictions. To M-T's credit, they have been working on a solution and have told us the new propeller blades for the C1C engine should be ready for testing in a couple weeks and that the static test they have conducted show no RPM restrictions. The new blades can be installed in the same hub as the old blades. No price has been given yet but M-T did say that the new propeller would be only slightly higher priced than the present propeller.

It is also interesting to note that according to M-T, in all the years they have been in business with literally millions of actual flight hours recorded, they have never had a blade failure where separation took place. That includes propellers used during the war where bullet holes were found through the blades of returning German fighters.

Open House

We had our semi annual open house on November 8th, which was attended by about 40 people. Mike Snyder conducted a seminar on how to properly flare aluminum tubing and how to install fittings on the braded fuel/oil/hydraulic lines.

Later in the day, Frank Ware spent considerable time showing the proper installation of the wing strake/fuel cells. We happen to have an airplane here ready for strake installation and it was a real live demonstration of how to do it right the first time. (I told Frank we would fix the leaks when no one is around). As usual, coffee and donuts were served for breakfast and pizza was the main entrée for lunch (see photos below).

Continental/FADEC/Blue Mountain

I went to great lengths last issue telling you we were afraid to make any modifications or changes to anything that was working just fine. Well, as it turns out, Blue Mountain talked us into making a change to the main guts of the EFIS ONE and just as promised, only a few hours of flight time later, the whole thing went crazy. Blue Mountain said they would find the problem and fix it. Not much of a consolation when a pilot is scud running with no artificial horizon because he couldn't file an IFR flight plan!!

Then we have had some glitches with the FADEC. Just when we thought all was going to work out great, the engine suddenly starts surging. Hot starts are difficult, an injector just quits working and it idles erratically. We scheduled a meeting with the president of Aerosance and told him of our plan to replace the FADEC with a standard magneto engine if they could not fix the problem. They were forceful in their desire to make

things right and showed evidence that the FADEC was a good 30 times less likely to fail than a magneto powered engine. They also showed evidence that a FADEC engine was not subject to the pilot errors that destroy or shorten the life of many aircraft engines. They also pointed out that there were no "single point" failure modes with a FADEC engine. Multiple sensors and three independent computers control just about everything and will give us, 10 percent better fuel efficiency, 5 percent more power and the real possibility of a 10 percent longer TBO. We also found out that the 3/8" fuel lines installed are not large enough for this engine and may be the reason for some of our problems. The fuel lines are now being replaced with 1/2 inch lines as requested by Continental. We will be taking the airplane to Mobile Alabama for Continental to correct everything. Once this is done, we will need to fly the airplane several hours before we are comfortable with the reliability of the system.

I do believe that the concept of an aircraft engine with the spark advance and fuel distribution done automatically is the wave of the future. We have had it in automobiles for 25 years or more. My father was a Case tractor dealer and had a magneto repair facility at his shop. This was 65 years ago and the magneto is almost exactly the same now as it was then. Even the farm tractor abandoned the magneto/carburetor years ago. FADEC is here to stay.

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Factory News

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How To Build A Safer Airplane

Robert Goyer, a staff writer for Flying magazine, commented on a study done by the FAA regarding the technically advanced airplanes (TAAs). In this study airplanes like the new Cirrus SR20 and SR22 with the parachute recovery system and all glass panels, were compared to some of the older, less well-equipped airplanes. The study found that the TAA airplanes actually had an alarmingly higher accident rate than their "less safe" cousins. At the heart of the study was a paradox, that TAAs, at least in theory, had more "available" safety, but without proper training for their pilots, they could be less safe than airplanes with less "available" safety. The conclusion was that something needs to be done to help pilots new to TAAs prepare better for the challenges inherent in them. It was the consensus that existing organizations - schools, manufacturers and INSURANCE companies - are in place and should be in position to quickly address the issue. They said that remedies include more rigorous training and higher experience standards, in addition to improved pilot-avionics interfaces, if the existing trends were going to reverse.

I know many of you have been very critical of our insistence on factory training and the insurances companies' demand for greater experience levels for Velocity pilots. Perhaps one of the reasons is the higher accident rate resulting from the new breed of aircraft. The insurance companies always "group" airplanes when they look at insurance risks. The Velocity is grouped with other composite high performance airplanes that would include the Cirrus and Lancair whose accident rates are much higher than older slower metal airplanes. This should serve as a lesson for all of us. Being well trained and having awareness of our airplane and the systems will be a bonus for you as well as for us.

Sometimes building a safer airplane has a lot more to do with the pilot than the airplane.

Good News Regarding Insuring Velocity Aircraft!

A major aviation insurance underwriter has given trial approval to insure all models of Velocity aircraft. The underwriter has approved two top nationwide insurance agencies, AUA, Inc. and Falcon Insurance, to enroll Velocity into the new program. Coverage is available in all states except Alaska. The 3-month trial program begins December 15th. At the end of the trial period the underwriter will make a business evaluation - and hopefully make their formal announcement welcoming Velocity aircraft to their family of approved aircraft.

Pilots must meet the following prerequisites to obtain standard insurance:

Privat Pilot; 500 hours Total Time; 25-hours in make and model - or - successful completion of the Velocity Flight Training Transition Program. If the aircraft is a RG, 100 hours of RG time is required. Note: Velocity, Inc. requires a High Performance or Complex Endorsement prior to entering the factory check-out program.

Pilots must meet these minimum qualifications to obtain insurance during the trial period. After the trial period, pilots with less experience may still qualify for insurance, but at a higher rate.

Rates for qualified pilots will run close to \$550 for \$1M liability, plus around \$2,800/\$100K Hull with a \$1,000-deductible.

At AUA ask for Pam Linebury;
At Falcon ask for Jim Nelson.
Falcon, Kerrville is 830-257-1000. Jim Stewart and Ladd Gardner at the two agents that are up to speed on Velocity.

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Air Show and Open House Schedule for 2004

April 13-19	Sun 'n Fun	Lakeland, Florida
April 15th	Velocity Open House	Sebastian, Florida
<i>Note: Velocity will arrange ground transportation from the Sun 'n Fun grounds for those who want to take a field trip to the factory</i>		
April 16th	Velocity BBQ Dinner @ Sun 'n Fun	
May 14-15	EAA Southwest Regional Fly-In (Demo rides will be available)	New Braunfels, Texas
June 18-19	EAA Golden West Fly-In (Demo rides will be available)	Marysville, California
July 27-Aug 2	EAA Oshkosh	Oshkosh, Wisconsin
Sept. 18-19	EAA Virginia State Fly-In (tentative)	Dinwiddie, Virginia
Oct. 7-10	EAA Copperstate (tentative)	Casa Grande, Arizona
Oct 21-23	AOPA Expo 2004	Long Beach, California
Oct 28-31	Light-Sport Aircraft Expo	Sebring, Florida
Nov 6	Velocity Open House	Sebastian, Florida

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.

KPC 164

Affects: All fixed gear Velocities
Manual Section: 9.5.5
Date of Change: 12-01-03

The sump tank is bolted to the gear bulkhead not the "firewall".

KPC 165

Affects: All aircraft
Manual Section: 13.4.3
Date of Change: 12-01-03

Added sentence: Make sure the pitot tube is located far enough aft of the rudder pedals to not interfere with them. The drawing was updated a little as well. Another guide to the position would be that the trailing edge of the streamline tubing of the pitot tube is directly below the center line of the elevator torque tube hole.

KPC 166

Affects: All aircraft (new manual)
Manual Section: 14.1.7 (new section)
Date of Addition: 12-01-03

Vortilon installation. There are three sizes of vortilons and they get installed starting 18" out from the strake junction with 36" between them. They should be aligned with the airflow, which turns out to be approx. 113 degrees to the outside. This page is available here and online.

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Builder Hints & Information

by Scott Swing

Nose gear door hydraulic cylinder

For those of you with nose gear door hydraulic cylinders that are not labeled (no name), we have had a problem with leakage. This is due to the fitting just under the snap ring. It was made too thin and left too much room between the snap ring and the part. This room would then allow the part to move in and out with pressure changes banging up against the snap ring. That banging causes the part to deform. If you have one of these cylinders, let us know so we can send you the new part. If you do not have a snap ring pliers and don't think you can find one to use, just send us the cylinder and we will fix it and send it back.. Basically all you have to do is dump the pressure in the system, remove the snap ring, slide the small aluminum part off the shaft, slide the new one on, and replace the snap ring. If you have been flying and the cylinder is not leaking, don't mess with it. If it is going to leak, it will leak fairly quickly after the pressure is put to it. If your part is deformed, it will have to be replaced. If you have a new one, you may only need a special spacer (washer).

New rudder pedal / brake system

Those of you who have purchased the new rudder pedal / brake system will have to learn a slightly different method of operation than before. Since you cannot turn without braking, you will want to slide your feet up onto the rudder pedals while taxiing and before landing. At first, when taxiing, you will want to

steer like you have rudder steering or a rudder behind the prop blast. Since leaving your feet on the floor and just using the tops of your feet to move the pedals back and forth will not result in steering, you are better off just sliding your feet up on the pedals. If you leave your feet on the floor and try to just move the tops of your feet, you can hit the brake when you may not want to.

Shimmy

There are some misconceptions about shimmy that I want to clear up. Some of you are throwing any vibration or shake into the shimmy category. There are a few things that cause vibrations and shakes. Balance problems can cause vibrations on the ground and soon after take-off. Shakes can be caused by out of round tires and certain RPMs creating high frequency buzz on the take off roll. The biggest shake producer is the brake disc. This is easy to verify since it only happens under braking. It is worst between 30 and 40 knots. This is not nose shimmy. If you get nose wheel shimmy, it will happen as soon as the nose touches the ground. It will not do it on take-off and it will not happen under braking. I repeat, it happens on landing when the nose gear hits the ground. If you have ever had it happen to you, you will never forget. The nose of the aircraft feels like it is going to come off. In any case, I just wanted to clarify that.

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Top & Side View Drawings for both the SE & XL are now available on velocityaircraft.com

Click on "Builders Page"

Event & Production News

by Scott Baker



Recent Fly-In's

Copperstate 2003

Like the rise of the mythical Phoenix, Copperstate organizers have risen from a one-year hiatus and displaced settings to bring this once popular regional EAA show back into a favorable light. Velocity missed the initial opening of Copperstate at Casa Grande, Arizona in 2002. Those who attended gave the program very good reviews – and based on this, Velocity, Inc. elected to attend this year's event.

In early October, Scott Swing and I took off from Sebastian in "Child's Play" (the christened name of the new XL-5 factory demonstrator) and headed west. This was the first extra-long cross country for us in this aircraft and we were anxious to verify the fast cruise speeds and exceptionally low fuel consumption of the FADEC powered IO-550 Continental that was reported by Nathan Rigaud and Paul Baribault, who earlier had flown the aircraft to Arlington, Washington and then to Oshkosh. I must say that we were impressed with 195-knot ground speeds (coming and going) and a fuel burn rate of less than 13-gallons per hour. The facilities at Copperstate are still in development. A parallel grass strip accompanies a single paved runway. Parking areas are turf. The ground was pretty rough for taxiing aircraft without a nose gear shock. Organizers say that taxiway and



Pizza part at Copperstate included: Kevin and Brooke Steiner, Scott Swing, Scott Baker, Mack Murphree, Steve Murphree, Toni Vallie, Pete Wetmore, and more...



Scott Swing & Velocity builder Greg Crane (right) at Copperstate 2003

grounds improvements are slated for next year. The flight line was loosely organized, which gave visitors an up-close look at aircraft take off's and arrivals. It's a special experience to see a B-17 landing on the grass and touch down (literally) 50' feet away from where you stand!

It was great to see so many Velocity owners, friends, and enthusiasts! The Saturday pizza party was enjoyed by all! Special thanks go to Bill Hawley and to Mack and Steve Murphree, who flew their respective Velocity XL-RG aircraft to the program. Congratulations Bill and Whitney Hawley for winning the 1st Place –

Custom Built Composite Award! Those who viewed the Hawley's Velocity know this won't be their last award! The interior, with its southwest theme and colors, is absolutely gorgeous! Nice job!

AOPA Expo – Philadelphia

It's not often that we visit the northeast and so it was nice to attend the AOPA Expo this year in Philadelphia. Duane, Bonnie, and I were stationed at the Static Aircraft Display at the Philadelphia International Airport during the 3-

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Event & Production News

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day event in late October. The 36-degree evening temperatures reinforced the thought that Philadelphia is a nice place to visit, but I'm glad I live in a warmer climate! To put things into perspective, visitors from the New England region thought this was a return to summer!

Velocity selected to feature the XL-RG-5 for the display. The non-stop trip from Sebastian to Philadelphia took 4-hours and 30-minutes (engine start to engine stop) and burned 56-gallons of fuel – leaving 24-gallons in the tanks (enough to travel an additional 250 nm plus 30-minutes of flight time in reserve). Visitors to the Velocity display were amazed when we talked about the aircraft's performance and the fact that the XL could easily fly non-stop from Philadelphia to Key West, Florida.

The Philadelphia Convention Center was the site of the indoor exhibits, meetings, and educational seminars. What a beautiful (and large) facility! We look forward to visiting Long Beach, California – site of next years AOPA Expo.

Centennial "Barnstorming" Tours Velocity, Inc. plans to "barnstorm" selected cities across the USA this summer to show folks this wonderful aircraft and to offer demonstration rides. Stay tuned for a list of cities and dates!

Flying IFR with the Blue Mt. Avionics EFIS/One

By Scott Baker

Florida is a wonderful primary flight-training environment. Life is more difficult, however, for pilots working on their IFR rating. There are few opportunities for other than a minute or two of flight in actual IMC, and the high volume of commercial traffic makes it difficult to get a communications word in edgewise with ATC.

As an Instrument Instructor, I try to keep sharp on my IFR flying skill and procedures. Like many pilots, I've found it difficult to find the time to keep IFR current. Looking forward to my upcoming flight to Philadelphia and the likelihood of actual IFR, a look at the logbook confirmed that it had been some time since I last flew practice approaches – and that the time had come for some serious IFR refresher work in the Velocity XL-RG-5.

N271TC features the Blue Mt. Avionics EFIS/One. I've flown the aircraft many hours in VFR conditions and have come to appreciate the navigational situational awareness offered by the moving map side of the display. Airspace borders (Class Bravo; Class Delta; MOA's; Restricted Areas; Prohibited Areas; and permanent ADIZ lines) are clearly shown.

As I chipped away at the rust from being away from the hood for so long, I came to appreciate bonus features of the moving map even more. The EFIS/One contains alternate map types that make things even more helpful when navigating in an IFR environment. My favorite is the VFR Detail Chart, which shows Victor Airways and airway intersections superimposed over a VFR Sectional map. Other map choices include an Airways Chart Type, which shows all of the above, but with a blackened background (no Sectional Map details) – and a Low IFR Chart Type Map, which looks just like a moving NOAA IFR-Low Altitude Chart. The aircraft's position and orientation, which is symbolized in the shape of an aircraft, is superimposed onto the map. Visualizing intercept angles and holding patterns are so easy that it spoils you!

It took a moment to become accustomed to the EADI – Electronic Attitude and Direction Indicator – display. All of the flight information – air speed, attitude, altitude, heading, rate of climb and descent, bank angle markings indicating what will result in a standard-rate turn, and a slip/skid ball are all pictured in a single electronic format. The tradi-

tional scanning techniques are still used, however the eyeballs don't have far to go to gather flight (and nearby navigation) information. I quickly found myself being able to take a "snapshot" of the EADI and instantly developing an interpretative understanding of what the aircraft was doing. In my opinion this helps eliminate fixation on a single instrument ...err, I mean sensor. The EHSI – Electron Horizontal Situation Indicator – contains the normal navigational and heading information that one expects. I liked the GPS waypoint course and distance information that is shown in the top right hand portion of the EHSI display. VOR/DME information is shown in the lower right of the screen. One fault I found with the EFIS/One is the awkward control over the Heading Bug. Blue Mt. Avionics has programmed the Heading Bug control knob to make large-scale movements with fast twists of the knob; and small-scale movements with slow twists of the knob. This is nice in theory, but when I twisted the heading bug knob, there was such a delay in the heading bug movement that it took total focus – and more than a few seconds – to move the bug to a desired heading. Consequently, controlling the Heading Bug becomes a major distraction, which is not a good thing in an IFR environment! BMA was receptive to our notes on this subject and we've been told to expect improvements in the heading bug control with the upcoming software release.

The EFIS/One features an Altitude Bug, which I used to set MDA's and DH's during some of the practice approaches. The button pushing to enter the desired altitude is a little awkward – but once the altitude was set, it gave a clear and visible reminder. A companion feature to the Altitude Bug is shown on the map portion of the display. The computer monitors the rate of descent (or climb) and projects an arc at the end of the course leader line. The arc shows the geographic position on

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Event & Production News

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the map where the aircraft is expected to meet the selected altitude. The position of the arc changes according to ground speed and the aircraft's rate of descent (or climb). This is kind of nice – especially on non-precision approaches – when the pilot can actually see where (in relation to the airport) the aircraft will be at the selected DH. In other words, if the pilot is descending too slowly, the “where I'll be when I get to the selected altitude” arc will be depicted beyond the airport (instead of a mile or so prior to the airport). This portrait of “what's about to happen” allows the pilot make adjustments to the ground speed and/or the rate of descent in time to make a smooth and successful approach.

A blank screen – the ultimate in partial panel! Blue Mt. Avionics reminds everyone to never trust a single AHRS, single display EFIS system for IFR operations without backup instruments to provide attitude, heading, altitude, and airspeed information. Backup to some might mean the Blue Mt. Avionics EFIS/Lite, an all-in-one AHRS and EFIS system. To others, “backup” means spinning gyros. It boils down to what makes you comfortable and of course, what's in the budget. Individual sensors on the EFIS/One can break – and so, “Yes” there is such a thing as flying partial panel with an EFIS system. There is so much information packed into the EFIS/One that the chances are, there is back up information at your disposal. For example: If the pitot airspeed is lost, GPS ground speed is displayed. If heading is lost, a course line to a GPS waypoint (airport or VOR) is displayed for heading guidance. The EFIS/One stands in need of a few more enhancements and improvements to make it a totally pilot friendly and reliable system – but I think it serves as a good foundation for IFR flight operations.

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Velocity Barnstorming Tour

Understanding that not everyone has the time to break away to visit the Velocity factory in Florida – Velocity, Inc. plans to reach out to customers this year by offering demonstration rides in selected cities across the USA.

The 2004 Barnstorming Tour begins in Houston, Texas on Thursday, May 13th and is followed by a visit to the Dallas area on Sunday, May 16th. Velocity will be attending the EAA Southwest Regional Fly-In in New Braunfels, Texas during the 14th and 15th of May.

Velocity enthusiasts who live near the scheduled cities are invited to bring friends and family to see the Velocity XL-RG and to take part in a demonstration ride. The demo ride costs \$150, which covers you and up to two additional guests (depending upon weight limitations) to take along during the ride. Those who take a demo ride are offered a full \$150 credit towards the purchase of a kit within one-year. Velocity, Inc. plans to offer additional incentives for those who take a demo ride and who purchase a kit soon afterwards.

The Velocity, Inc. office staff will be coordinating invitations and advance reservations for demonstration rides. Please contact Melanie

Francis at 772-589-1860 or by email at Melanie@velocityaircraft.com for more information. While we plan to stop at each of the cities on the schedule, these are tentative locations that are hinged to a minimum of (3) pre-registered guests. Registered guests will be sent detailed information as to the date, time, airport, and FBO location to meet the Velocity crew.

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Velocity Barnstorming Tour 2004 Scheduled Cities

May

Houston, Texas
New Braunfels, Texas
Dallas, Texas

June

Springfield, Missouri
Colorado Springs, Colorado
Marysville, California
Santa Barbara, California
Santa Monica, California

July

Atlanta, Georgia
Cincinnati, Ohio
Evansville, Indiana
Oshkosh, Wisconsin

September

Raleigh, North Carolina
Petersburg, Virginia
Charlotte, North Carolina

October

Phoenix, Arizona
Long Beach, California
San Diego, California

Please contact Melanie Francis at 772-589-1860 or by email at Melanie@velocityaircraft.com for more information.

Also, visit our website for up-to-date information about the Velocity Barnstorming Tour: velocityaircraft.com



Safety Corner

Accident & Incident Reports,
Maintenance & Service Difficulties

Service Notice

On the RG hydraulic cylinders, it is possible to install the right angle AN 4 fittings tight enough to make contact with the shaft. Prior to installing the cylinders in the airplane, it would be a good idea to check this. If there is contact, (the shaft will not move) remove the AN 4 fittings and grind some material off the end of the fitting and re-try.

Accident Report

We have received word of a Velocity that was "practicing" stalls that was reported to have developed into a "deep stall." All of you should be familiar with the early "deep stall" testing done by Velocity in the late 80's. We have been unable to contact the pilot but want you to know we are concerned. We want to know how the airplane was configured, the CG location, fuel on board and any other information that might be helpful in determining the cause. We would also like to know why someone who has been reported to have flown his Velocity for a couple years would be "practicing" stalls. We know from the serial number that the airplane was one of the earlier "narrow cord" wing models. Danny (the Velocity designer) sent out a letter to all builders of these early models requiring them to install an outboard leading edge cuff on the wing that, through testing, eliminated any chance of a deep stall if the CG was kept within the box. The cuff and instructions were sent to everyone with the older wing at no cost. In this case, the airplane was built by someone other than the pilot/owner, so the cuff may or may not have been installed. We have researched the FAA and NTSB reports and can find no help in determining what happened. If you know anything about

this, please call or e-mail us and let us know. We really want to find out the facts and report them to you.

PZL Franklin Engine Oil Temp Probe Location with the new PLL-7 Fuel Pump Installed

Rick Lavoie sent the below fax to PZL - Rzeszow in Poland regarding the proper location for his oil temperature probe, after installing the new PLL-7 fuel pump: The new PLL-7 fuel pump was mandated by PZL-F/71/2002 (refer to vol 32 page 8).

Jan Dobrowolski, Development
Director, PZL - Rzeszow S.A. Poland
SUBJECT: PZL Franklin Engine 6A-350-C1R, Location of "OIL TEMPERATURE MEASUREMENT"

I would like to know the correct location to place my Oil Temperature Probe "sender", now that I have installed the new PLL-7 fuel pump.

Referring to the Franklin Aircraft "Installation Instructions" manual 26.0.064

#7 "oil by-pass valve" 7.3 (Oil outlet for fuel pump drive lubricating) was used to measure both the oil pressure and temperature (probes or senders). I am still using 7.3 to measure my oil pressure, but NOT the oil temperature. Removing the oil line that sent oil to lubricate the old style fuel pump caused me to move the location of my Oil Temperature Probe. Using 7.3 for my Oil Temperature Probe is now a poor location, because the oil will not be moving, thus render an inaccurate oil temperature. Is this correct?

When I installed the new PLL-7 fuel

pump, I moved the Oil Temperature Probe to 11.1 "oil drainage screen assembly". This location gives me a temperature reading of about 35 degrees farenheit higher than when it was when measured from the "oil line that sent oil to lubricate the old style fuel pump" at 7.3 oil by-pass valve. If I leave my probe in this location, I would need to raise the maximum oil temperature by 35 degrees farenheit. Do you agree?

Please advise as to where the Oil Temperature Probe "sender" should be located, now that I have installed the new PLL-7 fuel pump.

As always, I have found PZL - Rzeszow very responsive. The following is a series of eMail correspondence that has resulted to date:

Subject: Location of oil temperature measurement

Dear Richard,

I have received your letter to Jan Dobrowolski with oil temperature measurement details. I agree that the flow conditions of oil may influence the temperature indications at by-pass location. We are now evaluating various locations of the probe.

Regards,
Antoni Gnot

Dear Richard,

Please find enclosed (attachment) our discussion on temperature measurement at oil pan location. Please contact if you have any note on the issue or if your data show that pan oil temperature limit should be different than our result.

Regards,
Antoni Gnot

NOTE: The PZL attachment was 5 pages long, and included 4 pages of graphs. Below is the conclusion paragraph from page 1 of 5 of this attachment:

Conclusion

There are no flight data for the oil temperature rise. On the basis of the stand test results, assuming that tem-

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Safety Corner

Continued from previous page

perature measurement of both, oil inlet and oil pan, have the same importance for controlling the thermal conditions of the engine, and that limit value refers to max temperature, it seems that max limit for the oil pan temperature readings, should be 19°F higher than for current (bypass) location.

My last eMail from Mr. Gnot requested me to fly N570 and record flight data for PZL. Here is the data I sent to him:

Oil Temperature 214 degrees F

Oil Pressure 55 psi

RPM 2500

Manifold Pressure 25.3 inches

Outside Air Temperature 60 degrees F

Altitude 4,500 feet

Barometric Pressure 30.12

Fuel burn 10.8 gallons per hour

Fuel pressure 6 psi

Exhaust Gas Temperature /
Cylinder Head Temperature

#1: 1340 / 322

#2: 1290 / 316

#3: 1320 / 322

#4: 1260 / 353

#5: 1290 / 308

#6: 1210 / 295

NOTE: Previous Inflight temperature data on N570 (prior to the new PLL-7 fuel pump) has been published in the "Velocity Views" Newsletter Volume 28 Page 15 (4th Quarter of 2001).

Warning: The above information is for informational purposes only and is NOT an official service notice from PZL or Velocity Inc. Velocity pilots that have a PZL Franklin engine need to be aware of the issue. You should wait until PZL issues an official communication regarding this.

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Flight Check! Be Safe!

Velocity Service Center Inc. offers flight training for builders/pilots to safely learn how to transition into flying a Velocity. Get a **Flight Check Out** prior to your first flight!

Flight training is available from:

- Nathan Rigaud, CFII
- Brendan O'Riordan, CFII
- Scott Baker, CFII

The following Flight Instructors have also been approved by Avemco Insurance:

- Sam DaSilva - Seminole FL 727-595-6384
- Mike Gunvordahl - Burke SD 605-775-2952
- Mack Murphree - Dayton NV 775-246-9364
- Manny Lewis - Scotia NY 518-399-8614

Don't take a chance, get checked out prior to your first flight. Please note that you should be current in some other type of aircraft prior to your Velocity check out. The purpose of the "flight check" program is to transition you from flying other aircraft types (like a Cessna) to a canard pusher (Velocity).

Factory Authorized Insurance Inspectors

Please make note of these individuals:

Name - Location Home Phone / Work Phone

Brian Gallagher - Murrieta CA 909-461-9990 / 909-696-0160

Barry Gibbons - Rosamond CA 661-256-8272

Don Pearsall - Owasso OK 918-272-5551 / 918-474-2610

Mike Pollock - Sachse TX 972-530-8400 / 972-728-2725

Glenn Babcock - Tampa FL 813-677-2543 / 813-604-2637

Wes Rose - Grand Rapids MI 616-772-7235 / 616-530-0255

Jean Prudhomme - Boca Raton FL 954-559-4988

Mack Murphree - Dayton NV 775-246-9364

Gary Stull - Tampa FL 813-949-1297

(Gary is an airline employee and can travel inexpensively)

Mike Watson - Mt. Vernon NY, 914-699-3915 / 201-476-8231

A&P Talk

by Brendan O'Riordan, CFII, A&P



High Tech Gadgets

With the flood of affordable High Tech gadgets that have been introduced into the Experimental market in the past few years we see small airplane cockpits starting to look more and more like airline cockpits. These gadgets have been designed to minimize the workload of the pilot but depending on the installation can actually increase the stress level in a cockpit.

We all learned to fly in basic trainers that had nothing more than the basic "6 pack" of flight instruments and a radio or two. At first these may have been a little overwhelming but soon we all mastered the basic instruments and wanted more. Now that you are in the midst of building your own airplane you may want to equip it with every gadget you thought you ever needed. This trend of thinking has spawned Velocities with very heavy nose weights and some of the busiest panels we have ever seen. There are a few basic questions each builder should ask him or herself when choosing instruments and radio's for their panel.

1. How do I really plan on flying this airplane?

This is a very general question that can be asked about all aspects of the aircraft your building.

Do I plan to fly VFR or IFR?

Do I plan on doing many long cross

countries a year or is the airplane going to primarily be used locally? Be honest with yourself when it comes to what type of flying you prefer to do? There is no need to spend money on equipment you will not use. Most Velocities are way overbuilt for the type of flying that their owners use them for. Remember avionics have weight as well. There is no point in flying around with the kitchen sink if you are not going to use it. When we ask builders this question one response we hear often from them is "I am a VFR pilot but I plan to get my IFR rating so I want to equip my airplane for IFR." This situation can be handled in a few different ways. The obvious route is you can outfit your panel with what you think you will need in the future and hope you have chosen the best equipment for your application or some builders will build a good basic VFR panel that is laid out so that additional avionics can be installed later. This keeps the panel simple and less expensive. If a low time VFR pilot is going to lay out a panel for IFR flight it would be a good idea to get advice from a higher time IFR pilot to see what is really needed. I find that Velocity owners that are professional pilots have much simpler panels in their airplanes than most other Velocities.

2. Do I really need this "fill in the blank" I plan to install on my airplane? This is a question that all builders should ask themselves about every part of the airplane. Depending on the answer to the 1st question you now will need to ask yourself if you really need the "Autopilot", "TCAS" or "EFIS" for examples. The factors to take into consideration are cost, complexity and weight. There is a reason why our first XL 97XL weighed 1650lbs. and it is rare to see our builders planes weigh less than 1800 lbs. and it is not uncommon to see them get as heavy as 2000 lbs. The weight difference comes from a collection of things on the airplanes but the panel is one of them. Your airplane will perform better the lighter it is.

3. Does this "fill in the blank" I plan to install on my airplane make flying easier or safer than the instruments it is made to replace. I have come to realize that the future is finally catching up to general aviation. It has been happening for a while now. I remember when Lorans came out and everybody thought they were the greatest thing. Now we have all glass cockpit systems. There are some reasons why it has taken so long for the evolution to occur. One reason is that the older systems are so simple. Another reason is that the way instruments and gauges have been installed in the past allowed a pilot to stay informed about what was going on when there was a single instrument failure. Make sure that whatever engine gauge setup you install in your aircraft that you don't have a single point of failure for all your equipment. This also holds true for your flight equipment. It is a good idea to have different systems that have overlapping functions so you can make sure what you are seeing from your instrumentation is accurate. If you get a chance to look into a new airline cockpit you will notice in most of them that somewhere on the panel they have old round style gauges they use as backups.

Another thing to make sure of with newer style instruments is how do they effect the pilots "scan." Some people find that grouping all the instruments together allows them to get all the information they need without having to look elsewhere while others find that it is harder to discern information from a tightly packed screen of information. Some of the newer instrumentation are coming out in LED displays which most pilots do not have a problem reading but I have found some that have a hard time with it. This obviously will depend on the pilot. So spend some time with the instrument that you are going to install and make sure it will work for you.

4. Is the company that makes this brand new "fill in the blank" that I

Continued on the next page

A&P Talk

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plan to install on my airplane a reliable and trustworthy company? I can understand how a new pilot can get to drooling all over himself at a large air show like Oshkosh or Sun and Fun with all the fancy instrument displays. First off you want to make sure that whatever instrumentation or gauges you put in your panel will work and will keep on working especially when you need them. Some of the booths at these large shows remind me of watching "infomercials" on T.V. "This instrument is the greatest. In not only tells you where you going it also slices and dices and Julians." In the experimental aircraft world we have seen many new companies sporting the latest and greatest and within a year or two have gone out of business leaving there customers high and dry. When it comes to purchasing the latest and the greatest "Caveat Emptor". Do your homework. You should ask questions that will give you answers that are specific to your situation. How many are flying?

Will this setup work with my particular engine?

Will this installation work with a pusher?

These are a few examples. Talk with someone who is flying the particular setup you want to install and get there input on how it works. I have had builders who have put big bucks down on a particular product and have called me after the fact only to have me inform them that the product is so new they will be doing the initial flight testing on it for the company.

You should treat your airplane as an investment. To be a good investor you need to be an informed investor. Ask yourself the tough questions and find out what you really need from your airplane. Then educate yourself on the equipment you plan to install and make sure it is what is needed to do the job.

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Electric Buzz...

by Wayne Lanza



Wiring Tips

In the past I have offered a bunch of wiring tips mostly associated with instrument panel and general wiring. In this issue of the Views let's address a few other electrical considerations.

One area is inside the cabin where we will have lighting, audio, cable runs and antennas. We have found that a good place for headphone jacks is in the keel. Placing the front jacks in the sides of the keel just behind the front seat backs (with seats all the way back) will make for easy access to the jacks and keep the headphone wires from fouling. For the rear seats the jacks work out nicely 10-15 inches behind the front ones. It seems that an ideal rear jack placement is about 4" forward of the rear seats and down low enough that to clear knees and thighs. Both front and rear placement in this manner should keep the jacks and wires far enough away from passenger feet and legs. We like to use the recessed, angled jack mounts that allow for a good recess of the jack plugs. Aircraft Spruce sells them, they are pricey but work great. With a little ingenuity you could probably mold them or make from aluminum. If you have an older standard (non elite), the front & rear jacks can be mounted inside of

the strakes. Try mounting the jacks inside of the strake web next to the front seat back bulkheads.

Cabin lighting has been a point of preference for many builders but here goes with a few options. The overhead air duct is a great place to mount your cockpit lighting. We usually run the wiring inside the duct from the back to front – why you ask... It is actually easier to run the wires from the inside of the firewall up to and through the duct especially if you are using the factory wiring harness. If you decide to run the wires up the carbon door beam, remember that you've got to go across the ceiling to get to the air duct from the overhead panel. This is OK but remember that you will have to upholster this area later...

Important Safety Tip!! Don't mount big, bulky lighting in the ceiling. They are hard on the scalp and potentially dangerous in a crash! Give careful consideration to lighting to avoid reflection and glare off of the canopy and instrument panel.

Cabin mounted antennas include Marker Beacon, Glide Slope, Transponder, ELT and possibly VOR. The Marker Beacon antenna is a simple straight dipole that fits neatly in/on the center keel. The Glide Slope antenna can go in the floor, just don't put it directly under the seat rails. The torroids and cable can be recessed into the foam and covered with BID. Put the Transponder antenna in the floor between the gear bulkhead and firewall. Mount the antenna to a 5-6" piece of (square or round) thin aluminum. Glue and pop rivet the aluminum to the floor and let the pin protrude through the belly. This will keep the Transponder emission away from passengers and also keep the coax wiring short. Mounting this antenna out in the strake will exceed the recommended allowable RG58 coax run for some of the newer Transponders. The ELT fits nicely between the keel and gear bulkheads and allows for a fuselage mounted tape antenna. This tape antenna centers at the fuselage joint, the top half runs on an angle up and

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Electric Buzz

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back to the ceiling (just behind the rear window). The lower half will go forward and down to the floor. The torroids and coax will thus be behind the upholstery and are easily concealed. The VOR can go just about any where in the floor (or ceiling), you can deviate a little with the angle and still get good VOR reception. When mounting/locating antennas consider that carbon is a good RF conductor. This means that mounting an antenna (i.e. ELT) to one of the door beams is not a good idea – they'll fit real nice but won't work. Case in point is the with the wings built by Alan Shaw, many of them had a full carbon reinforcement up the rudder channels. The carbon channel is close to and parallel to the COM dipole in the winglet, this is an effective RF short – not good, especially during transmit!! When a customer calls asking about radio transmission problems, the first question asked is 'are they Alan's wings'. If you have a set of these my best recommendation is to cut/grind away all of the carbon except for the hinge points and then reinforce with glass per plans. When preparing the coax wires that run from the back to the front, try to run them all at once. We favor running the primary harness first, then the RG micro switch and engine instrumentation wiring, and the coax bundle last. The coax bundle usually includes L&R NAV and COM runs plus the Transponder. The four wires for the Nav/Com's run out to the ends of the strakes and terminated with coax connectors, the wings are prepared the same way for easy mate/de-mate. If possible, carefully measure, pre build and label your coax wires using RG58U and the proper connectors. RG59 and soldered coax wires are not acceptable. If you don't feel comfortable with this work contact me at the factory for a quote on a pre-assembled coax kit.

Strobe wiring must be per the manufacturers specifications with

the proper wire and connectors. I have seen a problem installation where a 'professional builder' used a single connector for both the strobe and navigation lighting and the owner was going through strobe supplies every 20 hours. The problem was two fold – One had to do with the connectors the other with the type of wire used. The connectors were only rated for 300 volts and the 20 gauge, unshielded automotive wire was inadequate. If you are unsure as to how to build your wing light wiring, call Velocity for a pre wired strobe kit. This not a stocked item – I will build and prepare all components, cables and connectors of strobe & navigation lighting on a per need basis. When mounting the strobe light power supply it should be in side the cabin on the firewall or on the spar (fixed gear ONLY). It doesn't belong in the nose as many builder's have done, this is a through back to the early days of the LongEZ and is culprit to a long list of electrical problems. Ground the case of the strobe supply and if possible use 27500 shielded wire for the +12V run, ground the shield at the strobe supply end only. If you will be using an EFIS to display your engine parameters, it will probably have a remote acquisition module between the engine and the EFIS displays. This is typical for the Digifly, Blue Mountain or VM systems. The modules are not rated for mounting on the engine side of the firewall and will have a lot of sensor wires going to the engine. This bundle of wire can be fed directly through the firewall or via a bulkhead connector. The bulkhead connector must be both mechanically and electrically appropriate for this application. A cheap tin plated DB25 connector from Radio Shack will not last and is not recommended! Use a sealed/semi sealed connector with gold pins. Use a cable restraint so that engine vibration won't rip the connector out of the firewall – fixing high density connectors is a real bummer...

If you live in a coastal area (salt water) you might want to treat

CFI Notams

by Nathan Rigaud, CFII



Flying the Velocity

On your first flight of the Velocity you will likely be surprised by the performance of the aircraft. The overall performance of the Velocity compares very favorably to that of very high performance production airplanes. The tendency, even among pilots who have flown high performance aircraft, is to get behind the aircraft. Think ahead would be

Continued on the next page

exposed terminals to a light coating of terminal grease. This stuff is available at Home Depot, etc... and is not bad to work with. The power companies use it with aluminum wire to keep it from corroding when clamped at the poles and power meters. It does a good job to eliminate problems caused by dissimilar metals, acidic fumes and airborne corrosives. The only concern here is from over use - too much might act as a lubricant and allow some of the small terminals to loosen. Avoid this by applying after tightening the smaller terminals. The grease is not conductive and won't cause intra terminal shorts.

I've probably brought up more questions than answered, there are always a million things with these projects. The above issues can be addressed several ways, we choose to use these guide lines because they seem the most appropriate after so many airplanes...

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CFI Notams

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my suggestion.

Taxing

The Velocity is a pleasure to taxi, and exhibits no adverse traits. Very little power above idle, if any, is needed to keep the aircraft rolling nicely. Steering is accomplished with the use of differential braking, which allows for a very tight turn radius. The brakes are powerful and smooth, requiring very little pressure to steer or stop the aircraft. Avoid making hard braking turns that will require a lot of opposite brake to return to straight taxi. Make turns smooth without the need to "jab" at the brake pedal. The main landing gear is made up of the fiberglass material also. With this in mind, you do not want to Ride the brake pedals. Riding the brakes will transfer the heat through the axle onto the gear leg. Heated enough, this will melt the gear leg and will have to be replaced.

Takeoff

Normal takeoff configuration is elevator trim to 1" below neutral solo and 2" below neutral with two or more in the airplane. Aileron trim is not a factor until into the climb phase of flight. The aircraft should be aligned with the centerline of the runway. When in position, roll forward slightly to ensure that the nose wheel is centered. Apply power slowly to prevent debris from kicking up into the propeller and continue to apply power to full within approximately 3 seconds. The Velocity has little or no tendency to pull to the right as is the case of most tractor engine designs and therefore little or no brake/rudder is needed to maintain centerline departures. Rotate at approximately 65 to 70 knots, depending on aircraft loading, to a nose attitude to the horizon. Do not allow the nose of the airplane to rotate beyond the horizon. Hold this attitude until the airplane flies off the runway. There is no need to worry about over rotating the Velocity and hitting the propeller. When a positive rate of climb has

been established, and there is insufficient runway remaining on which to land, retract the gear (for RG) and accelerate to the desired climb speed, 90 knots. Trim the elevator and ailerons as necessary for hands off flight. Passing 500 feet, set climb power, 25 inches and 2500 RPM.

Climb

Normal cruise climb at sea level is 100 knots. Monitor all engine gages to ensure correct and optimum performance, and ensure the aircraft is trimmed for balanced flight. At these lower speeds, the Velocity has a tendency to have a very positive roll stability that requires pilot induced control input to displace from the normal trimmed balanced flight.

Cruise

The Velocity has excellent stability and control characteristics under all conditions of speed, power, load factor and altitude. The controls are effective throughout the speed range of canard stall to Vne and aircraft response to control movement is excellent. The rate of roll and pitch are brisk for a four seat aircraft. The trim system is effective at all speeds so that the aircraft may be easily trimmed to fly "hands off". The Velocity possesses neutral stability and positive dynamic stability in roll and both positive static and positive dynamic stability in pitch and yaw axis. When the aircraft is placed in an angle of bank its tendency is to remain in the angle of bank and neither continue to roll nor return to wings level. However, if a yaw or pitch displacement in induced the aircraft has a tendency to dampen out the resulting oscillation and returns quickly to aerodynamic equilibrium.

Descent

A timely descent, particularly from a high, fast cruise, will require that you be well ahead of the aircraft. Pulling the power back to quickly can have detrimental effects on the engine and reduce engine TBO. Prior to descent, reduce power 1 inch of manifold pressure and start the descent. Continue to reduce power 1

inch of manifold pressure for every minute in the descent. This will reduce the possibility of shock cooling of the powerplant. There are many powerplants that are being used in today's homebuilt aircraft, use the recommended procedure for your powerplant. In turbulent air the aircraft should be slowed down to its Vno of 170 knots. Monitor your engine instruments to remain in the green arcs.

Approach and Landing

Approaching the terminal area, keep the airspeed less than 120 knots to allow for a normal descent without rapid power reductions. Enter the pattern as directed at 1000 feet agl as appropriate. On the downwind leg reduce power to allow for a 100 knot trimmed airspeed. Perform your GUMP check, Gas, undercarriage, mixture and propeller. Once abeam the numbers of the landing runway, reduce power and trim to 90 knots. Turn your base leg and maintain 80 to 90 knots. Look outside for the runway, and determined if high or low and make power adjustments to compensate. On final approach, check gear down, if RG, and maintain 80 to 90 knots. The speed brake may be used at this point if you find yourself a little high. Remember to adjust power and trim to maintain 80 to 90 knots. Fly the aircraft onto the runway; we will not be doing a full stall landing.

Very little flare is needed to perform a nice landing. Remember to use your fingers to round out, if you use too much pressure, the Velocity will be flying once again. At this point you will be nose high with low airspeed. It is important that all rudder pressure is removed prior to touchdown to prevent the brakes being locked on. Once on the ground rolling out, use your brakes as directional control and maintain centerline.

Warning: Do Not attempt a full stall landing in the Velocity. A canard stall will bring the nose down hard and could result in damage to the nose gear.

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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.

False Low Fuel Sump Warning Light

From Dale Alexander of Paradise CA

I have noted some discussion in the Reflector about false low fuel sump warning lights and the soiling of shorts that have resulted. Speculation has been that perhaps the float has become heavy with fuel. This is certainly possible, but there have been a few where fault could not be assigned. While putting all the pieces together that eventually make a fuel sump, I noticed another condition that may exist that could lead to a sump warning light "emergency".

If one studies the construction plans for the sump, note that the fuel sump level float is located just below the sump inlet from the right tank. Under certain conditions it may be possible that incoming fuel from the right tank impacts the float and forces it down into a false warning condition.

A simple way to avoid this as well as possible is to shield the float from any incoming fuel with a small baffle located just above the sender. If the shield is added, be sure to drill a small hole as shown in the picture above the float to let any air that may be trapped in operation to bleed out

Better Bearings for Retracts

From Dale Alexander of Paradise CA

Many posts on the Reflector in the recent past have noted various "concerns" with brake shimmy and loose main gear legs making noise while taxiing. I have made a modification to my 173 RG Elite that may help with one if not both of these conditions.



The stock main gear spacer bushings on the RG model are aluminum sleeves that fit over the main gear pivot bolt. At present, this arrangement will not allow any amount of torque to be applied to the main gear pivot bolt beyond what would be

called snug. Any more and the gear bushing will bind the gear leg.

I have replaced the aluminum bushings with proper thrust bearings that allow complete capture of the gear

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BuildersForum

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with no side-side or fore-aft movement. Yet the assembly is virtually frictionless when compared to the original design. More importantly, the arrangement allows a significant amount of torque to be applied to the bolt which ties the firewall and gear bulkheads together to form a stronger box. This should be a great comfort for those that push the limits of crosswind landings.

The bearings can be ordered from McMaster-Carr (562-692-5911). Ask for four of their part number 60715K12. They cost \$12.50 each. Depending on the width of the gear legs and the spacing of the gear bulkhead to firewall, this modification is very nearly a drop-in. But it would be wise to also order some shims to take up clearance as needed. McMaster-Carr also sells these and they are very inexpensive.

Figure 1 (see below) shows the general assembly. The most important details to note are that the gear leg/bearing width must be wider than the inner pivot glassed into the

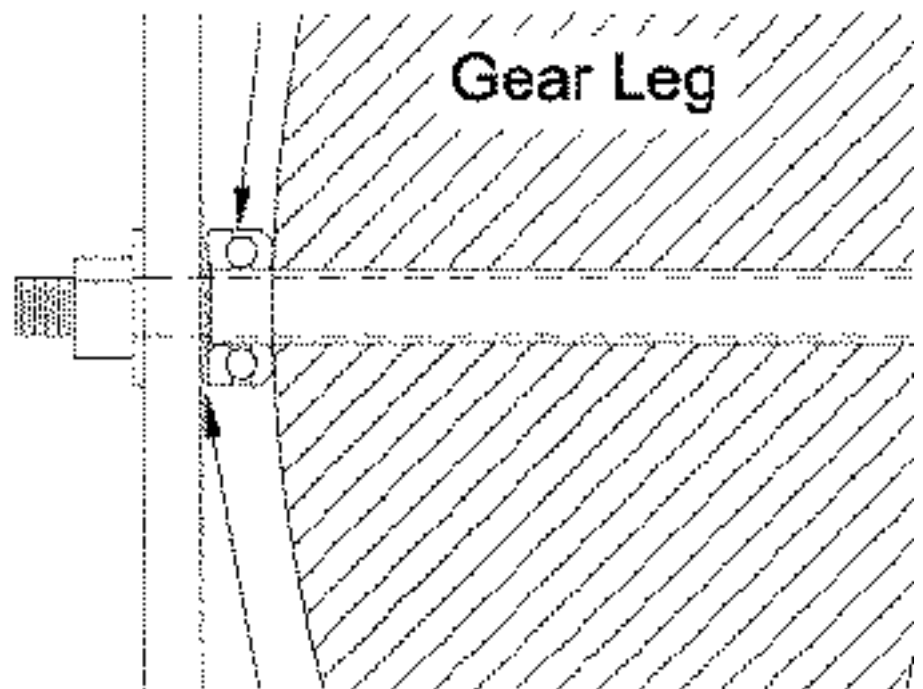
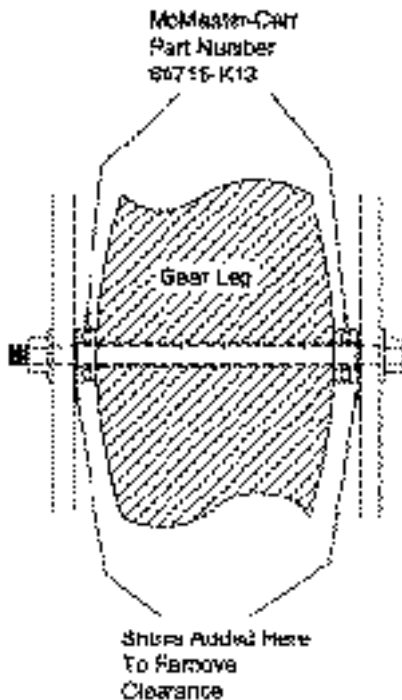
gear leg itself. The idea is for the thrust bearing to allow rotation without binding that the pivot rubbing on the bulkheads would produce. Ideally, the inner pivot should be long enough to guide the outer bearing race but not contact the bulkheads.

Figure 2 (see below) shows the detail better of what is happening at the bulkhead/bearing area. On my RG, the assembled clearance is about .010" less than the distance between the bulkheads. This makes assembly difficult as the gear leg needs to be twisted when placed into position, but it can be done. The additional shims are added to take up as much clearance as possible.

Now the good part. With this arrangement, I can torque the pivot through bolt to 20-25 FOOT POUNDS of torque and the gear leg still moves frictionlessly. This completely ties the two bulkheads together, reinforcing one another and spreading landing loads out into a much greater area while assuring that the gear will drop of its own weight if the hydraulic pumps system fails.

This same arrangement can be made to the nose gear assemble with a slight twist. The type of bearing needed would be the needle-roller type, also available from McMaster-Carr. A small amount of material ($5/64$ "") will have to be removed from the each side of the nose gear pivot shaft to allow for the width of the bearings.

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CFI Notams

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Crosswind Landings

Analyze the wind before pattern entry, or on downwind to determine if it is a right or left crosswind condition. This can also be determined on final by observing the crab profile while holding centerline. The optimum technique is to fly a crab approach with a slight rudder application a few seconds prior to touch down. The rudders are very powerful and can create heavy aileron forces to counter the rolling tendency of the rudders. After touchdown, apply stick into the wind and brakes as necessary to maintain centerline.

Go Around

Do not delay the decision to go around. Apply full power at first sign that a go around is necessary, after a positive rate of climb, retract the speed brake or landing gear.

Upper Air Work

Clearing turns will be performed prior to any maneuver in the practice area. All upper air work will be performed 2,000 feet or higher.

Steep Turns

Establish the aircraft in straight and level flight at cruise speed and align the aircraft with a landmark. Roll into a 45 degree angle of bank and apply slight back pressure as necessary to maintain altitude. Adjust power if needed. Complete the maneuver performing 360 degree turn left and right.

Slow Flight

Slow flight will be performed while maintaining a constant altitude and angle of bank. Enter slow flight from a normal cruise. We will maintain 80 knots and trim elevator as needed to maintain hands off flying.

Stalls

Maintaining altitude, reduce the power or idle. As the airplane decelerates, apply aft stick as necessary, adjusting elevator trim as needed. At

approximately 60 to 65 knots, the canard will either stall or pitch back indicating the canard has completed the stall. When this occurs, reduce back pressure on the stick to reduce the angle of attack and apply smooth power. When the canard stalls, the airplane will not brake into a spin. With the canard stalled, the ailerons and rudders will be effective throughout the stall.

•••

Visit
the Factory's
Official Web Site:
velocityaircraft.com

N570 For Sale: Standard Velocity RG

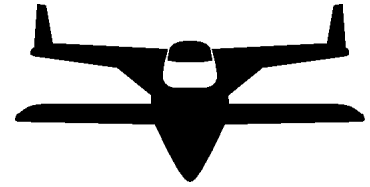


Interior, Engine, Avionics, & Airframe are all "10's". Spoiled, pampered and hangared in St. Augustine Florida since birth! 565 hours on Hobbs - all "tweaked out" with no problems. IFR certified, new PZL Franklin engine with IVO Inflight electric adjustable pitch prop, HSI, Strikefinder, S-tech auto pilot, PS engineering stereo audio panel, Stereo CD player/radio, Terra radios (2 com, 1 nav, 1 transponder), GPS moving map, JPI engine instrument plus EDM 700 engine monitor, and more...
Sales Price is US \$119,000
For a very complete description & lots of photos, go to:
lavoiegraphics.com/velocityrg

e-mail: RickL@lavoiegraphics.com
Rick Lavoie 904-461-6912

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For Sale: 173 LW Velocity FG

TT A&E 48 hours, MT constant speed electric prop (3 blade), One collins Nav-com, transponder, apollo GPS. Standard panel and engine gauges. Engine is a IO-360 Lycoming, new barrels and all accessories have been overhauled and certified. Also all gyros have been certified. Also panel mounted intercom installed. Aircraft flies great and averages 172 mph cruise at 10,000 ft. Built by an A&P and certified hardware used thru-out. Aircraft at Medford OR in Medford Air's hangar. Delivery available. All factory updates are c/w and fresh condition report will be done at time of sale. Reason for selling - Lost medical. Price \$87,500

This is a real good deal. Brendan and Sam have both flown this bird. Call Jerry Robertson at 541-618-9393 or Velocityrv@aol.com for more info.



For Sale
2002 Velocity XL RG - N789PP

This 2002 XLRG was built with superb attention to detail. Constructed and test flown at the factory, the quality of construction is evidenced by no discrepancies at the recent factory inspection. The paint and body work are flawless. The interior and upholstery are elegant, and the instrumentation is state of the art. This complex, high performance velocity is capable of cruising at 200 knots.

Engine: Continental IO-550, 150 Total Hours; Prop: MT Propeller MTV-9-D; Interior: Leather Seats, Rear Seat DVD System; Instruments: Apollo Audio Panel SL 15MS, GPS MapMX20, GPS Comm GX60, NAV Comm SL30, Transponder SL70, Auto Pilot: S-TEC System 30

For more information please email Tom Donald at tmdonald@adelphia.net or call (843) 681-5994

For Sale: Extra parts for 173 Elite

* Lyc IO-360 200hp Top Cooling Plenum \$150.00
 * Overhead Swith Panel \$12.00
 * 200hp Lyc Engine Cradle in either Silver or White \$200.00
 Contact Dale Alexander at: 530-872-0342 or eMail: Dalexan48@pacbell.net
 Happy to send eMail photos for inspection.

Factory Information



Velocity Inc.
Factory & Home Office:

200 W Airport Rd
 Sebastian FL 32958 USA
 Ph: 772-589-1860
 Builders Hot Line:
 772-589-0309
 Fax: 772-589-1893

Builders HOT LINE

Please remember that on weekends and after hours, we do not answer the 772-589-1860 phone number. Our unlisted builders hot line is 772-589-0309 and, if we are here, this is the only number we will answer.

Internet web site:
<http://velocityaircraft.com>

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 ScottB@velocityaircraft.com
 BrendanO@velocityaircraft.com

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accounting@velocityaircraft.com
parts@velocityaircraft.com

Velocity Service Center Inc.:
flighttraining@velocityaircraft.com
demos@velocityaircraft.com
maintenance@velocityaircraft.com

For Sale, Terra Avionics;

These Terra Units are late manufacture serial numbers, operating properly when removed this month;

1. TX 760D Comm, \$795.00
2. TN 200D Tri-Nav, with VOR, LOC, G/Slope, \$995.00
3. TRT 250 Transponder, \$795.00
4. Shadin Encoder (highest quality available), \$495.00

E-Mail response only, please.
we2@aug.com

Prop For Sale

New three blade Caddo prop for a Velocity with an IO 360 engine. Make offer. Mike (702) 349-4382 or mkhsbear@cox.net

1997 173 Standard Velocity FG

491TT. LIO360, 200hp. New 2 blade prop and extra 2 blade prop. New Klaus Savier Dual Light Speed Electronic Ignition (crank trigger). KLX135-GPS, KX155, KT76A transponder with mode C. 2 Dry Cell 500 CCA Batteries, New. New shoulder harnesses-pilot and co-pilot. New brake calipers, rotors, pads, and back plates. New tires, tubes, and bearings (all 3). Traffic avoidance system by Traffic Alert. 4 place intercom. IFR rated. Microvision 800 engine monitor system. VG's on wings and canard. New ceramic coated exhaust. New EGT probes. Annual done November 1, 2003. Cruise at Velocity specs, 170knots. Have over \$100,000 invested. Must sell due to health asking \$75,000 obo. Call Dan at 918-695-2758

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

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

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