

25 March, 2008

Dear Zodiac Builders,

This letter is a follow-up to my communication of May 10, 2007.

Since its introduction in 1984, the Zodiac CH 600/601, has been developed into a series of derivatives, including the HD, HDS, UL and XL models. The Zodiac XL meets the US definition of a Light Sport Aircraft and is available either in kit form or as a ready-to-fly, factory-assembled S-LSA. There are hundreds of examples of the Zodiac CH 601 flying worldwide today. After years of service and many thousands of hours of safe operation, the aircraft has gained a popular following among recreational pilots who appreciate its economy, good performances, ease of handling and excellent overall safety record. The Zenith Aircraft Co. demo Zodiac XL is still flown at the factory on an almost daily basis (now at over 1,300 hours); the ten-year-old XL prototype is still also flown regularly from Cloverdale, Calif.

As might be expected, with so many planes flying at the hands of so many pilots for so many years, there have been accidents involving all models in the Zodiac series. In most cases the cause of the accident was quickly established and the reputation of the aircraft as a sturdy and well engineered machine was only reinforced. It is worthy to note that while the NTSB typically takes many months to issue a final accident report, it does not wait for the final report to issue warning letters if, during the course of a specific investigation, it finds any indication that the remaining fleet is at risk. The NTSB sends these letters "pending further investigation", while the perceived issues are researched and resolved. No such letter has ever been issued regarding the Zodiac series. Still, a number of accidents have not been readily explained.

Among the aircraft that have experienced an in-flight break-up, all appear to have been subjected to severe structural loads that are consistent with "over-controlling" the aircraft. More specifically, and based on the (limited) information I have, most accidents linked with a break-up suggest excessive negative G forces caused, in whole or in part, by extreme elevator input from the pilot and/or occupant of the aircraft. The recommendations I made in my letter of May 10th, 2007 are as valid today as ever.

Beyond requesting that pilots always respect the design limits of the aircraft, I can only recommend a modification to the basic Zodiac aircraft at the expense of some of its wonderful assets (great low-speed controllability, excellent ground-handling in windy conditions, and superior elevator authority in case of incorrect weight & balance conditions): Still, in order to minimize the risk of inadvertently over-controlling the aircraft at higher speeds, limiting the downward deflection of the elevator on the Zodiac CH 601 series to 15 degrees is an acceptable modification to the basic HD, UL, HDS and XL models. This is a simple modification, done by changing the nylon elevator stops at the rear of the fuselage; the aircraft will continue to meet LSA standards with this limited elevator deflection, but please note that while limiting the amount of down elevator may in some cases help, it in no way diminishes every pilot's responsibility to always fly within the aircraft's design limits.

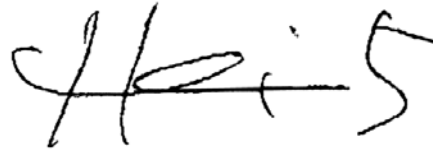
Over the last two years, the Zodiac XL design has been thoroughly reviewed and re-evaluated by myself, independent aeronautical engineers, as well as governmental agencies. As was previously reported, the independently verified results of the tests confirmed that the aircraft, when built to the plans, meets or exceeds all of its design parameters; thorough flight testing confirmed the findings. A tremendous amount of design data was submitted to the structural engineers at the NTSB after a Zodiac accident in California in November 2006; I had hoped that the investigation would be completed last year (within the typical one-year period), however, due to its thoroughness, the investigation is ongoing to this date.

Safety concerns us all and we are all responsible for it – That is why as a designer, I support “outside” independent testing when warranted, and why Zenith Aircraft regularly collaborates and assists with efforts to improve my basic aircraft designs. The design of the Zodiac is sound; build it according to the plans and you will have a well-built and sturdy aircraft. Please see below for some of my additional thoughts on the responsibilities, joys and risks of flying your own aircraft.

In closing, I want to express my sincere gratitude to the great majority of you who continue to build and fly my airplane designs in a safe and enjoyable manner. I continue to receive notes from many of you about your positive building and flying adventures, and I especially appreciate the pictures I continue to receive of your beautiful accomplishments.

Best wishes to you all as you continue to build and to fly safely.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chris Heintz', written in a cursive style.

Chris Heintz

P.S.

The following information will be nothing new to current pilots. Those of you who have attended my many Forums at Oshkosh and at Sun'n Fun over the last thirty+ years have heard me say these things over and over. And yet, while they are already well known and apply to all aircraft, as an aircraft designer and promoter of recreational flying, I still use every opportunity I can to remind us all of these fundamental principles:

We all know that there are occasional instances when a pilot encounters the unexpected. Among many possibilities, one example of this includes severe turbulence; another (as appears to have been the case recently with a Zodiac in Australia) is a bird strike. If we are fortunate when these are experienced, we only suffer the effects of a nasty scare; other times, however, we pay the ultimate price. Such "acts of God" regretfully happen with virtually all activities, and there is very little we can do about them. There are other instances, though, when we only have ourselves to blame.

If we dive our planes at speeds in excess of 290 km/hr (180 mph) and then show off to an assembled crowd by executing abrupt maneuvers (as reportedly happened a few months ago with a Zodiac in Spain), we don't just kill ourselves (and our passenger), but we affect every other Zodiac builder, pilot, potential builder and manufacturer, as well as the designer. As the result of such "accidents," most remaining pilots probably fly just a little more cautiously (which is good); but how many would-be pilots and fellow builders do we scare away from this great hobby, or from our fine aircraft (yes, I am a big believer in the Zodiac)?

A structural failure can be caused by a one-time occurrence (i.e. massive forward motion on the stick due to "panic" input (severe turbulence, collision avoidance, loss of canopy, pilot incapacity, etc.)) and/or, it can be the cumulative effect of repeatedly flying an aircraft beyond its limits (i.e. aerobatics, high-G maneuvers, flying over-gross, etc.), thereby weakening (fatiguing) one or more part(s) of the aircraft. Note that once a component is critically weakened, it may only take an otherwise mundane event (moderate turbulence, common maneuver, flap extension, etc.) to cause a structural failure. Any and all aircraft, including the Zodiac, can be flown beyond its safe limits. In the event you have pushed an aircraft beyond its limits, it is important that you carry out a detailed inspection of it before its next flight. This includes checking all critical areas: Gear, tail, and wing (spar) attachments must be "like new," all skins should remain flat and not buckled, and all rivets should still be well set. A black area around a rivet head typically means that the rivet is loose; it therefore needs to be replaced. Yes, keeping an aircraft clean is important.

In the field, Zenair and Zenith staff, as well as myself, have inspected dozens of Zodiac aircraft in the US and Europe. While the vast majority appear to be well-built and maintained, in some instances we have come across aircraft that were not constructed according to the specifications. For example, in more than one case we found inappropriately torqued main spar bolts, or the wrong number of washers on these bolts. A few loose or improperly set rivets were also found; all easily replaced.

Again, all of us play a role when it comes to safety in aviation: As builders and pilots, we must continuously exercise vigilance and good judgment. Despite its sleek looks and sporty performances, the Zodiac XL is a Light Sport Aircraft (even an "ultralight" in many countries). It should therefore be flown accordingly! As the builder of your own aircraft it should be easy for you to ensure that it is always well-maintained; as an appropriately-trained and informed pilot, you will always be able to get more out of your aircraft, and you will usually do it in a safe and enjoyable manner. Chose your day well and the combination of man, machine and weather will bring you limitless possibilities and unbound satisfaction.