

EVOLUTION *owner's*

newsletter

December 2010

A Progress Report on Product Completion and Improvements

Redmond OR; December 1, 2010

Your new landing gear

We've recently completed the flight and ground tests on the new steel landing gear and put it into service. This is an improvement that is even better than expected. The gear feels better, works better and looks better. The original impetus for making this change was to increase the service life of the assembly. The shortest road to these improvements and still maintain the existing layout and envelope was, of course, to use steel, which yielded a gear with an essentially unlimited life.

The result has met all expectations and surpassed others. As shown in last month's newsletter, all ground drop tests were completed without any problems with the design and material. One unexpected result of these tests was to have determined the need to alter the valving in the shock strut. This has resulted in decreased damping and a more compliant ride. A by-product of this is that the increased stiffness also improves ground handling, braking performance and landing feel. The aircraft also pushes and pulls easier when hand towing.



Another aim of the re-design was to re-position the actuators to provide more leverage in the retracted position to preclude any sagging or slowing of the retraction at the end of the stroke. The actuators were made longer, with a resultant increase in the capacity. A larger accumulator provides the extra hydraulic flow to fill the larger actuators. The result is a landing gear that extends and retracts in 5 seconds with a very positive start and stop. It has a "big airplane" feel with a smooth air noise signature and no buzz from the doors.



The ground tests included heavy braking and taxiing across an intersecting runway crown at high speeds. The flight tests included a Vne dive with a light pull up and a 2-3 G pull at 160kt with the gear retracted verify no sagging of the gear out of the wells. Gear retractions and extensions



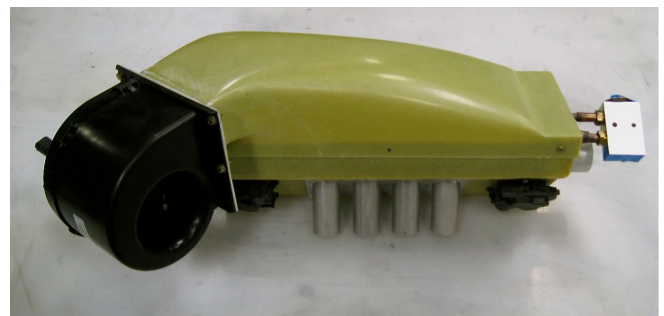
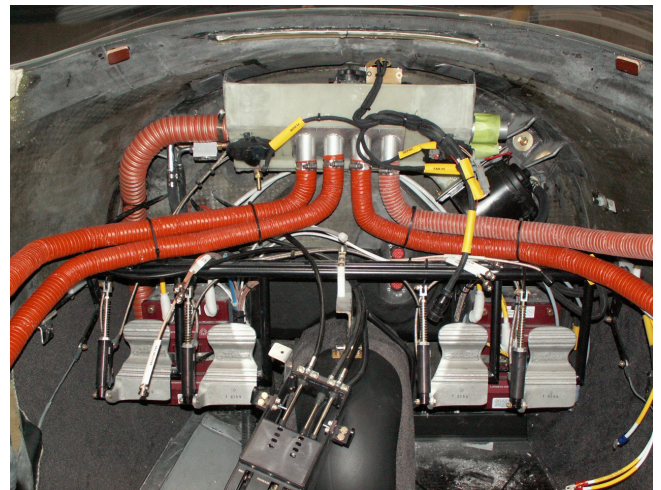
were accomplished at 150kt (Vlo) and dives with the gear extended at 160kt (Vle). Multiple emergency extensions were also performed with the hydraulic pump disabled.

These gear sets are being installed in the most efficient rate possible, based on a combination of customer need, convenience, and kit order.

A/C Distribution Box

We acknowledge that your Evolution kit is to include an air conditioning system. That would include the compressor, condenser, evaporator, a distribution box assembly which interfaces with the bleed air heat, an electronic control unit (contained within the panel touch screen unit) and all necessary plumbing. The missing part of this has been the distribution box,

delayed due to ongoing final testing of a purpose built design rather than an off the shelf, automotive style unit. We are pleased to let you know that these units are now being produced and will be supplied to you in a simple kit form. The A/C box kit will contain all the mechanical and electronic components for the system and is easily assembled during your kit build. The system requires a method to cool the bleed air down to a temperature suitable for cabin heat as well as conditioned air for cabin cooling. There are multiple ways of accomplishing the bleed air temperature reduction, all various forms of an air to air cooler, with different locations and ways of managing the airflow through the cooler. Our prototype N927LE uses the small NACA duct on the right cowl to bring air up to the cooler. Another aircraft is using a cooler within the engine air inlet, and there are other possibilities. We'll keep you advised as to how they work so you may pick one that works for you. The accompanying photo illustrates a typical installation of the evaporator/distribution box on the Evolution firewall.



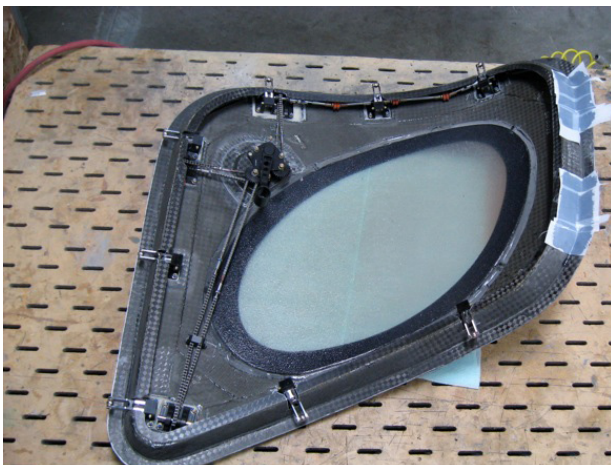
Assembled Evaporator Distribution Box and Fan Assy.



Cabin Doors

Door set production is now at one per week. We are rapidly catching up to the point where on one will be “waiting” for their door to keep their build on track. Contact Kim Lorentzen regarding where you fall in the queue and your expected door delivery date.

The mechanism has been improved and simplified from the prototype design. The doors are a closer fit and the latches are adjustable to accommodate small variations as a result of the custom build process. The cabin door in the photo is a customer door such as you will be receiving.



As always, we welcome hearing from you and will try and answer your specific questions. Questions are best handled by email as we can then gather the correct information, sometimes from multiple sources, before responding.

Thanks for your patience!