

The logo features a stylized bird or wing icon in blue and green above the text "EVOLUTION owner's" in a sans-serif font. Below this, the word "news" is written in a large, bold, black font with a red swoosh under the 'e', and "letter" is written in a large, grey, cursive font to its right.

EVOLUTION owner's
news letter

Editor, Doug Meyer

December 2015

Layout and Graphics, Ron Hart

The LanCAIR logo is written in a stylized, italicized, serif font with a red swoosh under the 'A' and 'I'.

Information for the Evolution Owner and Builder

Redmond, OR; December, 2015

CABIN PRESSURE WARNINGS

The topic of cabin pressure monitoring has obviously been on the mind of all Evolution owners recently. In fact, it has been a topic in general among pilots of all brands of pressurized singles. No Brand has been immune to the unfortunate loss of life due to possible or clearly identified cabin pressure loss. A rapid loss is obvious and the response should be clearly practiced (see Evolution Newsletter Dec. 2014), but a slow loss can be undetected until it is too late unless the aircraft has a facility of warning the pilot that the cabin is climbing and the pressure dropping. Your Evolution has two such systems.

The primary alert is the result of a detected low cabin pressure in the function of the Automatic Cabin Pressurization System. Most of you have a system controlled by a Dukes Outflow Valve, but all going forward from S/N 57 and a couple earlier conversions, have an Enviro eKAPS II system. Although these systems are different in their hardware and control, they both work the basic same way. In order to maintain a cabin differential, they must read the cabin altitude (barometric pressure) and modulate the outflow of bleed air coming into the cabin to maintain the correct positive pressure differential. In

order to do that, the systems read the cabin altitude with an internal barometric sensor. For pilot information and warning purposes, that value is sent to the Lancair Touch Screen control unit. That unit is programmed to display a large YELLOW box on the CABIN ALT display if the cabin altitude reaches a pressure altitude of 10,000 feet. At 12,000 feet PA that box turns RED advising the pilot that the cabin is climbing and/or simply not pressurizing during ascent.

As a secondary alert source, all Evolutions are equipped with a CO Guardian unit. The primary purpose of this unit is to detect a build-up of Carbon Monoxide (CO) in the cabin and alert the pilot so that he or she may reduce the cause and/or introduce fresh air into the cabin, but it also provides a separate Aural warning of high cabin altitude. This is completely independent from the Dukes or Enviro Pressurization System warning. The CO Guardian warning has its own internal barometric sensor and its own output. That output issues a warning that is sent directly to the Garmin G900x audio panel if the cabin altitude goes above 10,000 feet for 10 seconds, 12,500 for 10 seconds. The warning is a loud pulsing tone that is heard in the audio headset. The alarm tone stays on continuously over 14,000 feet. The tone of this alert is the same for a CO Alert. The only way to silence it is to descend the cabin or pull the CO breaker.

We well know that some of you have had problems with the Moritz/Radiant touchscreen unit and want you to know that we will soon have an entirely new unit to replace this. It is built to Mil-Spec standards by a different vendor and offers much more utility and reliability. It is in

CABIN PRESSURE WARNINGS(continued)

final testing now. I mention this in this context because if the M/R Touchscreen is disabled it might not display the visual warning depending on the nature of the screen failure and page. But remember, this is entirely independent of the CO Guardian alert.

PREFLIGHT and FLIGHT TESTING

You can test the CO Guardian alert on the ground by pulling the CO breaker (fig. 1) before you power up the panel, power up the G-900x, and after it has completed all the self-checks, note that you see the white on black CO DET FAIL in the PFD ALERTS box (fig. 2). Then push in the CO breaker. The warning tone should be clearly heard in the headset and the CO DET FAIL should go grey in the alerts box (fig. 3). Note that at this point you have tested the CO function as well as the baro function, but the message in the Alert box, since it refers only to CO level, would not appear during a real baro warning, only the tone.



Figure 2



Figure 3

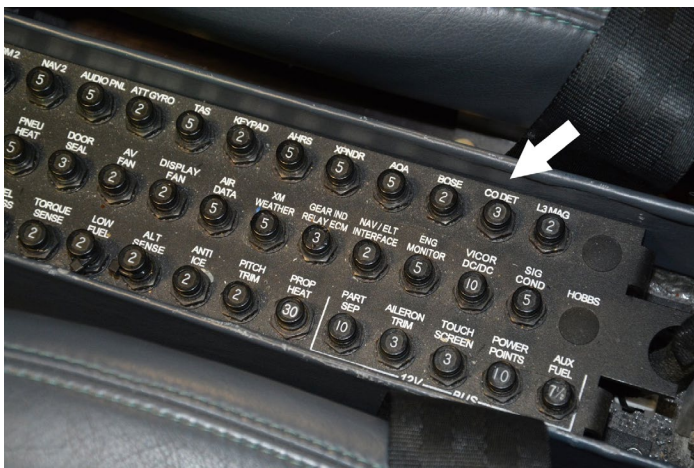


Figure 1

NOTE: Some early aircraft with a smaller breaker panel do not have a CO DET breaker as they have a fuse in the equipment bay under the baggage floor. You cannot do a ground test on these and they would be a good candidate for a push to test CO warning light as described further below.

There is no ground test available on the current M/R touch screen warning. The upcoming unit will provide for that.

You can safely flight test both systems by executing a simple unpressurized climb to 12,500 feet. It is much easier on the ears to climb unpressurized rather than pressurize and depressurize at altitude. Leave the bleed air ON but

PREFLIGHT and FLIGHT TESTING (continued)

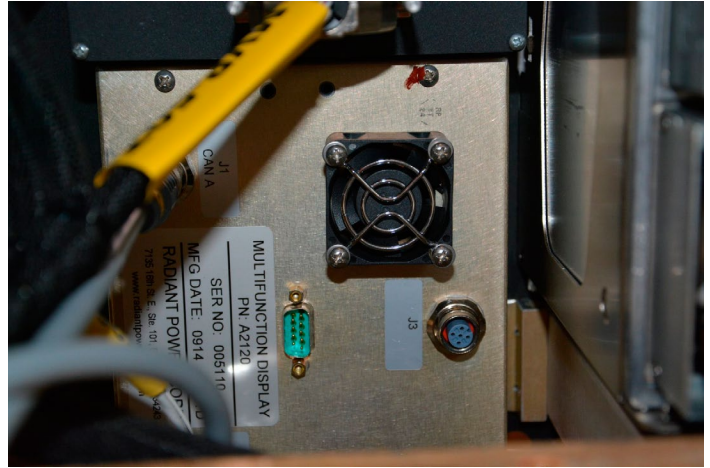
engage “CABIN DUMP” which will simply hold the outflow valve(s) open. As you climb through the previously noted altitudes you should hear and see the noted warnings. If you do not, there will be some troubleshooting in order. Note that if you pressurize at altitude by normalizing the “DUMP” switch passengers may experience some ear discomfort due to the fairly rapid climb of the cabin. When returning the cabin to normal ops all the warnings should extinguish.

UPCOMING CHANGES

Aircraft from S/N 69 on will have a CO TEST button on the panel. This will allow a “push to test” for the alarm and a red light in the switch which will illuminate as the Aural Alarm is activated by the CO Guardian. It is possible for current owners to install a similar test switch in their panel or overhead. Contact Lancair Avionics for details.

Moritz/Radiant Improvement

As I mentioned above we will have a newly designed unit from a new vendor soon. It is much more robust, incorporates internal cooling, and is configurable for future features. We are quite certain all or nearly all of the failures in the current units have been caused by excessive heat buildup in the M/R unit. This heat is built up under the glare shield as well as generated internally. As a remedy, we have adopted a small cooling fan that can be installed in the current unit (shown) and which markedly reduces the internal temperature in the housing and forestalling or possibly eliminating a screen failure. We will disassemble,



Moritz Fan

clean, inspect, install the fan in your unit and test it (which is easily removed and replaced) for \$100. Contact Lancair Avionics for more information.

Garmin Software Download Unlock Card



That pesky, yet valuable Garmin Data load Card. Do you know where yours is? Do we have to remind you that Garmin charges \$10,000 to replace it? (Yes, that's Ten Thousand Dollars and No/100) And, that they have a very high bar for waiving that charge? In the past, Lancair has placed that card in a plastic ziplock pouch in master Avionics binder for your airplane when your panel is delivered to you or your builder assistance shop. Starting with S/N 65 we are putting it in a blue plastic hard holder box that will be velcro'ed on the lower right backside side of your panel.



Some helpful tips....

- You're on the approach which is fully loaded in the GFC700 and you're between a couple of way points, the distance to the next of which correctly shows in the AP status bar on the top of the PFD, and Approach has just flipped you to the Tower. Tower guy says "say distance"..... and you're thinking, "Ok I'm 5 miles from OCRAP and OCRAP is... let's see how far..... from BUSTD...." Don't worry about it- just press NRST on the PFD and, voila! There's your distance to the airport.

- Referencing the recent problems with the M/R touch screen, it is simply stunning how hot your cockpit will get in the hot sun of a ramp. This just can't be good for anything under the glare shield and was terminal for some touchscreens. We strongly urge you to purchase a set, or at least a windscreen Heat Shield (p/n LEV-900, \$90) or a 5 piece set (LEV-905 \$225) from Bruce's Custom Covers (408)738-3959.

- You do know that your air conditioner evaporator box has a condensation drain, right? There should be a small drain tube out of the bottom of the evaporator box that allows condensation water from the A/C process to drain out the bottom of the airplane. Various builders have different ways of accomplishing this so if you don't know how yours is done, find out and check that it is not plugged, or simply dumping the considerable water on the equipment in the belly. Really.

- Is this the first of my Newsletters that you've received? You can see the back issues here:

<http://www.lancair.com/support/docs-evolution-turbine/newsletters>

Comments and responses please email:
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