

Tam Jet's Gear Failsafe System

We have all likely had that slightly sick feeling when our beautiful jet flies by and we notice the gear door is slightly open, or perhaps a wheel is starting to come out of the wheel well. A flick of the landing gear switch confirms our fears – no air in the system. The ensuing damage can be minor paintwork or major repairs.

Tam Nguyen is now marketing an electronic device that will all but eliminate this type of mishap. Called the Gear Failsafe System, this small apparatus monitors air pressure, and should it fall below a preset value, the landing gear are automatically lowered before all the air bleeds out of the system. The Failsafe will work with servo driven retract valves as well as electronic valves such as the JetTronics.

Installation of the device is simple. First, tap the air pressure line between the air tank and the retract valve and connect to the air sensor on the Failsafe. Next, unplug the retract servo or valve from the receiver and plug it into the failsafe. A short lead connects the Failsafe back to the retract channel on the receiver. The tap fitting, a short length of airline and the extra connecting lead are all provided so there are no extra parts to buy. I used a piece of Velcro to secure the ½ ounce Failsafe to the airframe. The install took less than fifteen minutes.

Programming is similar to training throttle position to an ECU. There is a small button and a red LED on the Failsafe. The button is held down while the receiver is turned on. When released, the small LED flashes twice to indicate that the Failsafe is ready to “learn” the gear down switch position. Set the transmitter switch to “gear down” and press the button on the Failsafe to complete this process. The LED now flashes three times to let you know it is ready to learn the gear up switch position. Set this on the transmitter and press the button once more to confirm this setting to the Failsafe. The LED acknowledges this action with four flashes, indicating it is ready to learn the air pressure that will activate the landing gear failsafe. Simply pressurize your system to this value, press the button once more and you are done with the programming. Tam's instructions recommend an activation pressure of 50 pounds, but the optimum setting will be the lowest pressure that you can reliably operate the gear and doors, with a bit of buffer to offset the pressure that is venting from the system, perhaps very rapidly.

The Failsafe also has one other nice feature. If you should happen to turn your transmitter on with the gear switch in the “up” position, the Failsafe recognizes the error and will override the servo, keeping the landing gear down. The Failsafe can also be overridden by holding the button down for approximately two seconds. To reset, simply turn off the receiver and turn it back on.

I tested the unit repeatedly in the Lightning, and it handled various slow leaks well. If you have a catastrophic failure, the ability of the Failsafe unit to handle it will depend on several factors. First, there must be an adequate cushion between the trigger pressure and the minimum pressure that will activate the gear. In the Lightning, I set the trigger pressure at 60 pounds, which is significantly less than what I usually land with. Minimum operating pressure to work the gear and doors through the UP valve is around 40 pounds, providing a 20 pound cushion. This was adequate to handle a completely severed line to either the up gear door cylinders or the up gear cylinders. Of course a catastrophic failure at the air tank would be problematic in any case, unless there were a backup air system, such as an interface to the brake tanks through a one way check valve. The override feature, which prevents gear retraction if the radio is activated with the gear switch in the “up” position, operated flawlessly.

While no device will offer complete protection against air leaks, Tam's Failsafe System goes a long way toward eliminating some of the common causes of gear up landings. Suggested retail on the Gear Failsafe System is \$110 US, and may be ordered at www.tamjets.com.