

The Airframe

Keeping a strobe light system healthy is a bit more complex than simply changing bulbs occasionally. The power supply's longevity depends on regular use of the system. Extended periods of nonuse result in the electrolytic condenser losing polarity formation. If a system is not used for over a year, there is significant potential for the system to fail. Should you find yourself in this situation, the solution is to remove the power supply, operate it at 75% of the normal voltage for 10–15 minutes, then reinstall it and use the system normally. If you remove a power supply, remember that these are condenser-based systems. Use caution, as the condenser can build up and store approximately 450 volts DC.

To periodically check the health of the xenon flashtube, you can use a paper cup like a stethoscope to listen to it flash. A healthy power supply and trigger transformer will make a “snapping” sound much like a spark plug. You can also feel the snap, which is a very low energy pulse, by placing a finger in close proximity to the strobe light. Xenon tubes are highly photosensitive, so a tube going bad may fire in the daylight because the ambient light conditions aid it, but the same tube may not fire at night. The tube may also fire when the engine is running but not when it is shut down because of the lower battery output.

Flash tubes are also subject to the effect of aging and will prematurely age when kept routinely in areas of high temperatures. The tube itself is airtight, and occasionally a leak will develop as a result of eggshelling of the glass or partial failure of the seals where the wire enters the glass. This condition is inevitable, as it is caused by the hot and cold cycling of the system; everything gets old and wears out.

One common reason for replacement is self-ionization. When one or more strobes begin to glow a continuous light blue, the entire system will become inoperative. This typically will occur when the system voltage is highest. To verify that the problem is ionization, turn off the system, wait a few minutes, then turn it back on. If everything operates normally for a minute or so, then fails and you see the glow, you've got self-ionization; replace the affected xenon tubes.

When replacing an old xenon tube, you may discover that other tubes begin to misfire or skip. In most cases, this signifies that they too are getting near the end of their service life. To check them out, remove the tube and operate it at 20% of its normal input power supply. If it operates at the reduced level, it still has good service life left. Another problem, found only in double-flash systems, is an intermittent second flash. Such systems are designed to operate at normal line voltage. What probably is happening is the system voltage is dropping below the battery-charging voltage and the second flash isn't getting off. Other electrical system problems probably are to blame rather than the strobe system.

CONDUCTING AN INTERIOR PREFLIGHT

The most important aspect of an interior preflight is carefully adhering to the published checklist. Beyond that, check the cabin for cleanliness. Dust floating in the air during flight can cause eye and respiratory problems. As a student pilot, I found that the airplanes were so dirty at my local FBO that for a long time I logged two sneezes for every touch and go. Loose objects are also a major concern in an aircraft cabin. In turbulence or during a fast stop, they can become lethal projectiles hurtling through the air.