

Chapter One

Anticollision Lights

The post-WWII era saw an economic boom in the United States, a large number of military-trained pilots, and many ex-military transport aircraft available for conversion to civilian use. By the 1950s these factors combined to produce a proliferation of airlines; the skies were more crowded than ever before in history, and for the first time airplanes were routinely carrying business travelers. The demand for greater aircraft conspicuity paralleled the demand for night airline operations, so anticollision lights were developed.

The earliest anticollision lights were white rotating beacons. It wasn't too long before it became obvious that a flashing white light resulted in a very significant, bright backscatter in the cockpit which could be very disorienting to the crew. As a result the white light was covered with a red filter to reduce the effect. Eventually the strobe light was developed and the requirement for an anticollision light broadened to include either a rotating beacon or a strobe.

The requirement for an anticollision light today is defined by four aircraft certification date categories. If the aircraft was certificated prior to August 11, 1971, it must have at least a red rotating beacon. If it was certificated on or after August 11, 1971, the regulations call for a white incandescent light, which is more luminous than the traditional red light. For aircraft certificated after July 18, 1977, the requirements regarding power and coverage for anticollision lights are more stringent yet.

While aircraft are grandfathered in, it is always acceptable to upgrade the older anticollision light systems for a more modern one. The simple fact is older collision light requirements are inadequate for today's dense air traffic environment. All aircraft can now be outfitted with simple, cost-effective strobes, which in most cases can utilize existing wiring and lighting mounts already on the airframe.

The current specifications for both rotating beacon and strobe anticollision light systems as defined by FAR 23.1401 may include one or more lights of either aviation red or aviation white. The intensity requirements are specified in detail by the regulation to assure adequate visibility. The configuration must be such that it "illuminates the vital areas around the airplane," which functionally means the light system must project light 360 degrees around the aircraft's vertical axis, as shown in Figure 1-4. It also must project light 75 degrees above and below the horizontal plane of the aircraft. Additionally, the system must produce a minimum of 400 candlepower in a forward direction, though the effective light-intensity requirement diminishes as the angle increases from the centerline (the regulation provides a table detailing the tolerances), and the lights must have a flash rate between 40 and 100 cycles per minute. While strobe lights are very effective, there are some drawbacks of which pilots should be aware.

Some people are highly susceptible to nausea, disorientation, and even the onset of epileptic episodes as a result of strobe lights. The regulations allow for the deactivation of strobe systems if the pilot in command determines that operating conditions warrant it. It is highly recommended that a strobe system be turned off when flying in clouds or fog, which causes the light to scatter around the aircraft and into the cockpit. It is also acceptable to turn them off during ground operations because the intensity of a strobe is