



U.S. Department  
of Transportation  
Federal Aviation  
Administration

# Advisory Circular

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**Subject:** Anticollision Light Maintenance  
Program

**Date:** 12/12/18

**AC No:** 43-217

**Initiated by:** AFS-300

**Change:**

**1 PURPOSE OF THIS ADVISORY CIRCULAR (AC).** This AC provides guidance in developing an anticollision light maintenance program. This AC describes an acceptable means, but not the only means, to comply with Title 14 of the Code of Federal Regulations (14 CFR). However, if you use the means described in this AC to show compliance, you must follow it in all important respects.

**1.1 Focus.** Anticollision lights are intended to aid in collision avoidance while on the ground and in the air. Certification standards dictate field of coverage, flash characteristics, color, and light intensity. To maximize their effectiveness, they are strategically placed to eliminate lapses in the field of coverage, usually at extremities of the aircraft. These locations tend to place the lights in extreme environmental conditions and subject to lightning strike and ground damage.

**1.2 Limitations.** This AC does not:

- Provide relief where more stringent procedures or safeguards are specified by manufacturer instructions for continued airworthiness (ICA) or other regulatory guidance.
- Amend certification standards found in Technical Standard Order [\(TSO\)-C96a](#), Anticollision Light Systems.

**2 AUDIENCE.** This AC applies to aircraft operators and maintenance, repair, and overhaul (MRO) organizations.

**3 WHERE YOU CAN FIND THIS AC.** You can find this AC and others on the Federal Aviation Administration's (FAA) website at [http://www.faa.gov/regulations\\_policies/advisory\\_circulars](http://www.faa.gov/regulations_policies/advisory_circulars).

**4 WHAT THIS AC CANCELS.** AC 90-75, Strobe Light System Inspection Practices, dated February 10, 1977, is canceled.

**5 RELATED REGULATIONS.** The following 14 CFR parts can be found at <http://www.ecfr.gov>.

1. Part [21](#), § [21.50](#), Instructions for Continued Airworthiness and Manufacturer's Maintenance Manuals Having Airworthiness Limitations Sections.
  2. Part [23](#), § [23.2530](#), External and Cockpit Lighting.
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3. Part 23 Appendix [A](#), Instructions for Continued Airworthiness.
4. Part [25](#), § [25.1401](#), Anticollision Light System.
5. Part 25, § [25.1529](#), Instructions for Continued Airworthiness.
6. Part 25 Appendix [H](#), Instructions for Continued Airworthiness.
7. Part [27](#), § [27.1401](#), Anticollision Light System.
8. Part 27 Appendix [A](#), Instructions for Continued Airworthiness.
9. Part [29](#), § [29.1401](#), Anticollision Light System.
10. Part 29 Appendix [A](#), Instructions for Continued Airworthiness.
11. Part [91](#), § [91.205\(c\)\(3\)](#), Visual Flight Rules (Night).
12. Part 91, § [91.209](#), Aircraft Lights.

## 6 RELATED READING MATERIAL (current editions).

- AC [20-30](#), Aircraft Position Light and Anticollision Light Installations.
- AC [20-74](#), Aircraft Position and Anticollision Light Measurements.
- SAE Aerospace Information Report AIR5689, Light Transmitting Glass Covers for Exterior Aircraft Lighting.
- SAE Aerospace Recommended Practice ARP5029, Measurement Procedures for Strobe Anticollision Lights.
- SAE Aerospace Recommended Practice ARP5637, Design and Maintenance Considerations for Aircraft Exterior Lighting Plastic Lenses.
- SAE Aerospace Standard AS8017, Minimum Performance Standard for Anticollision Light Systems.

**Note:** SAE publications are available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001; Tel: 877-606-7323 (inside the United States and Canada) or +1 724-776-4970 (outside the United States); <http://www.sae.org/>.

- 7 **HISTORY.** In February of 1991, a Boeing 737 collided with a Fairchild Metroliner SA-227 resulting in 34 fatalities. The subsequent investigation showed that the 737 landed on the same runway the Metroliner was waiting for takeoff. Several National Transportation Safety Board (NTSB) recommendations were issued as a result of this accident. Recommendations A-91-111 and A-91-112 specifically called for enhancements in aircraft anticollision light installation and maintenance. In response to the NTSB recommendations, Flight Standards Bulletin for Airworthiness (FSAW) 94-25 and later 94-25B were created, establishing guidance for a strobe light maintenance program.

**Note:** This AC combines practices cited in the previously mentioned FSAWs, wiring inspection in the canceled AC 90-75, and industry standards for consideration in a comprehensive anticollision light maintenance and inspection program.

- 8 ANTICOLLISION LIGHT MAINTENANCE PROGRAM.** As with any aircraft system, the design approval holder (DAH) should analyze the anticollision light system during initial certification for factors that contribute to system degradation and malfunction. In accordance with § 21.50, the DAH making application after January 28, 1981, is required to provide ICAs. The following important areas should be considered in a comprehensive anticollision light maintenance program in addition to the DAH recommendations or in cases where § 21.50 is not applicable to aircraft or anticollision light systems due to application date.

**Note:** Due to the various light configurations and certification/operational rule effectivity dates, specifications in place at the time of original certification are in effect. In some cases, it may be necessary to research Civil Air Regulations (CARs) for vintage aircraft.

- 8.1 Field of Coverage.** In most cases, the field of coverage will not change from the original certification specifications. However, repair after damage or modifications in adjacent areas should consider anticollision light location. Common modification concerns are the placement of additional antennas for In-Flight Entertainment (IFE) systems and mounting of external special use equipment that may obstruct the field of coverage. Additional post certification obstructions may unintentionally exceed the allowable obstruction budget specified in AC 20-30 and should be corrected.

In addition to these modification concerns, the practice of blocking or filtering a portion of an individual light to minimize interference with Night Vision Imaging Systems (NVIS) should only be allowed through the Supplemental Type Certificate (STC) process. In cases where anticollision light systems may periodically interfere with NVIS, the pilot has the option in § 91.209(b) to turn off the system.

- 8.2 Flash Characteristics.** A combination of the number of light sources, beam width, speed of rotation (rotating beacons), and other factors can affect the flash frequency. Certification standards for parts 25, 27, and 29 specify a flash rate of 40 to 100 cycles per minute as viewed from a distance. A flash rate exceeding 100 but no more than 180 cycles per minute are acceptable in cases of overlapping field of coverage.
- 8.3 Color.** Requirements for anticollision light color are unique to each certification part. For example, part 23 is not specific, part 25 gives the option of aviation red or aviation white, and parts 27 and 29 limit color to aviation red. However, § 91.205 allows for aviation white or aviation red for all powered civil aircraft with standard category U.S. airworthiness certificates conducting night visual flight rules (VFR) operations. Additionally, some light configurations may exhibit a change in color at the source similar to the gradual color shift of a white light-emitting diode (LED) array to a faint yellow.

- 8.4 Light Intensity.** Acceptable light intensity can only be determined by test equipment. This test should be conducted only after the protective lens, if installed, meets manufacturer's specifications related to transparency. If manufacturer's specifications are not published, refer to the acceptable industry standards documents listed in paragraph 9.
- 8.5 Transparency.** The maintenance program should inspect each light assembly protective lens for degradation related to environmental abrasives that cause pitting and color shifts, which may be the product of sun fading and crazing. Lens inspection and rejection criteria should be defined by the DAH. The ICA should also specify any test equipment necessary to detect color differences.
- 9 TESTING AND INSPECTION GUIDANCE.** Due to variations in anticollision light technology and configurations, inspection and test standards are in several FAA and industry documents.
1. AC 20-74 covers legacy rotating beacon and flashing or variable intensity incandescent configurations.
  2. AIR5689 identifies various quality defects common to glass lenses during the manufacturing process. This AIR also gives inspection criteria for molded glass coverings that can be used for in-service rejection criteria.
  3. ARP5029A provides guidance for strobe anticollision lights except for strobes with multiple flashes (burst) or flash rates exceeding 0.2 seconds.
  4. ARP5637A includes plastic lens maintenance concepts.
  5. AS8017D defines multiple flashes and flash rates exceeding 0.2 seconds.
- 10 TEST EQUIPMENT.** A photometer is the standard tool to measure anticollision light intensity. The aircraft or light manufacturer should specify the type of photometer for the specific configuration in their ICA. Operators may use an alternative photometer if they can provide proof of equivalency to the manufacturer's standard. In all cases, the photometer must be calibrated to a known standard.
- 11 ON-WING TESTING.** A comprehensive anticollision light maintenance program should be based on total system performance. This is accomplished by conducting on-wing testing in accordance with the manufacturer's ICAs and at a frequency established during certification. In cases where a manufacturer's anticollision light maintenance program and ICAs are not established, refer to the acceptable industry standards documents listed in paragraph 9 for inspection criteria. In the absence of a published maintenance program, an acceptable interval should be based on an operator's failure rates and operating conditions.
- 11.1 Photometer.** Ensure the photometer model is identified in the ICA or is an acceptable equivalent. Verify the photometer has a valid calibration date.
- 11.2 Work Area.** Verify the work area is clear of obstructions and reflective surfaces between the photometer and the Unit Under Test (UUT).

- 11.3 Lens Condition.** Prior to test commencement, inspect the outer lens for damage and contamination by referencing the manufacturer's ICA or ARP5637 for plastic and AIR5689 for molded glass assemblies.
- 11.4 Color.** Check the lens color or LED array for compliance with § 91.205.
- 11.5 Wiring.** Check the condition of the light wiring in the adjacent area, preferably at least a three-foot section if accessible. Pay special attention to wing tip light locations that may transit fuel vapor zones or tip tanks. There has been significant history of fuel vapor ignition by a malfunctioning strobe lamp mounted in tip tanks or damaged high discharge wiring.
- 11.6 Location.** Measure the distance between the photometer and the UUT. The photometer user guide usually will specify this distance. Vertical and horizontal angle from the UUT is also critical and may be specified by the DAH ICA or photometer manual.
- 11.7 Test.** Apply power to the anticollision light system and test for light intensity using the photometer and verify the flash rates. This test will be conducted at each individual light location.
- 11.7.1 Light Intensity.** Verify light intensities are within tolerances specified in the following:
- Section 23.1401 (Part 23 aircraft certified prior to August 30, 2017).
  - Section 23.2530.
  - Section 25.1401.
  - Section 27.1401.
  - Section 29.1401.
  - AC 20-74.
  - AS8017.
- 11.7.2 Flash Rates.** Compare observed flash rates to certification requirements. Flash rates for individual lights, UUT, should be no less than 40 and no more than 100 flashes per minute. Overlap flash rates should also be verified.
- 12 AC FEEDBACK FORM.** For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.



Robert C. Carty  
Deputy Executive Director, Flight Standards Service

**Advisory Circular Feedback Form**

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the Flight Standards Directives Management Officer at 9-AWA-AFB-140-Directives@faa.gov.

Subject: AC 43-217, Anticollision Light Maintenance Program

Date: \_\_\_\_\_

*Please check all appropriate line items:*

An error (procedural or typographical) has been noted in paragraph \_\_\_\_\_ on page \_\_\_\_\_.

Recommend paragraph \_\_\_\_\_ on page \_\_\_\_\_ be changed as follows:

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In a future change to this AC, please cover the following subject:  
*(Briefly describe what you want added.)*

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Other comments:

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I would like to discuss the above. Please contact me.

Submitted by: \_\_\_\_\_

Date: \_\_\_\_\_