

INCH-POUND

MIL-DTL-58085B
29 OCTOBER 2007
SUPERSEDING
MIL-L-85085A
17 August 1970

DETAIL SPECIFICATION

LIGHT, BEACON, ANTI-COLLISION, AIRCRAFT

Inactive for new design after 31 July 2000

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. Scope

1.1 Scope. This specification covers an anti-collision light.

1.2 Classification. Lights shall be of the type as specified (see 6.2).

- Type I - Connector located on bottom of unit, part No. M58085-1, position "A" on figure 1.
- Type II - Connector located on side of unit, part No. M58085-2, position "B" on figure 1.
- Type III - Connector unfastened; can be assembled as either Type I or Type II, part No. M58085-3, position "A" or "B" on figure 1.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in section 3, or 4 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in section 3, or 4 of this standard, whether or not they are listed.

Comments, suggestions, or questions on this document should be addressed to Defense Supply Center Philadelphia, ATTN: DSCP-NASA, 700 Robbins Avenue, Philadelphia, PA19111-5096 or email to dscpg&ispeccomments@dla.mil Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <http://assist.daps.dla.mil>.

MIL-DTL-58085B

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL SPECIFICATIONS

TT-P-1757 Primer Coating, Alkyd Base, One Component

FEDERAL STANDARDS

FED-STD-595/34088 Green, Flat or Lusterless

DEPARTMENT OF DEFENSE SPECIFICATIONS

| | |
|--------------|--|
| MIL-S-5002 | Surface Treatments and Inorganic Coatings for Metal Surfaces of Weapons Systems |
| MIL-DTL-5541 | Chemical Conversion Coatings on Aluminum and Aluminum Alloys |
| MIL-S-7742 | Screw Threads, Standard, Optimum Selected Series: General Specification for |
| MIL-DTL-7989 | Covers, Light – Transmitting, for Aeronautical Lights, General Specification for |
| MIL-A-8625 | Anodic Coatings for Aluminum and Aluminum Alloys |

DEPARTMENT OF DEFENSE STANDARDS

| | |
|-------------|--|
| MIL-STD-130 | Identification Marking of US Military Property |
| MIL-STD-461 | Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment |
| MIL-STD-704 | Aircraft Electric Power Characteristics |
| MIL-STD-810 | Environmental Engineering Considerations and Laboratory Tests |
| MIL-STD-889 | Dissimilar Metals |
| MS3102 | Connector, Receptacle, Electric, Box Mounting, Solder Contacts, AN Type |

DEPARTMENT OF DEFENSE HANDBOOKS

MIL-HDBK-838 Lubrication of Military Equipment

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

MIL-DTL-58085B

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

| | |
|----------------|--|
| SAE-AS25050 | Colors, Aeronautical Lights and Lighting Equipment, General Requirements for |
| SAE-AMS-S-8802 | Sealing Compound, Temperature Resistant, Integral Fuel Tanks and Fuel Cell Cavities, High Adhesion |

(Copies of these documents are available from www.sae.org or the Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 Order of precedence. In the event of a conflict between the text of this document and the reference cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Design. Anti-collision beacon light shall be in accordance with figure 1 and shall be as specified herein. Design shall permit adjustment or repair by personnel of operating units and overhaul bases. Parts shall be built to withstand the strains, jars, vibrations, and other conditions incident to shipping, storage, installation, and service. Weight of the complete assembly shall not exceed 2 pounds and 4 ounces.

3.1.1 First article. If first article approval is required (see 6.2), approval and testing shall be in accordance with 4.2. Approval of the first article shall not relieve the contractor of his responsibility to furnish a product in accordance with this specification. Any changes or deviations of the approved first article samples shall be subject to prior approval of the contracting officer.

3.2 Material. Materials shall be as specified herein. All materials and components shall be new and unused.

3.3 Construction.

3.3.1 Standard parts. AN or MS standard parts shall be used whenever they are suitable for the purpose, and shall be identified on the drawings by their part numbers. In applications for which no suitable corresponding part is in effect on date of invitation for bids, commercial parts may be used provided they conform to this specification.

3.3.2 Interchangeability. All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance.

3.3.3 Screw threads. Screw threads shall be in accordance with MIL-S-7742.

3.3.4 Protective treatment and finishes. Materials subject to deterioration when exposed to climatic or environmental conditions during service usage, shall be protected against deterioration in a manner that will in no way prevent compliance with the performance requirements specified herein (see 3.5). Protective coating that will chip, crack, or scale with age or extremes of climatic or environmental conditions shall not be used.

3.3.4.1 Metals. Metals shall be of the corrosion-resistant type or suitably protected to resist corrosion during normal service life. Surface treatments and metallic coatings for metal surfaces of the light shall be in accordance with MIL-S-5002. Unless suitably protected against electrolytic corrosion, dissimilar metals as defined in MIL-STD-889 shall not be in intimate contact with each other.

MIL-DTL-58085B

3.3.4.2 Aluminum and aluminum-alloy parts. All aluminum and aluminum-alloy parts shall be covered with an anodic film conforming to MIL-A-8625. If the finish is for corrosion resistance, or for a paint base, the parts shall be coated with a chemical film in accordance with class 2 of MIL-DTL-5541.

3.3.4.3 Steel parts. All steel parts, except lubricated internal working parts and those fabricated from corrosion-resistant steel, shall be cadmium-plated in accordance with type II, class B of SAE-AMS-QQ-P-416.

3.3.4.4 Painting. Before assembly, all exposed parts (except bearing surfaces and the lamp) shall be coated with zinc-chromate primer conforming to TT-P-1757; after assembly, two coats of zinc-chromate primer pigmented conforming to olive drab No. 34088 of FED-STD-595 shall be applied.

3.4 Components. Light shall include the following components:

3.4.1 Cover. Cover shall be of glass and conform to class B of MIL-C-7989. Cover shall be mounted to provide an unobstructed transmission of light. Light emitted shall be aviation red conforming to SAE-AS25050.

3.4.2 Housing. Housing shall completely protect the mechanism and electrical wiring from entrance of foreign matter.

3.4.3 Mounting flange. Mounting flange design, and screw locations, shall be as shown on figure 1. Flange shall be sealed to the housing with a sealant conforming to SAE-AMS-S-8802. A gasket shall be provided to seal the flange and the mating surface of the aircraft.

3.4.4 Terminals. Wiring from the motor (see 3.5.2) and lamp shall terminate in a connector receptacle conforming to R10SL-3P of MS3102. Terminal "A" shall be connected to the lamp circuit, terminal "B" to the motor circuit, and terminal "C" to the common ground. The connector location shall be in accordance with the type specified (see 1.2 and 6.2). For location "B", the connector shall be positioned so that the key is toward the flange of the light, which will be the 12 o' clock position with the light as shown in the lower view on figure 1.

3.4.5 Type III light. Type III light shall be furnished in a partially dismantled condition so that the electrical connector is free to be assembled in either the type I or type II position (see 1.2) without the use of special tools. A copy of assembly instructions shall be provided with each type III light.

3.5 Performance.

3.5.1 Life. The light shall withstand 1,000 hours of operation without servicing other than replacement of the lamp. The lamp shall withstand an average of 250 hours of operation.

3.5.2 Motor and lamp circuit. The light shall operate satisfactory on any supply voltage between 24 and 30 volt direct (dc) with an 84 watt rating.

3.5.3 Flash rate. The light shall have a flash rate of 70 flashes per minute, plus or minus 30, when operated from voltage specified in 3.5.2.

3.5.4 Light intensity. The minimum light intensities in all vertical planes, measured with the red filter and expressed in terms of "effective" intensities, shall be in accordance with Table I.

MIL-DTL-58085B

Table I. Minimum effective intensities for anti-collision light.

| Angle above or below mounting plane of light (degrees) | Effective intensity (candles) |
|---|----------------------------------|
| 0 to 5 | 100 |
| 5 to 10 | 60 |
| 10 to 20 | 20 |
| 20 to 30 * | 10 |

* Above only.

3.6 Lubricant. Where lubrication is required for the light to comply with 3.5.1, it shall be within the guide line of MIL-HDBK-838.

3.7 Drainage. The light shall permit drainage of condensation if it is mounted in an upright or inverted position.

3.8 Electromagnetic compatibility (EMC). The light shall meet the requirements of MIL-STD-461. The enclosed case construction shall provide continuity of electrical shielding. All mating surface shall be clean and carefully fitted to minimize radio frequency impedance at joints, seams, and mounting surfaces.

3.9 Electrical power supply. The light shall be designed for continuous operation when supplied with electrical power within the range of 20 to 30 volts (28 volts dc nominal) and have characteristics as defined in MIL-STD-704.

3.9.1 Electrical power interface. The light shall maintain specified performance when supplied with 28 volts dc (nominal) power having characteristics as defined in MIL-STD-704 for category B equipment. In addition to the transient voltage requirements of MIL-STD-704, the light shall not malfunction, or exhibit any unacceptable response on any lead to or from the system, or any connecting lead when subjected to transients of plus or minus 600 volts for 10 milliseconds. Also, the light operation shall not degrade the aircraft electrical power supply characteristics beyond the limits specified in MIL-STD-704.

3.10 Identification of light. Light shall be identified in accordance with MIL-STD-130.

3.11 Workmanship. The light, including all parts and accessories, shall be constructed and finished to produce an item free from all defects which would affect proper functioning. The item shall be free from burrs, sharp edges, metal chips, loose solder, and other foreign material. Particular attention shall be given to the neatness and thoroughness of soldering, wiring, marking, finish, alignment of parts, and tightness of screw assemblies.

4. VERIFICATION

4.1 Classification of inspection: The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2).
- b. Conformance inspection (see 4.3).

4.2 First article. Two lights selected prior to line production (see 3.1.1 and 6.2) shall be subjected to all examinations and tests specified herein.

4.3 Conformance. Conformance examinations and tests shall consist of examinations to determine compliance with this specification with respect to materials, workmanship, and markings, and with the operational test specified in 4.5.2. Sampling shall be in accordance with 4.4.

MIL-DTL-58085B

4.4 Sampling. A minimum of one light shall be selected at random from each 25 or fraction thereof submitted for acceptance, and tested for flash rate as specified in 4.5.2. A minimum of one light shall be selected at random from each 200 or fraction thereof submitted for acceptance, and tested for light intensity as specified in 4.5.2.

4.5 Tests.

4.5.1 Conditions. Other than for the environmental test specified in 4.5.4, tests on the light shall be conducted at an atmospheric pressure of 29.9 inches of mercury (Hg), plus or minus 1 inch, and at a temperature of 78° F, plus or minus 20° F.

4.5.2 Operation. The light shall be mounted to a flat 18 by 18 inch aluminum sheet painted with zinc chromate primer, and under conditions simulating actual installation, operated at room temperature (approximately 77° F) from a 24 to 30 volt source. The flash rate and light intensity shall be tested to determine conformance with 3.5.3 and 3.5.4. Any evidence of malfunction or overheating of the motor shall be cause for rejection of the lot represented. In first article testing only (4.2), the light shall operate a minimum of 100 hours before the flash rate and the light intensity are tested.

4.5.3 Endurance. The light shall be mounted to a flat 18 by 18 inch aluminum sheet painted with zinc chromate primer, and under conditions simulating actual installation, except with means provided for inverting the light without interrupting operation. The light shall be operated from a 28 volt dc source, plus or minus 1 volt. The rotating mechanism shall be operated 500 hours in the upright position and 500 hours in the inverted position. After this test, any evidence of excessive wear or malfunction in any part other than the lamp filament shall be cause for rejection of the lot. The average lamp life over this test period shall not be less than 250 hours. Room temperature blast cooling air may be provided for 23 out of each 24 hours of the testing.

4.5.4 Environmental. Environmental test (see 3.3.4.1) shall be in accordance with the applicable method as specified in MIL-STD-810:

| | |
|----------------------|--------------------------------|
| (a) High temperature | 501.3, Procedure I at 106° F |
| (b) Low temperature | 502.3 |
| (c) Rain | 506.3 |
| (d) Humidity | 507.3, Procedure I |
| (e) Fungus | 508.4 |
| (f) Salt fog | 509.3 |
| (g) Sand and dust | 510.3 |
| (h) Vibration | 514.4, Procedure I, Category 6 |

The light shall be operating during the entire vibration test (see (h) above). There shall be no more than one lamp filament failure on the two lights tested during the vibration test. After these tests, the light shall be inspected to determine whether it meets all operational requirements of this specification. The duration of the test shall be 3.5 hours in each of three mutually perpendicular axes. The specific model aircraft for which this item is used on is the UH-1 H/V model aircraft and the appropriate vibration spectra is referenced in method 514.4.

4.5.5 Electromagnetic compatibility. The light shall be tested as specified in MIL-STD-461, except that the test shall be conducted only between 150 kilocycles and 399.9 megacycles.

4.5.6 Electrical power interface. Tests shall be made to determine, and insure, compatibility of the light with power sources complying with MIL-STD-704, as specified in 3.9.1. The light shall not malfunction or exhibit any unacceptable response on any lead to or from the system, or any interconnecting lead, when subjected to power source transients as allowed by MIL-STD-704. Test methods and results shall be thoroughly documented.

MIL-DTL-58085B

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements are maintained by the Inventory Control Point's packaging activities within the Military Service's system commands. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The anti-collision light is for use on aircraft to provide a signal permitting aircraft to be seen at greater distances than aircraft provided only with wingtip and tail lights.

6.2 Ordering data. Procurement documents should specify the following:

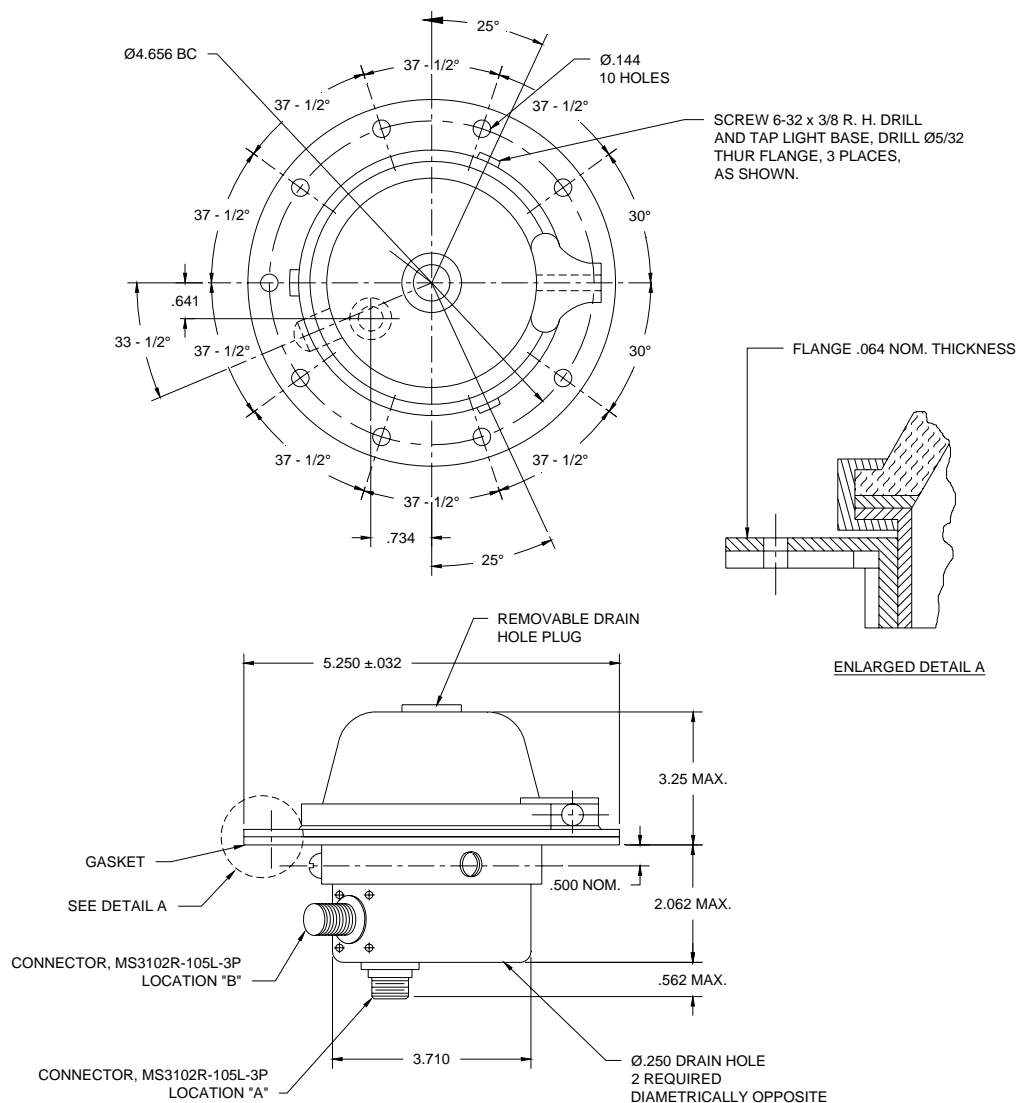
- (a) Title, number, and date of this specification.
- (b) Type of light required (see 1.2).
- (c) Whether first article tests are required (see 3.1.1 and 4.2).
- (d) Packaging requirements (see 5.1).

6.3 Subject term (key word) listing.

 Navigational light
 Signal

6.4 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

MIL-DTL-58085B



CONNECTOR HOLE NOT USED SHALL HAVE COVER PLATE INSTALLED.

| PART NUMBER | RATED | | CONNECTION LOCATION | COVER COLOR |
|----------------|-------|-------|------------------------|--------------|
| | VOLTS | WATTS | | |
| M58085-1 | 28 DC | 84 | A | AVIATION RED |
| M58085-2 | 28 DC | 84 | B | AVIATION RED |
| M58085-3 | 28 DC | 84 | A or B | AVIATION RED |

Dimensions in inches. Unless otherwise specified, tolerances, decimals $\pm .016$, angles $\pm 1^\circ$.

FIGURE 1. Light, Beacon, Anti-collision, Aircraft.

Custodian:
Army – AV

Preparing activity:
DLA – IS

(Project 6220-2007-005)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.