MIL-L-58085A(AV)
17 August 1970
SUPERSEDING
MIL-L-58085(MO)
23 July 1965

MILITARY SPECIFICATION

LIGHT, BEACON, ANTI-COLLISION, AIRCRAFT

1. SCOPE

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

1.2 Classification.--Light 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 The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of the specification to the extent specified herein:

SPECIFICATIONS

FEDERAL

QQ-P-416	Plating, Cadmium (Electrodeposited)
PPP-B-601	Boxes, Wood, Cleated-Plywood
PPP-B-636	Box, Fiberboard
PPP-B-640	Boxes, Fiberboard, Corrugated, Triple Wall

MILITARY

MIL-S-5002	Surface Treatments and Metallic Coatings for Metal Surfaces of Weapons Systems
MIL-C-5541	Chemical Films and Chemical Film Materials for Aluminum and Aluminum Alloys
MIL-I-6181	Interference Control Requirements, Aircraft Equipment
MIL-L-6730	Lighting Equipment, Exterior, Installation of Aircraft (General Specification)
MIL-S-7502	Sealing Compound, Integral Fuel Tanks and Fuel Cell Cavities, High Adhesion, Accelerator Required
MIL-S-7742	Screw Threads, Standard, Optimum Selected Series: General Specification for
MIL-C-7989	Covers, Light-Transmitting, for Aeronautical Lights, General Specification for
MIL-P-8585	Primer Coating, Zinc Chromate, Low-Moisture-Sensitivity
MIL-A-8625	Anodic Coatings, for Aluminum and Aluminum Alloys
MIL-F-22191	Films, Transparent, Flexible, Heat Sealable, for Packaging Applications
MIL-C-25050	Colors, Aeronautical Lights and Lighting Equipment, General Requirements for

STANDARDS

FEDERAL

FED-STD-595	Colors

MILITARY

MIL-STD-100	Engineering Drawing Practices
MIL-STD-129	Marking for Shipment and Storage

MIL-STD-130	Identification Marking of U. S. Military Property
MIL-STD-143	Specifications and Standards, Order of Precedence for the Selection of
MIL-STD-704	Electric Power, Aircraft, Characteristics and Utilization of
MIL-STD-810	Environmental Test Methods
MIL-STD-838	Lubrication of Military Equipment
MIL-STD-889	Dissimilar Metals
MS3102	Connector, Receptacle, Electric, Box Mounting, Solder Contacts, AN Type

(Copies of specifications and standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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 4.2.1. 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 Materials.--Materials shall be as specified herein. When specifications and standards are not specifically designated, selection of materials and processes shall be in accordance with MIL-STD-143. 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. Changes in manufacturer's part numbers shall be governed by the drawing number requirements of MIL-STD-100.

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.

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-C-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 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 MIL-P-8585; after assembly, two coats of zinc-chromate primer pigmented conforming to olive drab No. 34087 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 MIL-C-25050.

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 MIL-S-7502. 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(b)). 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 satisfactorily on any supply voltage between 24- and 30-volt direct current (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 the paragraph identified as "Light Intensity" in MIL-L-6730. Angles 0 through 20 shall be measured above and below the mounting plane of the light. Angles 20 to 30 shall be measured only above the mounting plane of the light.

3.6 Lubricant.--Where lubrication is required for the light to comply with 3.5.1, it shall be in accordance with MIL-STD-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-I-6181. The enclosed case construction shall provide continuity of electrical shielding. All mating surfaces 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. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection.--Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.2 Classification of examinations and tests.--Examinations and tests of the light assembly shall be classified as first article (see 3.1.1 and 4.2.1) and quality conformance (see 4.2.2).

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

4.2.2 Conformance.--Quality 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 4.4.2. Sampling shall be in accordance with 4.3.

4.3 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 4.4.2. 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 4.4.2.

4.4 Tests.--

4.4.1 Conditions.--Other than for the environmental test specified in 4.4.4, 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.

4.4.2 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 (4.2.1), the light shall operate a minimum of 100 hours before the flash rate and the light intensity are tested.

4.4.3 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.

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

		Method
(a)	Low temperature	502
(b)	High temperature	501, Procedure I at 160° F.
(c)	Sand and dust	510
(d)	Rain	506
(e)	Humidity	507, Procedure I
(f)	Fungus	508
(g)	Salt spray	509
(h)	Vibration	Table 514-1, category (a), procedure I, curve Z.

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.

4.4.5 Electromagnetic compatibility.--The light shall be tested as specified in MIL-I-6181, except that the test shall be conducted only between 150 kilocycles and 399.9 megacycles.

4.4.6 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.

4.5 Inspection of preparation for delivery.--Preservation and packaging, packing, and marking shall be inspected to determine conformance with section 5 of this specification.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging.--Preservation and packaging shall be level A or level C, as specified (see 6.2).

5.1.1 Level A.--Lights shall be individually packaged in heat-sealed bags fabricated from material conforming to MIL-F-22191, without a preservative. Each light shall then be placed in a fiberboard box conforming to W6s and W6c of PPP-B-636. The light shall be cushioned within the box by the use of die-cut fiberboard pads for protection against contact with the interior surfaces of the container.

5.1.2 Level C.--Lights shall be preserved and packaged in a manner to prevent deterioration and damage during handling and shipment from the supply source to the first receiving activity.

5.2 Packing.--Packing shall be level A, level B, or level C, as specified (see 6.2).

5.2.1 Level A.--Lights packaged in accordance with 5.1 shall be packed in a snug-fitting plywood box conforming to oversea type of PPP-B-601. Boxes shall be surface-treated in accordance with this specification. The gross weight of each container shall not exceed 200 pounds.

5.2.2 Level B.--Lights packaged in accordance with 5.1 shall be packed in a snug-fitting container conforming to domestic type of PPP-B-601; or to class weather-resistant of PPP-B-636; or to class 2, grade A of PPP-B-640. The gross weight of each container shall not exceed 200 pounds. Containers shall be closed and strapped in accordance with the applicable container specification or appendix thereto.

5.2.3 Level C.--Lights packaged in accordance with 5.1 shall be packed in snug-fitting fiberboard containers conforming to class domestic of PPP-B-636, or to class 2, grade B of PPP-B-640.

5.3 Marking.--In addition to any special marking required by the contract or order, marking shall be in accordance with MIL-STD-129.

6. NOTES

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 4.2.1).
(d) Level of preservation and packaging, and packing required (see 5.1 and 5.2).
(e) Whether special marking for shipment is required (see 5.3).

6.3 Revisions.--Due to extensiveness of revisions of the basic specification, marginal asterisks are not used to indicate changes.

Custodian:

Army -- Aviation Systems Command

Preparing activity:

Army -- AV

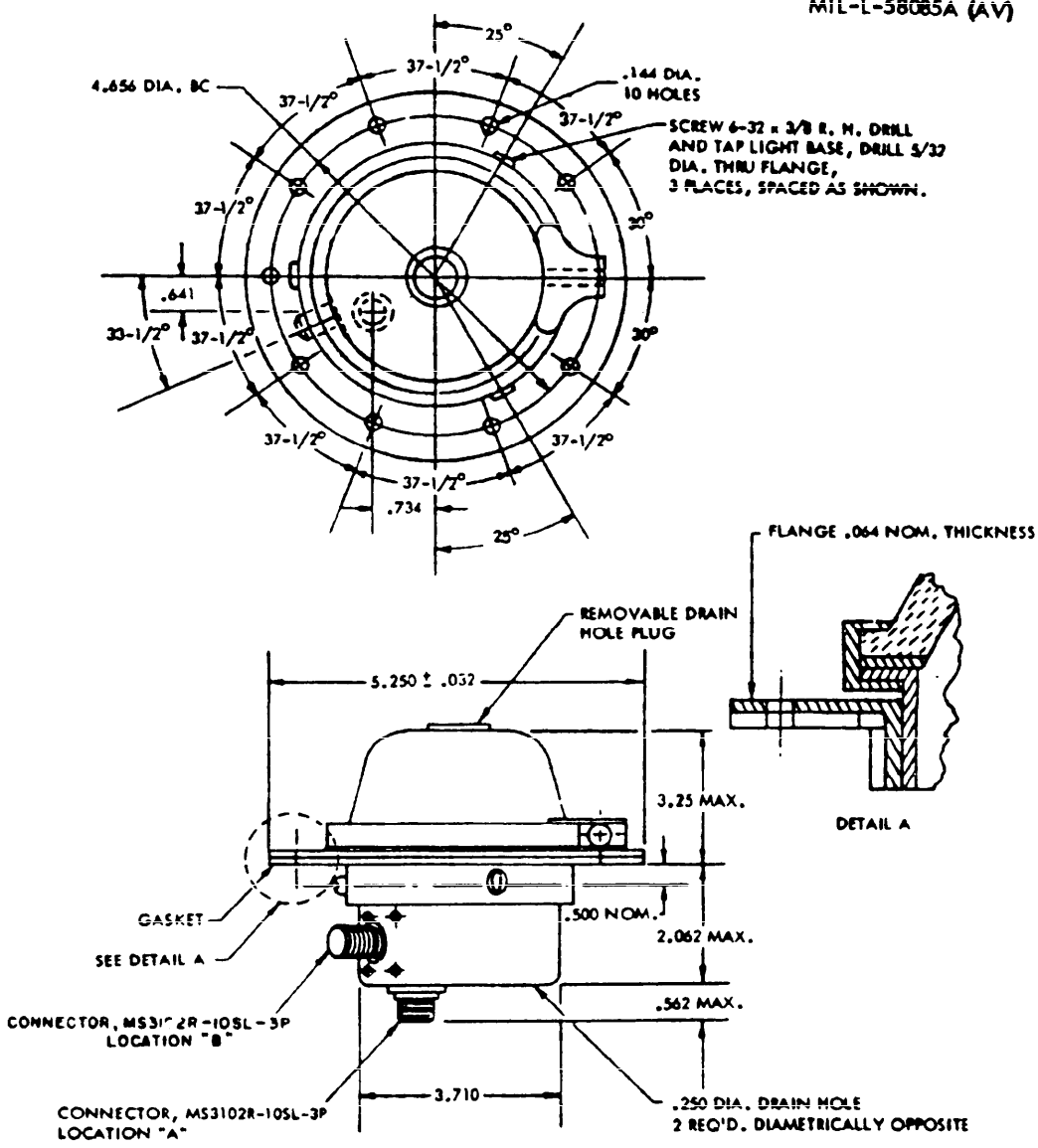
Review activity:

Army --

User activity:

Army --

Project No. 6220-A198



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
MS5805-3	28 DC	84	A OR B	AVIATION RED

DIMENSIONS IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES, DECIMALS ± .016, ANGLES ± 1°

FIGURE 1. - LIGHT, BEACON, ANTI-COLLISION, AIRCRAFT.

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).

SPECIFICATION

ORGANIZATION (Of submitter)

CITY AND STATE

CONTRACT NO.

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT
$

MATERIAL PROCURED UNDER A

☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

☐ YES ☐ NO IF "YES", IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity)

DATE

DD FORM 1 APR 63 1426 REPLACES NAVSHIPS FORM 4863, WHICH IS OBSOLETE

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