

MIL-L-7830D  
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## MILITARY SPECIFICATION

### LIGHT ASSEMBLY, MARKER, AIRCRAFT OBSTRUCTION

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

#### 1. SCOPE

1.1 Scope. This specification covers the requirements for an aircraft obstruction marker light assembly.

#### 2. APPLICABLE DOCUMENTS

\* 2.1 Government documents.

\* 2.1.1 Specifications and standards. Unless otherwise specified (see 6.2), the following specifications and standards of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

#### SPECIFICATIONS

##### FEDERAL

|           |                                 |
|-----------|---------------------------------|
| PPP-B-601 | Boxes, Wood, Cleated - Plywood. |
| PPP-B-636 | Boxes, Shipping, Fiberboard.    |

##### MILITARY

|             |   |
|-------------|---|
| MIL-P-116   | Preservation, Method of.  |
| MIL-S-7742  | Screws Threads, Standard, Optimum Selected Series, General Specification for. |
| MIL-C-7989  | Cover, Light-Transmitting for Aeronautical Lights, General Specification for. |
| MIL-C-25050 | Color, Aeronautical Lights and Lighting Equipment, General Requirements for.  |

#### STANDARDS

##### FEDERAL

|             |   |
|-------------|---|
| FED-STD-H28 | Screw Thread Standard for Federal Services. |
|-------------|---|

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: the Engineering Division, San Antonio ALC/MMEDO, Kelly AFB, Texas 78241 by using the self addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

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|              |   |
|--------------|---|
| DOD-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  | Standards and Specifications, Order of Precedence for the Selection of. |
| MIL-STD-831  | Test Reports, Preparation of.   |
| MIL-STD-1188 | Industrial Packaging of Supplies and Equipment.                         |
| AN 2541      | Globe and Marker Lamp.  |
| AN 2547      | Light, Marker, Aircraft Obstruction.                                    |

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

\* 2.1.2 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein, the text of this specification shall take precedence.

### 3. REQUIREMENTS

3.1 First article. This specification makes provisions for first article testing.

3.2 Components. The light assembly shall consist of a lens and a light, as specified by the procuring activity. Each item supplied will be specified by its AN part number in the invitation for bids.

3.3 Selection of specifications and standards. Specifications and standards for necessary commodities and services not specified herein shall be selected in accordance with MIL-STD-143.

3.4 Materials. Materials shall conform to applicable specifications as specified herein. Materials which are not covered by applicable specifications shall be of the best commercial quality and suitable for the purpose intended.

3.4.1 Metals. Metals shall be of the corrosion-resistant type, unless protected to resist corrosion during normal service life.

#### 3.5 Design and construction.

3.5.1 Lens. The dimensions of the lens shall be as shown on AN 2541. The type and color shall be in accordance with the AN part number specified (see 6.2).

3.5.1.1 Glass. The glass shall be class B conforming to MIL-C-7989.

3.5.1.2 Colors. The colors shall be type I, grade D, conforming to MIL-C-25050.

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3.5.1.3 Optical design. The optical design of the lens and necessary fittings shall be such that, when the lens is in place on a light (AN2547-1) equipped with a 325 lumen series lamp operated at rated lumens, the equivalent clear lens vertical candlepower at any angle will equal or exceed the values shown on figures 1 and 2 for the corresponding angle. The equivalent clear lens candlepower shall be determined by dividing the measured candlepower by the transmission ratio for the color being measured as follows:

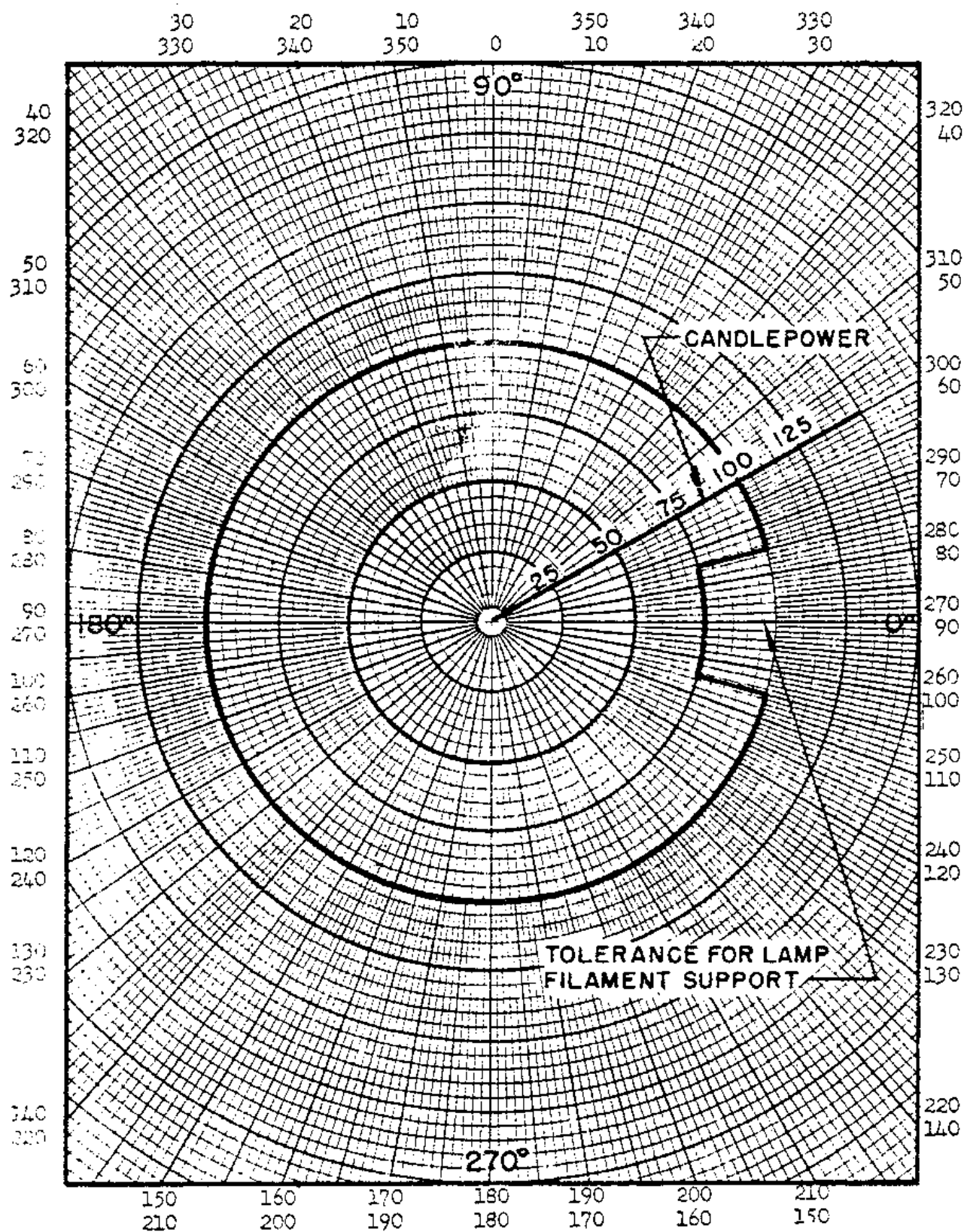
| Transmission ratio |       |
|--------------------|-------|
| Color              | Ratio |
| Clear              | 1.00  |
| Yellow             | 0.40  |
| Green              | 0.15  |
| Red                | 0.13  |
| Blue               | 0.008 |

3.5.2 Light. The light shall conform to AN2547 and shall be designed to accommodate a lens conforming to AN2541. The light shall be made of hydro-formed sandcast, or die cast nonferrous corrosion-resistant metal or a ferrous metal protected by an approved commercial corrosion-resistant finish such as galvanizing, sheradizing, or baked enamel. The light shall house the socket and hold it rigidly in such a manner as to place the lamp filament at the proper position. The light shall be of separable construction to permit relamping without unscrewing the lens and shall be weatherproof. The bottom section of the light shall be appropriately grooved to provide adequate purchase for the setscrew in the top section. Drain holes shall be drilled in the light as shown on AN2547.

3.5.2.1 Socket assembly. The socket assembly shall be supplied as a part of the light. The type and number required will be determined by the AN part number of the light. Sockets and receptacles shall be manufactured of glazed porcelain, or other material approved by the procuring activity, and nonferrous corrosion-resistant metal. The socket assembly receptacle, mounting, and light shall be such as to accurately place and hold the light center of the lamp within 7/32 inch of the verticle axis of the light center, and within 5/64 inch above or below the correct light center. This tolerance shall include all allowable tolerances in the light, socket, receptacle, and mountings. The socket, socket receptacle, socket mounting and mounting screws shall be such that, when these parts are correctly assembled, irrespective of their location to each other due to manufacturing tolerances, the light center tolerances specified shall not be exceeded. Both the series and multiple socket assemblies shall be so designed that when a lamp is installed, the plane of the filament will be located with respect to the mounting holes as shown on AN2547.

3.5.2.1.1 Multiple sockets. sockets for multiple service shall be of the medium prefocus type. The sockets shall be in accordance with AN2547. The medium prefocus socket shall be positioned for use with a medium prefocus lamp having a 2-3/4 inch light center length. When the multiple socket designated by AN2547-10 is specified, it shall be furnished complete with two 4-36 mounting screws of the proper length and washers for assembling the socket to the mounting.

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FIGURE 1. Horizontal distribution.

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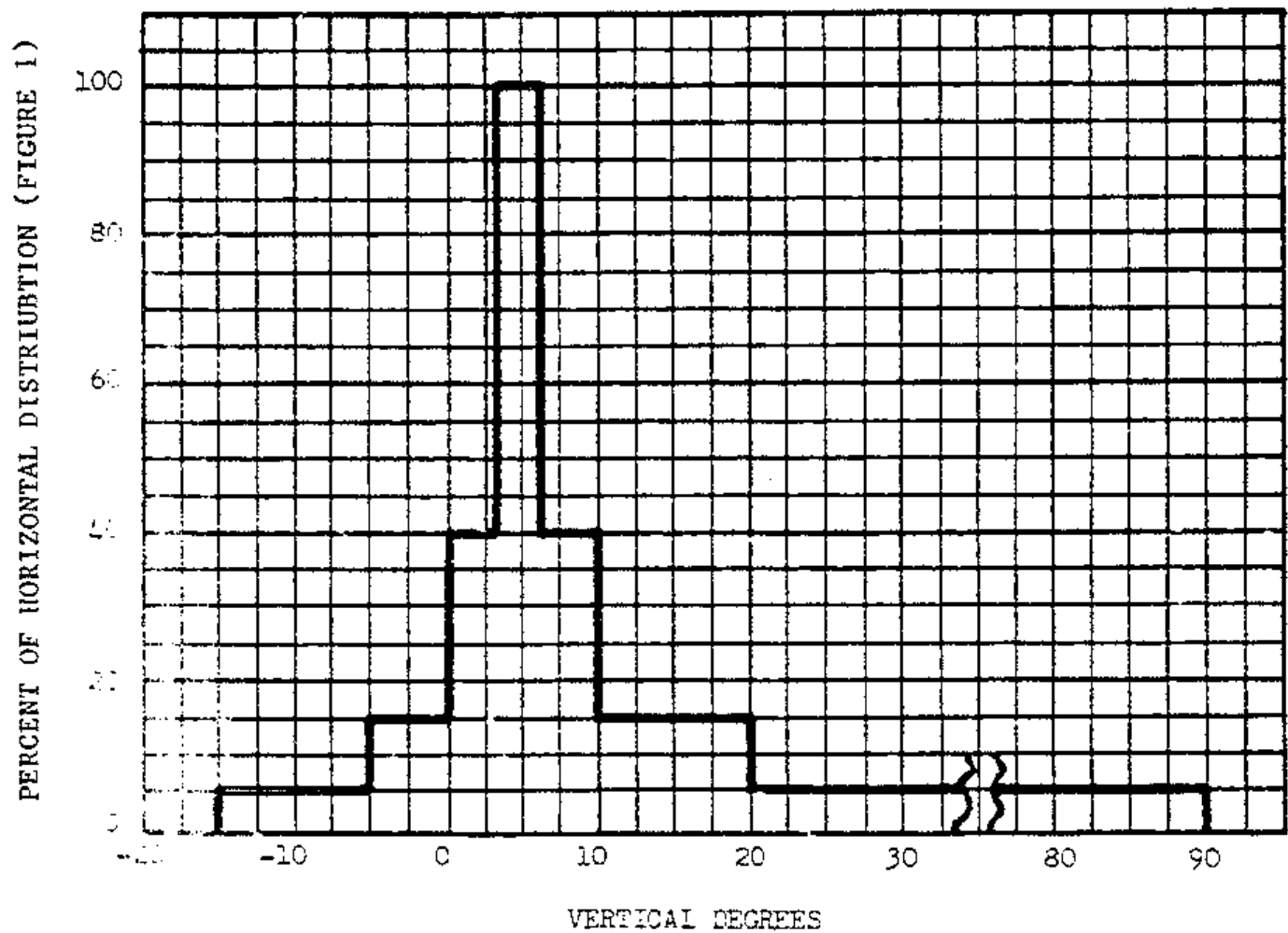


FIGURE 2. Vertical distribution through any vertical plane.

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3.5.2.1.2 Series socket assembly. The socket assembly for use on series circuits shall consist of a medium prefocus-type socket and receptacle in accordance with AN 2547. The socket assembly shall be furnished complete with two 4-36 mounting screws of the proper length and washers for assembling the socket to the mounting. An easily replaceable disk film cutout not greater than 25/32 inch in diameter and not more than 0.07 inch in thickness shall short circuit the socket in case of lamp failure. The disk cutout shall have breakdown voltage of not less than 20V nor more than 100V. The receptacle shall become automatically short-circuited during removal of the socket and before the socket loses contact with the receptacle. The design shall be such that line binding posts are not exposed during the relamping process.

\* 3.5.2.2 Setscrews. The setscrews shall be wing or knurled thumbscrews.

3.5.2.3 Chain. Unless otherwise specified, a chain, linking the top and bottom sections, shall be supplied. The chain shall be of such length that the top section can be removed with a lamp in place.

3.6 Operating conditions. The light assembly shall be designed and constructed for continuous outdoor service under all weather conditions.

\* 3.7 Interchangeability. All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable. The drawing number requirements of DOD-STD-100 shall govern changes in the manufacturer's part numbers.

### 3.8 Threads.

3.8.1 Screw. Screw threads shall conform to MIL-S-7742, class 2.

\* 3.8.2 Pipe. Pipe threads shall conform to FED-STD-H28.

3.9 Finish. Protective coatings and finishes which will crack, chip, or scale during normal service life or due to extremes of atmospheric conditions shall not be used.

3.10 Identification of product. Equipment, assemblies, and parts shall be marked for identification in accordance with MIL-STD-130.

3.10.1 Castings. Each casting shall have the following information cast with raised letters in a position where it can be easily read:

AN Part No.  
Manufacturer's name or trademark

3.11 Workmanship. Workmanship shall be in accordance with high grade commercial practice covering this class of work.

## 4. QUALITY ASSURANCE PROVISION

\* 4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other

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facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by 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 tests. The inspection and testing of the light shall be classified as follows:

- a. First article testing (see 4.3).
- b. Quality conformance tests (see 4.4).

#### 4.3 First article testing.

4.3.1 Test samples. The test samples shall consist of one complete sample of each part number representative of the production equipment.

\* 4.3.2 Test report. Upon completion of the first article tests, a test report shall be prepared in accordance with MIL-STD-831 and three complete copies of the report furnished to the procuring activity.

\* 4.3.3 First article tests. First article tests shall consist of all tests described under 4.5.

4.4 Quality conformance tests. The quality conformance tests shall consist of:

- a. Individual tests.
- b. Sampling plan and tests.

4.4.1 Individual tests. Each light assembly shall be subjected to the following tests as described under 4.5:

- a. Examination of product.
- b. Insulation test.

#### 4.4.2 Sampling plan and tests.

4.4.2.1 Lot. A lot shall consist of light assemblies manufactured under essentially the same conditions and submitted for inspection at substantially the same time.

4.4.2.2 Sampling plan. One lens, one light, and one socket assembly shall be selected at random from each 200 or fraction thereof produced and subjected to the following tests:

- a. Photometric and chromaticity.
- b. Dimensional checks.
- c. Series socket assembly.

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4.4.2.2.1 Rejection and retest. When one or more light assemblies from a lot fail to meet the requirements of the specification, acceptance of all light assemblies in the lot will be withheld until the extent and cause of failure are determined. After corrections have been made, all necessary tests shall be repeated.

4.4.2.2.2 Individual tests may continue. For production reasons, individual tests may be continued pending the investigation of a sampling test failure. Final acceptance of the entire lot shall not be made until it is determined that the lot meets all the requirements of the specification.

4.4.3 Defects in items already accepted. The investigation of a test failure could indicate that defects may exist in items already accepted. If so, the contractor shall fully advise the procuring activity of all defects likely to be found and methods of correcting them.

#### 4.5 Test methods.

4.5.1 Examination of product. The light assembly shall be inspected to determine compliance with the requirements specified herein with respect to materials, workmanship, and marking.

4.5.2 Insulation. Each light assembly shall be tested for insulation integrity by applying 5,000 volts, 50 to 60 cps ac power for the series light assembly and 1,000 volts, 50 to 60 cps ac power for the multiple service light assembly, between the lamp circuit in the socket and the fixture housing for a period of 1 minute. Breakdown of the insulation during these tests shall be cause for rejection.

4.5.3 Photometric and chromaticity. One lens and filter, if used, shall be subjected to photometric tests to determine compliance with all the photometric requirements of this specification, and to chromaticity tests to determine compliance with MIL-C-25050.

4.5.4 Dimensional checks. One light assembly shall be subjected to dimensional checks to determine compliance with the applicable drawings.

4.5.5 Series socket assemblies. One series socket assembly shall be assembled with proper light to determine that operation is satisfactory and conforms to 3.5.2.1.2.

4.5.6 Multiple socket. One multiple socket shall be assembled with proper mounting to determine that the socket is satisfactory and conforms 3.5.2.1.1.

4.6 Inspection of preparation for delivery. Preservation, packaging, packing, and marking shall be inspected to determine conformance to section 5.

#### \* 5. PACKAGING

\* 5.1 Preservation. Preservation shall be level A or commercial as specified (see 6.2).

\* 5.1.1 Level A. Light assemblies shall be preserved Method 1C-1 of MIL-P-116. Item shall be adequately wrapped and cushioned to prevent damage and placed in a fiberboard container conforming to style RSC, Type CF variety SW, Class domestic, grade 175 of PPP-B-636. Closure shall be in accordance with the appendix thereto.



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\* 5.1.2 Commercial. Light assemblies shall be preserved in accordance with MIL-STD-1188.

\* 5.2 Packing. Packing shall be level A, B or commercial as specified (see 6.2).

\* 5.2.1 Level A. A quantity of light assemblies preserved as specified in 5.1 shall be packed in a wood-cleated plywood shipping container conforming to PPP-B-601, overseas type, Grade A, Style optional. Insofar as practicable, containers shall contain identical quantities and be of minimum cube and tare consistent with the protection required. Closure and strapping shall be in accordance with the appendix to PPP-B-601.

\* 5.2.2 Level B. A quantity of light assemblies preserved as specified in 5.1, shall be packed in a wood-cleated plywood shipping container conforming to PPP-B-601, domestic type, Grade B, Style optional. Insofar as practicable, containers shall contain identical quantities and be of minimum cube and tare consistent with the protection required. Closure and strapping shall be in accordance with the Appendix to PPP-B-601.

\* 5.2.3 Commercial. Light assemblies shall be packed in accordance with MIL-STD-1188.

\* 5.3 Marking. Unless otherwise specified unit containers and shipping containers shall be marked in accordance with MIL-STD-129.

## 6. NOTES

6.1 Intended use. The light assembly covered by this specification is intended for use as an obstacle light and is intended for mounting on either poles or obstacles.

\* 6.2 Ordering data.

\* 6.2.1 Acquisition requirements. Acquisition documents should specify the following:

- a. The AN part number of the specific items desired (see 3.5.1, 3.5.2, 3.5.2.1.1, and 3.5.2.1.2).
- b. Deletion or substitution for the chain specified in 3.5.2.3, if not required.
- c. Location and conditions for first article testing (see 4.3).
- \* d. Selection of applicable levels of preservation and packing required (see 5.1 and 5.2).

6.3 Lamps. The light assembly is designed to utilize one of the following lamps (not furnished with the light assembly).

6.3.1 Multiple. A lamp of 40 or 100w, CC-2 filament (plane of filament through center of fins on base), A-21 clear bulb, 2 3/4 inch light center length, 5 5/16 inch maximum overall length, medium prefocus base.

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6.3.2 Series. A lamp of 325 or 1,020 lumens, 6.6 amp, C-8 filament, A-21 clear bulb, 2 3/4 inch light center length, 5 1/16 inch maximum overall length, medium prefocus base.

6.4 Changes from previous issue. The margins of this specification are marked with asterisks to indicate where changes (additions, modifications, corrections, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

Custodians:

Navy - AS  
Air Force - 99

Preparing activity:

Air Force - 82

(Project 6210-0540)

Review activities:

Army - ME  
Navy - YD  
DLA - GS  
Air Force - 85