Cancelled by AS 150/5345-46

AC NO: 150/5345-37C

DATE: 27 Jun 72

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: FAA SPECIFICATION L-850, LIGHT ASSEMBLY, AIRPORT RUNWAY CENTERLINE AND TOUCHDOWN ZONE

1. PURPOSE. This circular describes FAA Specification L-850, Light Assembly, Airport Runway Centerline and Touchdown Zone, for the guidance of the public.

2. CANCELLATION. Advisory Circular 150/5345-37B, FAA Specification L-850, Light Assembly, Airport Runway Centerline and Touchdown Zone, dated 8 January 1968, is cancelled.

3. DESCRIPTION OF SPECIFICATION. This equipment specification establishes the performance requirements and pertinent construction details for unidirectional and bidirectional semiflush inset light assemblies to be used for lighting airport runway centerlines and touchdown zones.

4. EXPLANATION OF REVISION.

   a. The isocandela curve for the centerline and touchdown zone assembly was increased to provide light at a higher angle for larger jets.

   b. Additional tests were added for hydraulic impact, shock, and horizontal static load. The top assemblies must be sealed.

   c. A warranty requirement was added.

   d. Provision was made for a higher strength top as an alternate for snow areas.

   e. Requirements for rotational and uplift prevention and a collar to prevent sealant flow were added for the inset base.

Initiated by: AS-550

5. HOW TO OBTAIN THIS CIRCULAR. Obtain additional copies of this circular, Advisory Circular 150/5345-37C, FAA Specification L-850, Light Assembly, Airport Runway Centerline and Touchdown Zone, from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

CHESTER G. BOWERS
Director, Airports Service

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1. SCOPE. The semiflush lighting equipment covered by this specification includes a Class A bidirectional light assembly and a Class B unidirectional light assembly. The two classes differ principally in photometric output; the bidirectional being used to delineate the runway centerline and unidirectional for the touchdown zone. Both classes are designed to mount on a L-857 Type II 12-inch diameter base, (see Advisory Circular 150/5345-42) or on a shallow inset type base shown in Figure 3. The L-857 bases are used with conduit installations and the inset type is designed for installation in a hole drilled in the runway pavement. For the purposes of identification, the following nomenclature is applied:

L-850A	-	Bidirectional light for use on L-857 base.
L-850AS	-	Bidirectional light equipped with inset base.
L-850B	-	Unidirectional light for use on L-857 base.
L-850BS	-	Unidirectional light equipped with inset base.

2. APPLICABLE DOCUMENTS. The following documents of the issue in effect on the date of application for qualification (paragraph 4a) form a part of this specification to the extent specified herein:

   a. FAA Specifications. Copies of the following FAA specifications may be obtained from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590:

      (1) AC 150/5345-26A, Specification for L-823 Plug and Receptacle Cable Connectors.

      (2) AC 150/5345-42, FAA Specification L-857 Airport Light Bases, Transformer Housing, and Junction Boxes.

   b. Military Specifications. Copies of the following military specifications may be obtained from the Commanding Officer, Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120, Attention: Code CDS:

      (1) MIL-C-7989, Covers, Light-Transmitting, for Aeronautical Lights, General Specification for.

      (2) MIL-C-25050, Color, Aeronautical Lights and Lighting Equipment, General Requirements for.

      (3) MIL-E-5272, Environmental Testing, Aeronautical and Associated Equipment, General Specification for.

(4) MIL-P-26915 (USAF), Primer Coating, Zinc Dust Pigmented, for Steel Surfaces.

(5) MIL-STD-889, Dissimilar Metals.

c. Federal Specifications. Copies of the following Federal specifications may be obtained from the Business Service Centers of the General Services Administration Regional Offices:

(1) QQ-Z-325, Zinc Coating, Electrodeposited, Requirements for.

(2) QQ-P-416, Plating, Cadmium (Electrodeposited).

(3) ZZ-R-765, Rubber, Silicone.

d. American Standard. Copies of ASA B46.1-1962, Surface Texture Waviness and Lay, may be obtained from the American National Standard Institute, 1430 Broadway, New York, New York 10018, at a cost of $3.00 per copy.

3. REQUIREMENTS.

a. Performance Requirements.

(1) Photometric Output. Class A (Bidirectional) and Class B (Unidirectional) top assemblies including the light source or lamp(s) shall be designed to meet the intensity distribution requirements shown in Figure 1 and Figure 2, respectively.

(2) Lamp Rating. The lamp(s) used in either Class A or Class B top assemblies shall be series lamp(s) having a nominal rating of 200 watts, having a rated average life of at least 500 hours, and having a 6.6-ampere filament.

(3) Power Requirements. In each class of top assembly, all current carrying parts requiring insulation shall be insulated for at least 600 volts and shall have a current carrying capacity of 1.5 times the normal operating current. The total input to the light assembly shall not exceed 220 watts.

(4) Environmental Conditions. Each class and type of light assembly shall be capable of performing satisfactorily under the following conditions:

(a) Temperature. Temperature which ranges from +55°C. to -43°C. See paragraphs 4a(4) and 4a(6).

(b) Temperature Shock. Temperature shock as required in paragraph 4a(3).

(c) Humidity. Relative humidity up to 100 percent including conditions where condensation takes place in the form of both water and frost. See paragraph 4a(10).

(d) Vibration. Vibration as required in paragraph 4a(1).

(e) Static Load. Static load as required in paragraph 4a(1).

(f) Shock Test. Mechanical shock as required in paragraph 4a(11).

(5) Hydraulic Impact. The lights shall be designed to withstand, without damage, hydraulic pressures which may be formed by aircraft tires moving at high speeds during operations in wet weather.

b. Design Requirements for Light Assemblies.

(1) Top Assembly. The metal components for top assembly, excluding bolts, nuts, and washers which are specified elsewhere, shall be fabricated from a ferrous metal capable of meeting the load requirements. Steel having a minimum tensile strength of 50,000 p.s.i. and a minimum hardness of 163 Brinell has been used successfully. In areas of heavy snows, the procuring agency may specify that the minimum tensile strength and hardness be increased to Rockwell C 40-50 if suitable precautions are taken to avoid low temperature brittleness. Pry bar slots, indentations, or other suitable provisions shall be made for prying or jacking the top assembly free of the base receptacle when the light assembly is installed in the pavement.

(a) Dimensional Requirements. The principal critical dimensions of the top assembly shall be as listed in this paragraph and as shown in Figure 3. The outside diameter of the upper portion of the top assembly shall be 11.938 inches, ±.050 inch. At its outer diameter, the overall thickness of the flange portion that rests on the base flange shall be 0.75 inch, ±0.05 inch.

1 The top assembly flange shall have a portion extending at least 1/4-inch down into the base receptacle to restrict side motion and resist shear action when the unit is struck.

The diameter of this extension into the base receptacle shall be 9.940 inches (+0.000 inch, -0.010 inch). The protrusion into the base receptacle shall contain no fillet or other obstruction to prevent metal-to-metal seating of the bearing surface on the base receptacle. No part of the top assembly shall be more than 1.250 inches above the bearing surface of the flange.

2 All interfaces of the top assembly and base receptacle shall be machined to the same finish as shown in Figure 3. The flange of the upper portion of the top assembly shall have six bolt holes equally spaced 60 degrees apart on a bolt-hole diameter of 11.250 inches, ±0.010 inch. The bolt holes shall be counterbored or recessed so that the resultant thickness of metal left between the bottom of the counterbored holes and the underneath flange surface is 0.400 inch, ±0.015 inch. The bolt holes shall each be 7/16-inch in diameter and shall not be tapped except two of the bolt holes, 180 degrees apart, which shall be provided with 1/2-13 inch threads for lifting the top assembly. The counterbored holes shall be of sufficient diameter to permit easy removal of the bolts with a standard socket wrench. The light channel(s) shall be centered between the bolt holes. The light channels for the Class A top assembly shall be oriented so that the centers of the two light beams emitted are 180 degrees apart.

3 The external portion of the top surface extending above the pavement shall be smoothly sloped upward from the edges at angles not exceeding 12 degrees in the direction parallel to the light channel(s) and not exceeding 15 degrees in all other directions. These maximum slope angles shall not apply to the light channels, optical windows, and such indentations as bolt hole recesses.

4 The top assembly may be provided with an external rib or other suitable means in the area of the lens(es) to mitigate damage to the head assembly due to action of snowplow blades and aircraft tailhooks.

(b) Optical Top Assembly. All optical components of the light head shall be housed in a sealed assembly. This assembly may be an integral part of the top assembly or part of an encapsulated subassembly.

(c) Rubber Materials. Rubber, when used in the top assembly, shall be of silicone rubber suitable for the application.

(d) Bolts, Studs, Nuts, and Washers. All bolts, studs, nuts, and other similar fasteners used in the fixture assembly shall be fabricated from either 18-8, 410, or 416 stainless steel, passivated and free from discoloration. All lock washers shall be made of 410 stainless steel. All screw threads shall be Class 2 or Class 3 in accordance with Handbook H28. This requirement does not apply to current carrying components.

(e) Lampholder. The lampholder shall securely and accurately position the lamp. It shall permit easy relamping without disturbing the color filter or any other element of the optical subassembly. After relamping, the light unit shall still meet the intensity distribution requirements shown in Figure 1 or Figure 2. The lampholder shall be indexed to prevent improper relamping.

(f) Lamp By-Pass and Holder. A by-pass device, which immediately closes an auxiliary circuit around the lamp on failure of the lamp, shall be available for each light assembly. At the option of the purchaser, these devices may be specified for any shipment. A film disc cutout or other suitable device may be used for this function. A suitable holder shall be furnished for mounting this device. Necessary wires or current carrying members shall be installed to provide a path for the current to flow through the by-pass device when the filament opens.

(g) Current Carrying Components. Current carrying components shall be fabricated of noncorrosive, high-conductivity materials. Aluminum shall not be acceptable for this purpose. Electrical contacts shall be made of coin-silver material or other equally high-conductivity corrosion resisting materials.

(h) Dissimilar Materials. Dissimilar materials in contact with each other which will lead to electrolytic corrosive action shall not be used. Dissimilar metals are as defined in MIL-STD-889, Dissimilar Metals.

(i) Finish. All surfaces of the finished top assembly shall be smooth, without burrs or sharp edges. All "O" ring grooves shall have a surface finish of 64 rms maximum. In addition, all edges above the pavement including the metal edges above the lens(es), the top edges of the light channel(s) and rib(s), and the top edge of the outer periphery of the finished top assembly shall be rounded to not less than 1/16-inch radius.

(j) Protective Plating. All ferrous castings, structural, and hardware parts of the light assembly, not made of stainless steel, shall be plated after fabrication, machining, and drilling. This plating shall be zinc conforming to Class 1, Type II of Federal Specification QQ-Z-325 or cadmium conforming to Class 1, Type II of Federal Specification QQ-P-416. The plating shall be applied as required by the applicable specification.

(k) Color of Light. Unless otherwise specified, the light emitted from all assemblies shall comply with the requirements of MIL-C-25050 for Type I (Aviation) colors. When filters are installed, all the requirements for white light shall apply except that the minimum candlepower values shall be multiplied by the following transmission ratios: White - 1.0, Green - .175, Red - .20, Yellow - .40, Blue - .022. Certification of compliance with this specification shall be furnished to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591.

(l) Reflectors. All reflectors utilized in a lamp optical assembly shall be provided with a finish of high specular reflectivity and shall be protected from dirt, tarnishing, and corrosion.

(m) Optical Components. All prisms, lenses, filters, and reflectors shall be Grade B of MIL-C-7989, except that one or more parts may also be tempered to withstand the temperature shock specified in paragraph 4a(4).

(n) Adjustment and Repairs. Each class of top assembly shall be so constructed that adjustments and repairs can be made easily by maintenance personnel with normally available commercial tools.

(o) Fungus-Proof Materials. Materials that are nutrients for fungi shall not be used in the top assembly where it is practical to avoid them. When used and not hermetically sealed, they shall be treated with a fungicidal agent acceptable to the procuring activity. However, if they will be used in a hermetically sealed enclosure, fungicidal treatment will not be necessary.

(2) Base Receptacle. The inset base receptacle shall be fabricated as shown in Figure 3. It shall be fabricated from a suitable ferrous material by welding, drawing, or casting; and the dimensions shown in the figures, except references to welding, shall apply to all fabricating methods. The exterior surface in addition to the protrusion for the sealing of the leads shall have protrusions or indentations to prevent rotation or uplift of the fixture in the pavement hole. Protrusions shall be symmetrically spaced and provide a total of at least 0.5 square inches. Indentations shall provide a total of at least one square inch of area against uplift and rotation. The L-857 Type II base receptacle shall be fabricated in accordance with the provisions of AC 150/5345-42, FAA Specification L-857, Airport Light Bases, Transformer Housings, and Junction Boxes. This base is not part of this specification.

(a) Flange. The top face and inside edge of the flange shall be machine finished. Six blind holes, 5/8-inch deep and tapped at least 1/2-inch, shall be provided in the top face. After the protective plating has been applied, the flange shall conform to the requirements shown in Figure 3. The level of the top surface of the flange shall be such that it shall not vary more than 0.010 inch from a reference plane perpendicular to the vertical axis of the cylindrical body. Surface finishes shall be determined as roughness height ratings in micro-inches in accordance with American Standard ASA B46.1. The effect of flaws shall be included in the roughness height measurements.

(b) Welding. When a welding process is used, all welding shall consist of continuous watertight welds of a strength at least equal to the material welded.

(c) Protective Plating. After fabrication, machining, and drilling, the entire base receptacle shall be plated for corrosion protection. This plating shall be zinc per Class 1,(.0010 inch thick) Type II of Federal Specification QQ-Z-325 or cadmium conforming to Class I, (.00050 inch thick) Type II of Federal Specification QQ-P-416. The plating shall be applied as required by the applicable specification.

(d) Protective Painting. After the protective plating has been applied to the receptacle, all inside surfaces of inset bases, including the underside of the cover flange, shall be given one coat of paint in compliance with Military Specification MIL-P-26915.

(3) Leads. Two leads shall be furnished with each type of inset base receptacle to supply power to the lamp. The leads shall enter the base receptacle through the wire entrance shown in Figure 3. The wire entrance shall be sealed in the factory to assure a water and air tight seal. The integrity of the seal shall be checked as specified in paragraphs 4a(5) and 4a(9). The seal and wire shall be installed to prevent water from wicking into the base. The method used in sealing the leads shall not result in a protrusion of more than 1/4 inch on the exterior surface of the base receptacle. On the interior surface, the sealing method shall not result in an encroachment on the minimum free interior space specified in note No. 2 in Figure 3. The leads on the inset fixtures shall be terminated inside the base by means of Number 8 screw terminals appropriately insulated from the base receptacle. The lead wires used to connect the top fitting terminals with the screw terminals in the base shall have suitable lugs on both ends; except that for use with the L-857 base, the leads shall terminate in an L-823 connector, Figure 1a as shown in AC 150/5345-26A.

(a) Rating. The leads shall be single conductors with suitable insulation rated for at least 600 volts. The exterior leads sealed in the base shall have wires with insulation rated for at least 125°C. operation. The replaceable interior leads shall have wires with insulation rated for at least 250°C. operation.

(b) Conductors. The lead conductors shall be copper No. 12 AWG with at least 19 strands.

(c) Length. The leads shall have sufficient length inside the base receptacle to permit servicing of the top assembly without requiring disconnection of the wires. External leads are to be at least 18 inches long.

(4) "O" Ring Gasket. The "O" ring gasket for use in the "O" ring groove of the cover flange of the base receptacle shall be molded from silicone rubber conforming to Federal Specification ZZ-R-765.

(5) Hold-Down Bolts. Six hex-head machine screws, 3/8 inch in diameter, 7/8 inch in length, and suitable for use in the tapped holes in the flange as shown in Figure 3, shall be furnished. These shall be used for fastening the top assembly to the base receptacle. In addition, six 3/8-inch external tooth lock washers shall be furnished for use under the bolt heads. Bolts and lock washers shall be fabricated of 410 stainless steel.

(6) Plywood Covers. A plywood cover shall be furnished with each base receptacle (when it is shipped separately from the light assembly) to protect the machined flange surface during shipment, handling, and installation. This plywood cover shall be mounted on and concentric with the base receptacle in lieu of the top assembly. Prior to mounting on the base, the perimeter of this cover shall be immersed to a depth of at least 2.0 inches in melted parafin and rotated one complete turn. Such treatment shall provide a nonadhesive surface to the top, edge, and bottom contact surfaces of the cover. The cover furnished shall be of exterior commercial Grade C-D, five-ply plywood, or approved equal, 3/4 inch thick. It shall be 12 inches in diameter (+3/8 inch or -0 inch) and shall contain six holes corresponding to the tapped holes in the base receptacle flange. These holes shall be 7/16 inch in diameter and shall be counterbored on the Grade D side 1-1/8 inches in diameter to a depth of 1/4 inch. The Grade D side of the cover shall have painted on it a suitable reference line to indicate the light axis.

(7) Parts List and Installation Instructions. A complete parts list and installation instructions shall be furnished with each shipment of light assemblies or each shipment of light assembly components. Sufficient drawings or illustrations shall be provided to indicate clearly the method of assembly and installation. Theory of operation shall be described in this manual.

(8) Alignment Device. Each shipment of ten or more light assemblies shall have an alignment device suitable for installing inset light fixtures in the holes in the pavement.

4. QUALITY ASSURANCE PROVISIONS.

a. Qualification Testing. Each class of top assembly shall be tested in accordance with the applicable tests cited below and in a testing laboratory acceptable to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591. These tests shall be performed in the order shown and may be witnessed by a representative of FAA, Airports Service. This testing is required to certify the manufacturer's ability to produce a light assembly meeting the requirements of this specification. More than one light assembly may be submitted for the tests. In the event a light assembly fails, it may be resubmitted for test after the cause of the failure has been corrected. Prior to tests, the top assembly holddown bolts shall be torqued to a value specified by the manufacturer. The manufacturer shall furnish one light assembly, two certified copies of the testing laboratory's report, and installation instructions to the Airports Service of the Federal Aviation Administration for inspection, review, and approval. When approved, the name of the qualified manufacturer and a description of his equipment will be included in AC 150/5345-1C, Approved Airport Lighting Equipment. The manufacturer shall bear all testing costs.

(1) Vibration Tests. The base receptacle shall be mounted securely in place on the surface of the test table of the vibration testing machine. It shall be mounted in a horizontal position corresponding to its position in place on a runway. Small angles or brackets may be welded to the base receptacle to hold it in place on the test table. The top assembly, with an electrical shunt across the lamp terminals, and with the lamp in place, shall be installed in the receptacle with provisions to determine whether continuity of the electrical circuit is maintained during the tests.

(a) Vibration Planes. The light assembly, mounted in place on the test table as specified above, shall be vibrated in three planes, or directions of vibration, as follows:

1 In a direction perpendicular to the plane of the test table; i.e., vibrated vertically.

2 Vibrated horizontally in a direction parallel to the light axis; i.e., parallel to the line through the centers of the light channels.

3 Vibrated horizontally in a direction at right angles to the light axis; i.e., normal to the line through the centers of the light channels.

(b) Vibration Frequencies. This test shall be conducted in two parts, if required. In the initial test, the light assembly shall be vibrated in each direction through frequency ranges of 20 to 2,000 CPS until the G's shown in Table I are reached. The duration of each sweep on the light assembly shall be 10 minutes and electrical continuity shall be continuously monitored through the initial vibration tests. If the lamp envelope and filament remain intact, the vibration tests are considered complete. If the lamp envelope and/or filament fail, the second part of the test shall be initiated. In the second part, the shunt shall be removed from the lamp terminals, the damaged lamp shall be removed from the lampholder, and a new lamp of the type specified for use in the light assembly shall be inserted in the lampholder. Without energizing the lamp filament, the light assembly shall be vibrated again, as specified in paragraph 4a(1)(a), through the frequencies shown in Table I, until the acceleration reaches three G's in each plane. The duration of each sweep on the light assembly shall be 10 minutes.

TABLE I - VIBRATION FREQUENCIES

Acceleration G's	Frequency CPS
10	20 to 500
15	500 to 2000

(c) Inspection. After the above required tests have been completed, the light assembly shall be inspected. Mechanical failure of any component, loosening of any

part or fastener, or any discernible movement of lamps in lampholders during the initial test shall be cause for rejection. If the second test is required, breakage of the lamp filament and/or envelope shall also be cause for rejection.

(2) Photometric Tests. The optical performance of the unit shall be determined by photometric readings with a clear lens and the type lamp for which the unit is designed. The lamp shall be operated at its rated current. The photometric axis of the fixture shall be established in relation to a fixture properly installed in the pavement with the horizontal axis lying on the plane of the pavement, passing through the center of the fixture, and parallel to the centerline. The vertical axis shall lie on a line passing through the center of the fixture, perpendicular to the pavement plane. Horizontal intensities shall be determined for both beams of the Class A top assembly at each lateral degree, at elevation angles of 0°, 1°, 1-1/2°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10°, 11°, 12°, 13°, 14°, and 15°, and the intensities shall meet the distribution requirements of Figure 1. Horizontal intensities shall be determined for the beam of the Class B top assembly at each lateral degree, at elevation angles of 0°, 1°, 2°, 3°, 4°, 5°, 6°, 7°, 8°, 9°, 10°, 11°, and 12°, and the intensities shall meet the distribution requirements of Figure 2. If either class of top assembly is so designed that any light channel has a negative slope and any portion of the exterior lens or prism is below pavement level, such portion shall then be obscured by opaqued tape. The intensity distribution shall then be measured as described above and the intensisites shall be not less than 70 percent of those prescribed in Figure 1 and Figure 2 for Class A and Class B top assemblies, respectively.

(3) Cycling and Temperature Shock Test. The light assembly mounted on an inset base receptacle shall be subjected to a cycling test by operating the unit at rated current at room temperature (dry) for a period of not less than four hours. At the expiration of the "on" part of the cycle, the fixture shall be de-energized and immediately submerged under at least one foot of water. The temperature of the water before submersion shall be 5°C., or lower. The unit shall remain under water for at

least four hours. At the expiration of the "off" part of the cycle, the fixture shall be subjected to repetition of the above tests until a total of three "on-off" cycles have been completed. The fixture shall be immediately inspected at the completion of the third cycle. Any evidence of glass breakage or lens damage, any leakage of water into the assembly, damage to any part of the unit, or equipment failure during the tests shall be cause for rejection.

(4) Low Temperature Test. The light assembly mounted on an inset base receptacle shall be totally immersed in water, and while immersed, subjected to a low temperature of minus 43°C. ±2°C. for a period of 24 hours followed immediately by operation at rated current for 30 minutes or until free of ice. This shall be repeated for a total of three cycles. Any evidence of damage shall be cause for rejection.

(5) Insulation Resistance Check. The unit shall be subjected to a 500-volt megger test (lead to case). The initial resistance shall be at least 500 megohms. The light assembly complete with base receptacle shall then be operated for one hour at rated current and immediately submerged in a salt water solution except for the ends of the leads. The resistance test shall be repeated. Resistance shall be at least 500 megohms.

(6) Accelerated Life Test. The light assembly shall have an accelerated life test performed on it after it has successfully passed all the above tests. The light assembly, mounted on a base assembly, shall be set in dry sand in an ambient environment temperature of +55°C. (±2°C.) simulating its installation in pavement. The sand shall be at least five inches thick around the sides and bottom of the light assembly. This sand shall fill any openings in the light assembly which would be below pavement level. The unit shall then be operated for at least one-half the rated lamp life at rated current. The temperature on the top shall be measured and the temperature shall not exceed 150°C. above ambient. After this, all sand shall be removed and the photometric performance of the unit shall be measured as described in paragraph 4a(2). Intensities shall not be less than 80 percent of the intensities specified in Figure 1 and Figure 2.

After this test, the light assembly shall be taken apart and thoroughly examined. Any visible deformation, blistering, evidence of heat damage, or corrosion shall be cause for rejection.

(7) Protective Plating Test. Zinc plating shall be tested by the appropriate method described in Federal Specification QQ-Z-325; cadmium plating shall be tested by the appropriate method described in Federal Specification QQ-P-416.

(8) Load Test. This shall be a static load test. The assembled unit, with the top assembly (including gasket, lamp, and optical assembly) mounted on a base receptacle, shall be placed on a flat steel plate mounted in a standard testing machine. The load shall be applied to the top part of the fixture through a block of rubber, 11 inches in diameter and 1-1/2 inches thick, having a Shore A hardness of 55 to 70. A total load of 50,000 pounds shall be applied uniformly over the area of the rubber at a rate not greater than 10,000 pounds per minute. The light assembly shall be considered unsatisfactory if there is any permanent deformation, cracking of material or finish, breaking, or damage to any part of the light.

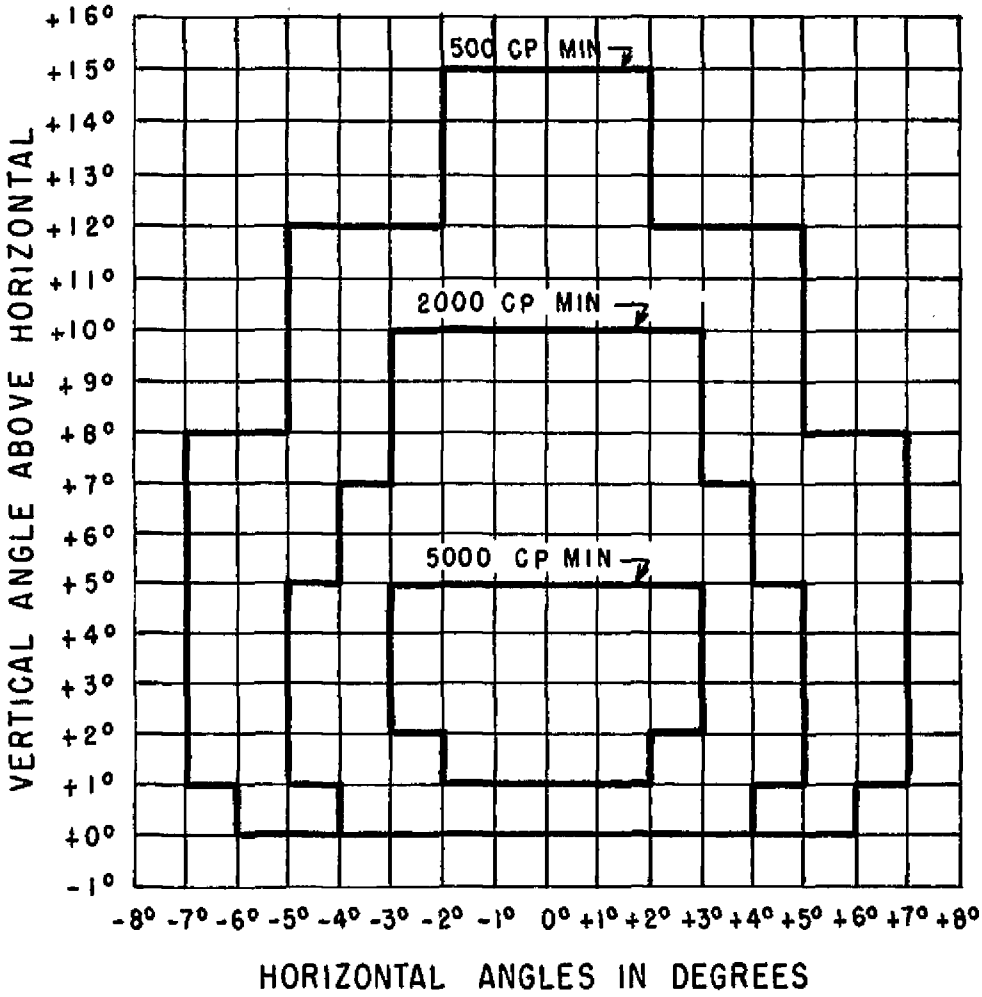
(9) Leakage Test. This test shall be performed after the assembled light unit has undergone the load test described in paragraph 4a(8). For the leakage test, the top assembly shall be securely bolted to a base receptacle having a suitable means for pressurizing and all bolts torqued to the manufacturer's specifications. Prior to performing this test, the two wire leads shall be subjected to a 30-pound tension for five minutes to test the integrity of the seal where the leads enter the base receptacle. With a minimum internal pressure of 20 p.s.i., the assembled unit shall be tested using a bubble test material (high foam detergent producing a low surface tension). The assembly shall be considered watertight if no air bubbles appear.

(10) Humidity Test. The light assembly shall withstand a humidity test conducted in accordance with Procedure III of Military Specification MIL-E-5272 for 360 hours. Any evidence of damage, rusting, or corrosion shall be cause for rejection.

d. Shipping Marking. The light assembly cartons or wooden containers and the mounting base plywood covers shall be durably and legibly marked with:

Consignee's Name and Address
Component Name and Part No.
Specification No.
Contract No.
Manufacturer's Name and Address

6. WARRANT. The light fixture manufacturer shall warrant that the fixture meets this specification and that it is free from material and manufacturing defects. In addition, the light fixture manufacturer shall warrant that this unit shall not suffer mechanical degradation, except for normal surface wear, when subjected to landings, rollover, turning, and braking loads by civil or military aircraft traffic. This warrant shall extend for a period of one year after the start of installation with a maximum of two years from the date of shipment. This warrant does not apply to lamps that exceed their expected life.



NOTES:

(a) A HORIZONTAL SHIFT OF PLUS OR MINUS ONE DEGREE AND A VERTICAL SHIFT OF PLUS OR MINUS ONE-HALF DEGREE IS PERMITTED FOR INSPECTION, QUALIFICATION, AND APPROVAL PROCEDURES.

(b) THE PEAK INTENSITY WITHIN THE ABOVE CURVE SHALL NOT EXCEED 25,000 CANDELAS.

(c) THERE SHALL BE A GRADUAL FALL-OFF OF INTENSITY TO AN INTENSITY VALUE OF NO LESS THAN 5 CANDELA WITHIN A CURVE WHOSE LIMITS ARE ±18° HORIZONTAL AND 18° VERTICAL.

FIGURE 1. ISOCANDELA CURVE FOR MINIMUM OUTPUT IN WHITE LIGHT FOR CLASS A BIDIRECTIONAL TOP ASSEMBLY

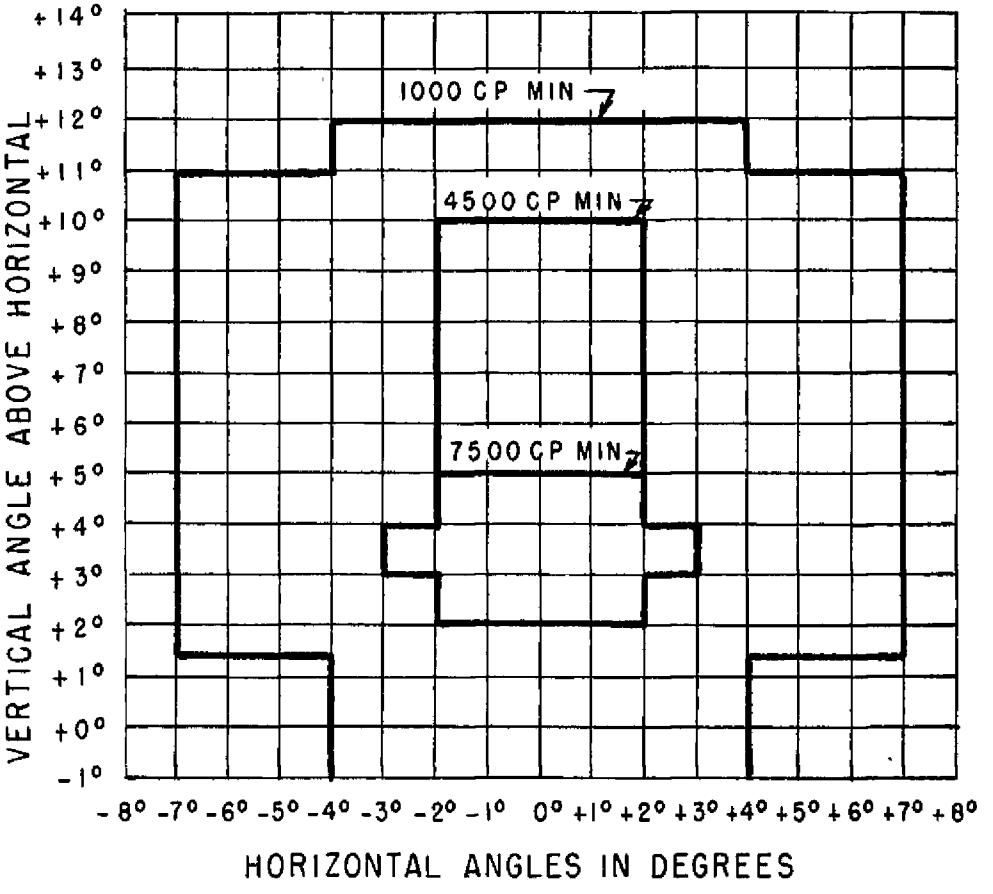


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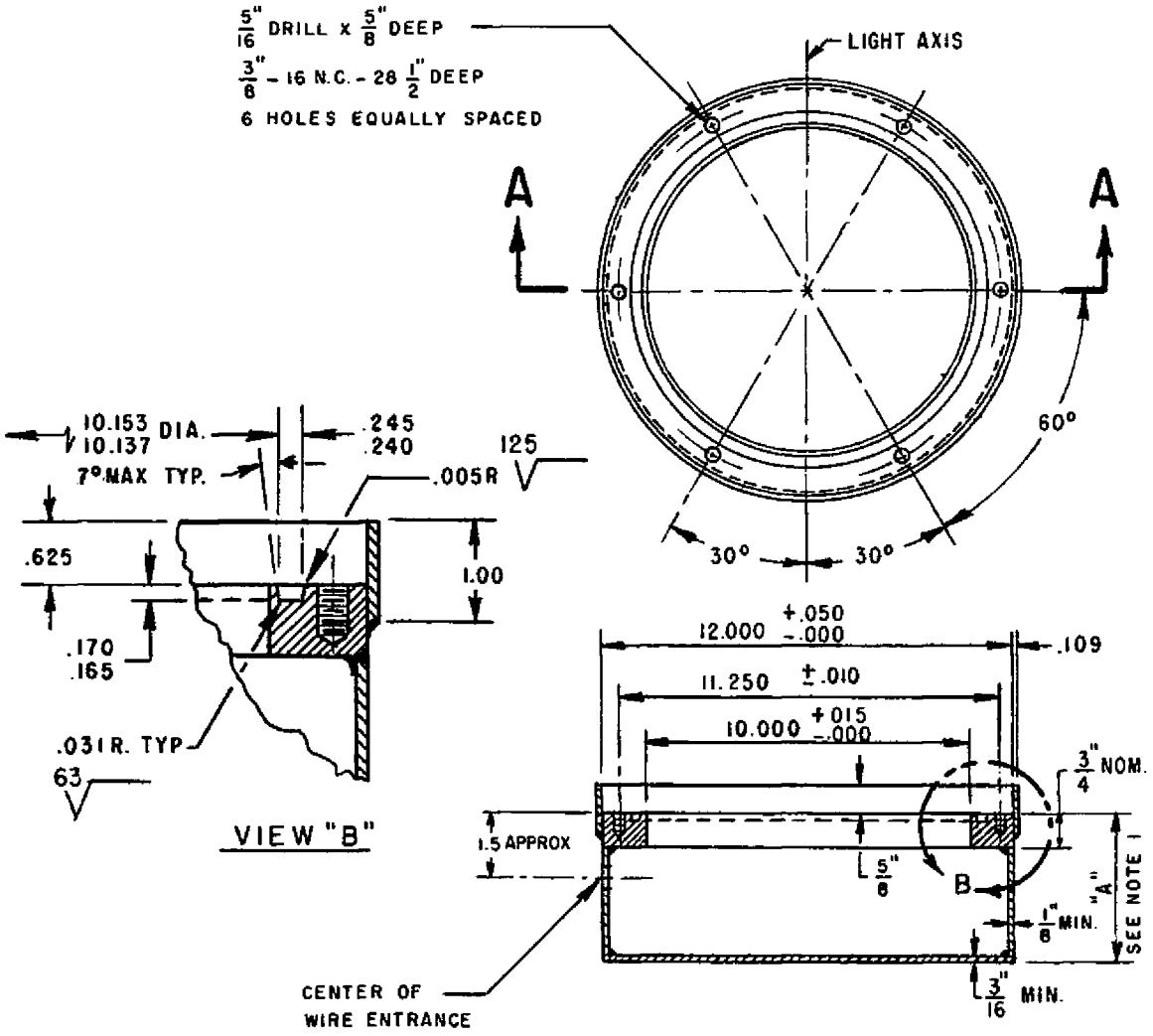
FIGURE 2. ISOCANDELA CURVE FOR MINIMUM OUTPUT IN WHITE LIGHT FOR CLASS B UNIDIRECTIONAL TOP ASSEMBLY



NOTES

1. STANDARD DIMENSIONS MEET SPECI
2. CLEAR INSI BOTTOM OF NOT LESS T DIAMETER, THE CENTE A DEPTH O STANDARD
3. NORMAL MI MATERIAL W
4. THE BOTT(WITH NO UP MAXIMUM D(OF 0.25
5. WHERE NOT DIMENSIONS WITHIN A T(
6. THERE SHAI CONTACT BI FITTING ANI
7. ANTI ROTAT PROTRUSION PROVIDED A PAR 3b (2) .

SECTION A-A

FIGURE 3. RECEPTACLE

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Washington, D.C. 20591

Official Business

PENALTY FOR PRIVATE USE, $300

POSTAGE AND FEES PAID
FEDERAL AVIATION
ADMINISTRATION
DOT 515