



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

PURCHASE DESCRIPTION

LAMP, PAR-56 FLASHTUBE

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1. SCOPE

1.1 Scope.- This specification prescribes the requirements for an aviation service PAR-56 flashtube lamp used for runway approach lighting systems and the following systems:

- Runway End Identifier Lighting System (REILS): Type FA-10264, Type FA-9628, Type FA-10096, Type FA-10229, Type FA-9437.
- Medium Intensity Approach Lighting system with Runway Alignment Indicator Light (MALSR): Type FA-10290, Type FA-10097, FA-10267, Type FA-8981, and Type FA-11500.
- Sequenced Flashing Light System: ALSF-2/SSALR: Type FA-9985, Type FA-10048, Type FA-10700.

2. APPLICABLE DOCUMENTS

2.1 FAA documents.- The following FAA documents of the issues in effect on date of invitation for bids or request for proposals, form a part of this specification and are applicable except as modified herein.

2.1.1 FAA specification.

FAA-E-982	PAR-56 Lampholder
FAA-E-1100a	Photometric Test Procedures for Condenser-Discharge Lights

2.2 Military documents.- The following military and federal documents of the issues in effect on the date of the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

2.2.1 Military standards.

MIL-STD-129	Marking for Shipment and Storage
MIL-STD-810F	Environmental Test Methods and Engineering Guidelines

2.3 Other standard documents. The following national standards of issues in effect on the date of the invitation for bids or request for proposals, form a part of this specification and are applicable to the extent specified herein.

ANSI/ASQC-Q9001-2000	Quality Management Systems Requirements, DID-FAA-QA-003 (QSP).
ASTM D 3580	Standard Test Method of Vibration (Vertical Sinusoidal Motion) Test Products.

ASTM D 3951	Standard Practice for Commercial Packaging
ASTM D 4169	Standard Practice for Performance Testing of Shipping Containers and Systems
ASTM D 5112	Standard Practice for Testing of Shipping Containers and Systems.

Illuminating Engineering Society (IES) Lighting Handbook, 8th Edition

(Copies of this specification and other applicable FAA specifications may be obtained from the Contracting Officer in the office issuing the invitation-for-bids or request-for-proposals. Requests should fully identify material desired, i.e., specification and amendment. Requests should cite the invitation-for-bids, request-for-proposals, or the contract involved, or the use to be made of the requested material.)

(Military specifications and standards and federal and GSA specifications and standards may be downloaded from the Internet by accessing <http://assist.daps.mil> and then selecting the button for ASSIST Quick Search.)

(ASTM documents may be obtained from American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

(ANSI/ASQC documents may be obtained from ASQC, 611 East Wisconsin Avenue, Milwaukee, Wisconsin 53202)

(Illuminating Engineering Society (IES) Lighting Handbook, 8th Edition may be obtained from <http://www.iesna.org>)

2.4 Precedence.- In case of conflict between this specification and specifications and standards referenced in 2.1.1, 2.2.1, and 2.3, this specification shall govern.

3. REQUIREMENTS

3.1 General.- The flashtube lamps covered by this specification are to be used for outdoor operation. All flashtube lamps shall consist of an arc tube made of glass or quartz, sealed in a PAR-56 envelope consisting of an internally coated reflector and a cover glass as shown in Figure 1 and 2. The arc tube may be coiled into a helix for a higher concentration of light. Flashtube lamps may be coated with an environmentally protective coating. Flashtube lamps shall have screw terminals for electrical connection. Flashtube lamps will be installed in the REILS, MALSR and ALSF-2 sequenced flasher light head. Three (3) terminal screws with three (3) external teeth washers shall be included with the flashtube lamp. The flashtube lamps are applicable to the systems in 1.1.

3.2 Functional requirements.- The flashtube lamps, mounted in their lampholders (flash head assemblies), will normally be installed in approach lighting systems that require sequenced

flashers. The flashtube lamps shall function in their lampholder assemblies in continuous or intermittent outdoor service under the flashtube lamp parameters and performance requirements specified in section 3.4 and under the environmental conditions specified in section 3.5.

3.3 Equipment to be furnished by the contractor.- The contractor shall furnish PAR-56 flashtube lamps, meeting all requirements of this specification, in quantities specified in the contract schedule. The lamps shall be identified in accordance with 3.7.

3.4 Flashtube lamp parameters and performance requirements.- Flashtube lamps shall conform to the requirements listed below.

3.4.1 Configuration.- The PAR-56 flashtube lamp bulb shall be glass hermetically sealed; with 3 color coded screw terminals (refer to figure 1). The anode shall be black (2 kV input), the cathode shall be white, and the trigger input shall be red. The flashtube lamp shall be stamped with smudge resistant ink next to the terminals to identify the connection. Next to the black terminal shall be ANODE and "2 kV", next to white terminal shall be CATHODE and next to the red terminal shall be TRIGGER. (See Figure 1).

3.4.2 Operation.- A capacitor discharge ranging from 1 uF, 4 uF and 30 uF will operate through a 500 micro Henry inductor to the flashtube lamp twice per second, at three intensity level (High, Medium, and Low) respectively. The normal use of the flashtube is 120 flashes per minute at varying intensity levels, high, medium, and low. The maximum flash rate at the maximum energy is 120 flashes per minute. The flashtube lamp must operate and meet all photometric requirements with minimum anode and minimum trigger voltages presented in Table I.

3.4.3 Loading.- The flashtube lamp shall use 60 Watt-seconds (joules) maximum per flash.

3.4.4 Operation potentials.- The lamp shall operate with the operational potentials in Table I applied at the flashtube lamp terminals. The flashtube lamp shall operate with the first trigger pulse as a positive going voltage pulse. The flashtube lamp shall also operate with the first trigger pulse as a negative going voltage pulse. The approximate arc resistance at peak voltage is 3.4 to 3.8 Ohms.

Table I. Operating Potentials

	<u>Anode Voltage dc</u>	<u>Trigger Voltage</u>
Maximum	2,250	18,000
Nominal	2,000	12,000
Minimum	1,850	8,000

3.4.5 Flash duration.- Flash duration shall not be less than 250 microseconds nor more than 5,500 microseconds at 50 percent of the peak instantaneous candlepower at high intensity, see Table II.

3.4.6 Life Rating.- The flashtube lamp shall have a rated life of no less than 1000 hours when operated at 2000 V, with 60 joules per flash, and a flash rate of two times per second. At the end of 1000 hours the flashtube lamp shall have a minimum candelas output of not less than 70% of the initial candela.

3.4.7 Photometric Output.- The PAR-56 flashtube lamp shall produce the intensities shown in Table II given the nominal operating potential of 2000 Volts and operating conditions in 3.4.2. All intensities are in units of Candelas. The flashtube lamp shall be operated at high intensity for 15 minutes minimum before intensity testing. The effective intensity measurements shall be made over a rectangular pattern not less than 10° vertically and 30° horizontally. The corners may be rounded on a 5° radius to determine compliance with Table II values. The effective intensity shall not decrease more than 30 percent during the minimum rated life. The lamp shall be held so it rotates about the rim for horizontal or vertical rotation , as described in Goniometer and Single Detector, Type B, in Illuminating Engineering Society (IES) Lighting Handbook, 8th Edition, page 40.

Table II. Light intensities (candelas)

<u>Intensity</u>	<u>Maximum Intensity</u>	<u>Minimum Intensity</u>
High	20,000	14,000
Medium	2,000	1,400
Low	450	215

3.4.8 Dielectric requirements.- There shall be a 15 kV dc dielectric level between each of the three terminals on the PAR-56 flashtube lamp.

3.5 Environmental requirements.- The lamps, mounted in standard FAA PAR-56 lamp holders conforming to specification FAA-E-982, shall be designed for outdoor installation and continuous or limited operation in driving rain, sleet and snow, and under the following environmental conditions.

3.5.1 Temperature.- Any temperature between -67° F (-55° C) and +158° F (+70° C) (4.5.7).

3.5.2 Low pressure altitude.- Any altitude from sea level to 10,000 feet (3,048 meters) above sea level (4.5.10).

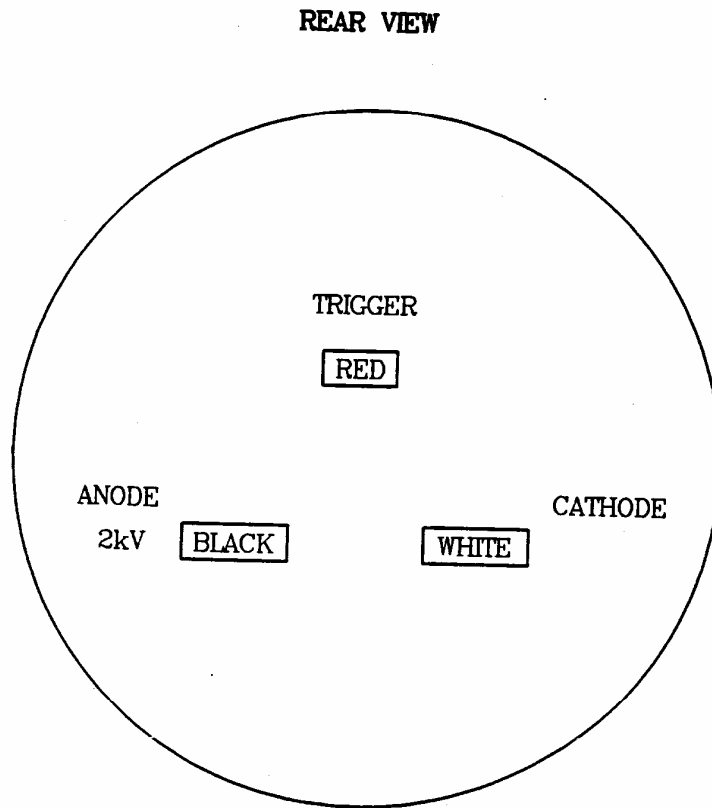


Figure 1. Lamp, PAR-56 Bulb, Screw Terminals, Outline

3.5.3 Humidity.- Any relative humidity between 10 and 100 percent over the temperature range specified in 3.5.1 (4.5.9).

3.5.4 Salt fog.- Exposure to salt laden atmosphere (4.5.11).

3.5.5 Rain.- Exposure to wind-blown rain (4.5.12).

3.5.6 Thermal shock.- Exposure to a sudden application of cold water and ice (4.5.6 and 4.5.13).

3.5.7 Vibration.- The lamp installed in a PAR-56 Lampholder, meeting FAA-E-982, shall be capable of withstanding vibrations in three planes (4.5.8) and in the frequency range of 10 to 2,000 hertz, acceleration in gravities (4.5.8.1 Table III).

3.5.8 Solar Radiation (Sunshine).- Coated lamps shall be able to withstand continuous irradiance intensity of 1120 watts per square meter. The coating shall retain 95 percent of initial transmittance after two years of solar radiation (4.5.14).

3.5.9 Icing/freezing rain.- The lamp shall operate with one half inch (1/2") (12.7 mm) of glaze ice on the lamp (4.5.6). With these icing conditions the lamp shall operate without defect.

3.6 Lamp design and construction.- The lamps shall be suitable for use in fixtures operated at ambient temperature from -67° F (-55° C) to +158° F (+70° C). The PAR-56 flashtube lamp shall meet the dimensions specified in figure 2.

3.6.1 Fungus-proof materials.- All materials that are nutrients for fungi shall not be used.

3.6.2 Metals.- Metals shall be corrosion resistant or suitably treated to resist corrosion caused by fuels, salt spray, or atmospheric conditions that may be encountered in storage or normal service on an airport.

3.6.3 Selection of materials.- Specifications and standards for all materials, parts, and government certification and approval of processes and equipment, which are not specifically designated herein and which are necessary for the execution of this specification, shall be selected and submitted for approval to the Contracting Officer, or as specified in the contract schedule.

3.6.4 Screw terminals.- Screw terminal lugs of flashtube lamp shall be straight, flat and rounded to prevent arc-over between terminals. Threads in the lug and on the mating screw shall be free of deformation and burrs. Terminal lugs shall be connected to the lamp using silver solder. (4.4.1) The silver solder shall have a minimum of 20 percent silver in the solder.

3.6.5 Optional design.- Design details not specified are optional. The physical appearance of the flashtube lamp shown in figures 1 and 2 is preferred; however, minor variations will be permitted, provided performance requirements are met, the flashtube lamp is physically interchangeable with those depicted in figures 1 and 2, and the design is approved by the procuring activity.

3.6.6 Lamp coating.- When lamps are coated with an environmentally protective coating, the coating shall be permanently attached to the lamp. There shall be no air bubbles between the coating and the lens of the lamp.

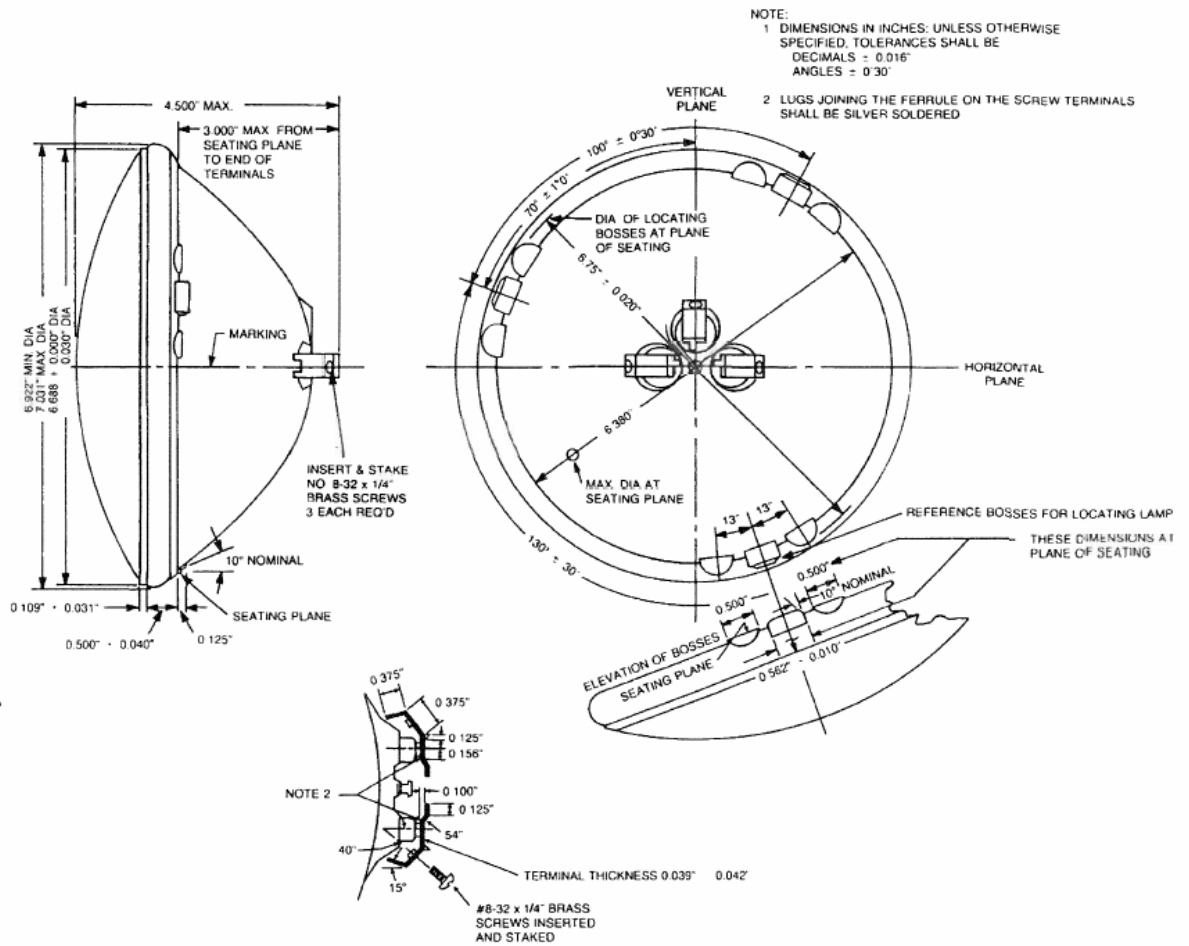


Figure 2. Lamp, PAR-56 Bulb, Dimensions

3.7 Marking.- Each flashtube lamp shall be marked on the back top side of the reflector body with the ordering designation, Anode Voltage (A-number-V), Trigger voltage (T-number-V), day, month and year of manufacture and the manufacturer's name, logo or trademark and CAGE code. The marking of the flashtube lamp connections shall be as specified in paragraph 3.4.1. The marking shall remain, for the life of the flashtube lamp, permanent, clear, durable and legible. The manufacturer's name, logo, or trademark molded into the flashtube lamp may be substituted for only that portion of the marking requirement. Stick on labels are not acceptable. (4.4.1)

3.8 Workmanship.- Each flashtube lamp, including all parts and accessories, shall be fabricated and finished in a thoroughly workmanlike manner. Each flashtube lamp shall be free from blemishes and defects. Marking of parts and assemblies shall be clear, legible, and durable. Soldering, welding, brazing, cementing, and wiring shall be thorough. Alignment of parts shall be accurate. The flashtube lamp electrical termination lugs shall be straight, flat and rounded, without bends, twists or burrs. The sealed flashtube lamp shall be free of loose internal items and debris.
(4.4.1)

3.8.1 Cleaning.- Each flashtube lamp shall be thoroughly cleaned, and loose, spattered, or excess solder, metal chips, flux, and other foreign material shall be removed during and after final assembly.

3.9 Packaging, packing and marking.- The flashtube lamp shall be packaged, packed and marked in accordance with Section 5.

4. QUALITY ASSURANCE PROVISIONS

4.1 Quality assurance provisions.- The contractor shall provide and maintain a quality control program that fulfills the requirements of American National Standards ANSI/ASQC-Q9001-2000. ISO certification is not required. All tests and inspections made by the contractor may be subjected to government inspection. The term "government inspection," as used in this specification, means that an FAA representative will witness the contractor's testing and inspection, and will carry out such visual and other inspection as deemed necessary to assure compliance with contract requirements. Inspection is meant to be separate and distinct from testing and shall be limited to visual and/or observational. Operational shall mean the flashtube lamp shall light and shall not be subjected to testing. Inspecting and testing shall be conducted using test procedures prepared in accordance with a quality system plan (QSP) in accordance with ANSI/ASQC-Q9001-2000, DID-FAA-QA-003 (QSP) and approved by the government. The contractor shall prepare the test procedures.

4.2 Test and inspection of production models.- The first fifteen (15) units of production are designated as production models. The production models shall be subjected to the examinations specified in 4.4 and the tests specified in 4.5.1 through 4.5.14. The flashtube lamps shall be mounted in PAR-56 lamp holders and shall be operated during the conduct of tests specified in 4.5.1 through 4.5.14. The humidity test (4.5.9) shall precede the thermal shock test (4.5.6), and both tests shall be conducted on the production models.

4.3 Test and inspection of production units.- Testing of the production units shall start after acceptance of the production models. All of the production units shall be examined as specified in 4.4 and tested as described in 4.5.1, 4.5.2, 4.5.4, and 4.5.13. After production unit tests all of the production units shall be inspected for acceptance (4.3.2). Any cracking, fading, or failure of the flashtube lamps to operate shall be cause for rejection.

4.3.1 Inspection data.- The contractor shall prepare and submit a list of tests, acceptance test procedures, and test data forms to the Contracting Officer.

4.3.2 Acceptance inspection.- All production units shall be visually inspected for damage and integrity of packaging. Inspection for acceptance will include; marking, packaging, concealed damage, physical dimensions and specified cleanliness of the flashtube lamp. Any cracking, staining, fogging, of the lens or the reflector, cracking or loose terminal, dirty flashtube lamp, illegible marking, poor packaging or packing, concealed damage when the external package has no visible damage, and specified packaging attributes shall be considered a defect and cause for non acceptance.

4.4 Examinations

4.4.1 Examination of product.- The flashtube lamp shall be inspected to determine compliance with the requirements specified herein with respect to materials (3.6), workmanship (3.8), and marking (3.7). The flashtube lamp shall be inspected to determine that outline dimensions meet the dimensions given in Figure 2 as applicable. Flashtube lamp electrical termination lugs shall be examined for compliance with 3.6.4 and 3.8.

4.4.2 Preparation for delivery.- The preservation, packaging, packing, and marking shall be examined for conformance to section 5 and subparagraphs.

4.5 Test methods.- Testing of the system shall be performed as follows:

4.5.1 Visual examination.- Each flashtube lamp shall meet the requirements in 3.1, 3.3, 3.4.1, 3.6.4 and 3.8. Any cracking, fogging of the lens or the reflector, stains on the reflector, cracking or loose terminals shall be cause for rejection.

4.5.2 Rating test.- After being burned-in under approved laboratory conditions at rated voltage 3.4.4 for a period equal to 1 percent of its rated life at an ambient temperature of $+68^{\circ} \pm 20^{\circ}$ F ($+20^{\circ} \pm 11^{\circ}$ C), the flashtube lamp shall be tested to determine if the flashtube lamp parameters measured are equal to or exceed the parameters specified in 3.4.2, 3.4.3, 3.4.4, 3.4.5 and 3.4.8. There shall be a 15 minute lamp burn before testing for lamp parameters. The flash duration 3.4.5 shall be obtained by measuring the light output pulse in candelas.

4.5.3 Life test.- The lamp shall be tested and results of the test verified to determine that the life of the lamp conforms to the life requirements specified in 3.4.6, when the lamp is operating in a PAR-56 lampholder (FAA-E-982) on an open, vibration-free rack.

4.5.4 Photometric tests.- Photometric tests shall be conducted on the flashtube lamp to demonstrate compliance with the intensity and beam dimension 3.4.7 and the intensity requirements of Table II. Photometric tests shall be conducted in accordance with FAA-E-1100 Photometric Test Procedures for Condenser Discharge Lights. Test results shall include a graph showing the effective isocandela curve for each intensity setting and oscilloscope photographs of the pulse

shape and deviation. The photometrics shall be obtained using a lamp light flash duration described in 3.4.5.

4.5.5 Light maintenance test.- The flashtube lamps shall be tested to determine that at rated life, the light output shall not fall below 70 percent 3.4.6 and 3.4.7 of the specified initial output or fail to flash. The test procedure for determining the change in light output before and after burning shall be the same for any one lamp.

4.5.6 Icing test.- This test shall be performed on flashtube lamps 3.5.9. The icing test shall be conducted in accordance with Procedure I, Method 521.2 of MIL-STD-810F. The lamp shall be placed in an environment of $+23^{\circ}\text{F} \pm 2^{\circ}\text{F}$, ($-5^{\circ}\text{C} \pm 1.1^{\circ}\text{C}$) until cooled to this temperature. Water shall then be introduced by suitable means to cause a layer of ice to form on the lamp covering, the reflector and the cover lens to a thickness of at least 1/2 inch (12.7mm). After the required thickness of ice has formed, the lamp shall be retained in the $+23^{\circ}\text{F}$ (-5°C) environment for an additional period of at least 30 minutes. With the longitudinal axis of the lamp tilted 25° upward, the lamp shall then be energized and allowed to operate until the ice melts and breaks free. The lamp shall be de-energized, removed from its environment, and examined for defects. In addition, when there is a coating on the lens cover, adhesive tape, commercial item A-A-883 (NSN 7510-010031-3129) shall be placed on the surface (center) of the lens and removed after five minutes. The adhesive tape shall be of sufficient length to allow removal with the removing force applied at right angles to the surface. Any peeling of the lens protective coating, from the area under the tape, or visible anywhere on the lens surface, shall constitute failure of the test. At the completion of each test, the lamps shall be thoroughly examined for defects. The lamps are of acceptable quality if the reflector coating does not peel, discolor, crack, or fade; the glass does not crack or break; the cover glass does not leak or separate from the reflector body; and the terminal seals and solder joints on the terminals do not break.

4.5.7 Temperature Tests.

4.5.7.1 High temperature.- The high temperature test shall be conducted in accordance with Procedure II, Method 501.4, extreme induced conditions, of MIL-STD-810F, except the temperature shall be constant, 158°F ($+70^{\circ}\text{C}$), and maintained for a period of 6 hours minimum duration. The temperature sensors shall be installed around the production model in the test chamber. This test shall be run concurrently with the low temperature and pressure tests.

4.5.7.2 Low temperature.- The low temperature test shall be conducted in accordance with Procedure II, Method 502.4 of MIL-STD-810F. The temperature shall be constant at -67°F (-55°C) and maintained for a period of 6 hours minimum duration. The temperature sensors shall be installed around the production model in the test chamber. This test shall be run concurrently with the high temperature and pressure tests.

4.5.8 Vibration test.- The vibration test shall be conducted in accordance with Procedure I, Method 514.5 of MIL-STD-810F. The PAR-56 lamp shall be installed and operating at rated amperes in a standard FAA PAR-56 lamp holder and the assembly shall be vibrated in the following three planes:

- (a) A plane perpendicular to the vibration table (vertically)
- (b) A plane parallel to the light beam axis (horizontally)
- (c) A plane horizontally at right angles to the light beam axis (side)

4.5.8.1 Vibration levels.- The vibration levels are shown in Table III. The duration of each sweep shall be 10 minutes. A sweep is the vibration of a unit throughout a given frequency range. At the conclusion of the test the lamp shall be thoroughly examined. Failure of the lamp to operate during the test, and any mechanical failure observed on the lamp after the test shall be cause for rejection.

Table III. Vibration Test Data

Acceleration in Gravities	Frequency, Hertz
0.020 inch double amplitude (displacement)	10-70
1	70-200
1	200-500
1	500-2,000

4.5.9 Humidity test.- The humidity test shall be in accordance with Procedure II, Method 507.4, of MIL-STD-810F, except that a total of three complete 24 hour cycles (72 hours) shall be required (Table 507, 3-I (cycle 5)). The high temperature shall be +70°C (158°F) and the highest relative humidity shall be 100 percent instead of 75 percent.

4.5.10 Low pressure (Altitude) test.- The low pressure test shall be conducted in accordance with Procedure II, Method 500.4, of MIL-STD-810F. The lamp shall be tested at atmospheric pressures corresponding to sea level and 10,000 feet (3,048 meters) altitude. The lamp shall be tested at both -67°F (-55°C) and +158°F (+70°). Lamps shall be tested for two cycles at high intensity, two cycles at medium intensity and two cycles at low intensity, with a power off interval. A cycle is defined as operation for one hour at the intensity setting, followed by one-half hour off. This test shall be run concurrently with the low and high temperature tests.

4.5.11 Salt fog test.- The salt fog test shall be performed in accordance with Procedure I, Method 509.4, of MIL-STD-810F. The equipment shall be exposed for a period of 86 hours, consisting of four consecutive periods of twelve (12) hours wet and twelve (12) hours dry, followed by a 48-hour drying period. At the conclusion of the test, salt buildup or film may be removed with tap water.

4.5.12 Rain test.- The rain test shall be performed in accordance with Procedure I, Method 506.4, of MIL-STD-810F. The wind velocity shall be 18 m/s (40 mph), and the rainfall rate shall be 10cm/h

(4in/h). The test item temperature shall be at least $10^{\circ} \pm 3^{\circ}\text{C}$ ($50^{\circ} \pm 37^{\circ}\text{F}$) higher than the rain temperature at the beginning.

4.5.13 Two-hour test.- All production units shall be tested for operation at the three intensities. Production models and production units shall be mounted in standard FAA PAR-56 lamp holders and operated at high intensity for 2 hours at an ambient temperature of $86^{\circ}\text{F} \pm 18^{\circ}\text{F}$ ($30^{\circ}\text{C} \pm 10^{\circ}\text{C}$).

4.5.14 Solar radiation (Sunshine) test.- Only coated lamps shall be tested with this test. The solar radiation (sunshine) test shall be performed in accordance with Procedure II, Method 505.4, of MIL-STD-810F. An irradiance intensity of 1120 watts per square meter shall be applied to the lamp coating for six hundred and thirty days at 49°C (120°F). At the end of the test the lamp coating transmittance shall be ninety five percent of the initial transmittance, and the lamp at rated life shall meet the seventy percent light maintenance requirement (3.4.6).

4.6 Test performance.- All tests described above shall be performed by the contractor, at the contractor's facility, or at a FAA approved independent testing laboratory. A FAA representative may witness tests. Tests shall be conducted on the production model and on production units as outlined above to provide compliance with this specification.

5. PREPARATION FOR DELIVERY

5.1 General.- Lamps shall be packaged for extended warehouse storage and reshipment. Packaging shall be in accordance with ASTM D 3951 and testing or validation shall be in accordance with ASTM D 4169, Assurance level II, Distribution cycles 18.

5.2 Packaging.- Each lamp, with one inch cushioning on all surfaces, shall be packaged in an individual unit package fiberboard container. Unit packages shall be over packed in intermediate containers with 12 unit packages per container. Intermediate packaging and shipping containers shall be capable of multiple handling and storage under favorable conditions, such as enclosed facilities, for a minimum of one year.

5.3 Palletized shipments.- All palletized shipments shall be made on disposable pallets with maximum outside dimensions of forty seven and one-half inches ($47 \frac{1}{2}$ inches) by forty inches (40 inches). Overall height of the pallet and contents shall not exceed forty seven inches (47 inches). Fork entry of the pallet shall be on the long sides of the pallet. No portion of the load shall overhang or extend beyond any pallet edge. Shrink wrapping to secure intermediate containers is encouraged.

5.4 Marking.- Unit and intermediate packages and exterior shipping containers shall be marked in accordance with MIL-STD-129, M, 4.2.1. Each intermediate package and each shipping container shall be durably marked with the following information: (example in parentheses)

National Stock Number:

Cage Code & Manufacturer's Part Number:
Item Description:(PAR-56 Flashtube Lamp)
Specification:
Quantity and Unit of Issue:
Contract/Purchase Order Number:
Level of Protection and Date Packed:
Manufacturer's Name and Trade Mark:

6. NOTES. The contents of the subparagraphs below are only for the information of the Contracting Officer. They are not contract requirements, and are not binding on either the Government or the contractor except to the extent that they may be specified elsewhere in the contract as such. Any reliance placed by the contractor on the information is wholly at the contractor's own risk.

6.1 Acceptance inspection.- The contract should identify the location of the final acceptance inspection as origin or destination. The Contract shall provide final acceptance inspection requirements.

6.2 Government furnished equipment.- It is recommended that the contract include PAR-56 lamp holders as needed, to be provided as government furnished equipment.

6.3 Test results.- It is recommended that for coated lamps the bidder be require to submit with the bid the test results proving that the lamp meets the requirements of the specification (3.1), (3.5.8), (3.6.6) and (4.5.14).