AC NO: 150/5345-28B

DATE: 16 Feb 72

ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: SPECIFICATION FOR L-851 VISUAL APPROACH SLOPE INDICATORS AND ACCESSORIES

1. PURPOSE. This advisory circular describes the specification requirements for visual approach slope indicator (VASI) and simple abbreviated visual approach slope indicator (SAVASI) equipment and accessories.

2. CANCELLATION. Advisory Circular 150/5345-28A, Specification for L-851 Visual Approach Slope Indicators, dated 17 March 1970.

3. HOW TO OBTAIN THIS CIRCULAR. Additional copies of this circular, AC 150/5345-28B, Specification for L-851 Visual Approach Slope Indicators and Accessories, may be obtained from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

CLYDE W. PACE, JR.
Acting Director, Airports Service

Initiated by: AS-550

the high brightness setting (6.4-6.6 amperes) to a low brightness setting within the range of 4.8-5.7 amperes. The automatic switching is obtained with a photoelectric control as specified in paragraph 6a(3)(c) and the necessary auxiliary circuitry in the adapter unit.

(c) Provide a photoelectric control designed to permit a high brightness of the lamp housing when the ambient lighting reaches 58±2 footcandles and a low brightness when the ambient lighting reaches 35±2 footcandles. Provide a time delay of between 5 to 20 seconds to prevent false switching due to light from vehicles, lighting, and intermittent cloud conditions.

(d) Provide a shorting bar in the adapter unit to check the current in the lamp circuit. See Figure 3 for the AWG size and number of cables between the adapter unit and VASI lamp housings. Cables are not a part of this specification.

(e) A constant current regulator may be used in lieu of a constant voltage power supply providing the installed unit can meet the requirements of paragraph 5b, and the input power factor and efficiency (corrected) are each at least 90 percent. See Figure 4 for a typical wiring diagram.

(4) Aiming Bar. The aiming bar meets the requirements of FAA-E-1328c, paragraph 3.5. Provide permanent instruction on this bar on how to use the unit.

(5) Calibration Bar. The calibration bar meets the requirements of FAA-E-1328c, paragraph 3.5.1. Make provision on the calibration bar to check the aiming bar's accuracy at 0 degree, 3 degrees, and 6 degrees, as a minimum. Provide permanent instructions on the bar on how to use this unit.

(6) Carrying and Storage Case. The carrying and storage case meet the requirements of FAA-E-1328c, paragraph 3.5.2.

b. SAVASI.

(1) Lamp Housing Assembly. The design and construction of the lamp housing is optional provided the performance and test requirements in FAA-E-1328c are met. Utilize pressure type terminal blocks in the lamp housing, of the proper rating, that can connect Number 8 AWG or Number 12 AWG wire. Design the optical

distribution to meet the requirements in Figures 1 and 2. restrict the overall length and front face of the housing to less than three feet. Glass, plastic, or other material in the aperture opening is not acceptable. Make the aperture an open space. Provide accessories for mounting the lamp housing on the type vertical supports specified in FAA-E-1328c, paragraph 3.4.13.1. The vertical supports are not a part of this specification. The lamp housing may be designed to mount on not less than two, nor more than four vertical supports. The lamp housing in its installed position must be stable. The minimum components furnished with the lamp housing are specified in paragraph 4a(1). Make the aiming line for the optical system, the bottom of the transition bar, and the top of the bottom aperture plate.

(2) Tilt Switch System. Provide a tilt switch system in accordance with paragraph 6a(2).

(3) Adapter Unit. Provide an adapter unit to permit the operation of two of the lamp housings specified in paragraph 6b(1) in a SAVASI configuration.

(a) Design and construct the adapter unit to meet the environmental requirements of FAA-E-1328c. Make provisions to mount the adapter unit on frangible supports.

(b) Design the adapter unit to operate with a 240-volt (60 H_z) $\pm$12-volt input power. Provide a minimum power rating of 600 watts. Include provisions to permit one series circuit consisting of two Specification FAA-E-2351a, 200 watt, Type II lamps to be operated within a maximum current range of 6.4-6.6 amperes. This current range is obtainable with the adapter unit separated at least 500 feet from the lamp housings and the two lamp housings are physically separated 400 feet. Make provisions to automatically switch the high brightness setting of the lamp housings (6.4-6.6 amperes) to a low brightness setting within the range of 5.2-5.7 amperes.

(c) Provide a shorting bar in the adapter unit to check the current in the lamp circuit. See Figure 3 for the AWG size and number of cables between the adapter unit and the SAVASI lamp housing. Cables are not a part of this specification.

(4) Aiming Bar. The aiming bar meets the requirements of paragraph 6a(4).

(5) Calibration Bar. The calibration bar meets the requirements of paragraph 6a(5).

(6) Carrying and Storage Case. The carrying and storage case meets the requirements of paragraph 6a(6).

(7) Series Operation of SAVASI. The SAVASI lamp housings specified in paragraph 6b(1) may be operated in a series circuit. In lieu of the adapter unit specified in paragraph 6b(3), utilize a 500 watt, 6.6 ampere transformer in accordance with Specification MIL-T-27535 and the referenced drawing 27305-1. The 500-watt transformer is not a part of this specification. In addition to the transformer, the SAVASI requires a tilt switch system, paragraph 6a(2) and a shorting device that will short-circuit the secondary of the 500-watt transformer if the lamp circuit shown in Figure 4 is open circuited. The shorting device is a part of this specification.

c. Name Plates. Provide a name plate permanently and legibly filled in with at least the following:

(1) Lamp Housing.

(a) Designation: SAVASI lamp housing or VASI lamp housing, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

(2) Adapter Unit.

(a) Designation: SAVASI adapter or VASI adapter, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Rating: _____ volts _____, amperes, single phase, 60 H_z.

(d) Manufacturer's part number.

(3) Aiming Bar.

(a) Designation: SAVASI aiming bar or VASI aiming bar, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

(4) Calibration Bar.

(a) Designation: SAVASI calibration bar or VASI calibration bar, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

d. Material and Workmanship. Use components and materials of industrial quality or better. Perform workmanship in accordance with high grade commercial practice.

e. Parts List and Installation Instructions. Furnish a complete parts list, which includes the manufacturer's name and identifying part number, for each item listed, together with installation instructions for each installation. Provide a parts list and installation instructions with individual assemblies when shipped for maintenance or replacement purposes. Furnish sufficient drawings and instruction to indicate clearly the method of assembly and installation.

f. Option. If specified, furnish an aiming bar with the capable of obtaining at least three specified fixed angles. This bar may be used in lieu of the aiming bar specified in paragraph 6a(4) if the effective angle of the VASI installation is an angle that will not require resetting a changing elevation. Make the accuracy of the aiming bar at the specified angle equivalent to the accuracy of the bar specified in paragraph 6a(4). Provide a procedure for calibrating the aiming bar. Utilize no mechanical moving parts in the design of the aiming bar. The preset angles may be designated with bubble type levels having an accuracy within ± 2 minutes.

7. TEST.

a. Qualification.

(1) Lamp Housings. Subject at least one sample SAVASI and VASI lamp housing, tilt switch, and VASI lamp out feature included to all test required in FAA-E-1328c. Perform photometric test on the SAVASI lamp housing to determine compliance with Figures 1 and 2.

(a) Tilt Switch System. Check the tilt switch system for the SAVASI and VASI equipment to determine compliance with paragraph 6a(2) through 6a(2)(c).

(b) Lamp Out Feature. Check the lamp out feature to determine compliance with FAA-E-1328c, paragraph 3.4.14.

(2) Adapters. Perform test on the VASI and SAVASI adapter units to determine compliance with all sections of paragraphs 5b, 6a(3), and 6(b)(3).

(3) Aiming and Calibration Bars. Perform checks on the VASI and SAVASI aiming and calibration bars to determine compliance with all requirements of FAA-E-1328c and paragraphs 6a(4) and 6a(5).

b. Production.

(1) VASI and SAVASI Lamp Housings. Subject the VASI and SAVASI lamp housings to the test specified in FAA-E-1328c, paragraph 4.10.

(2) Aiming and Calibration Bars. Subject the aiming and calibration bars to the test specified in FAA-E-1328c, paragraph 4.11.

c. Additional Test. Make additional inspections and tests as deemed necessary by the Federal Aviation Administration, Airports Service, Washington, D.C. 20591, to determine compliance with this specification.

8. QUALIFICATION. Furnish sample lighting equipment to an independent testing laboratory acceptable to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591. Test the equipment as described in paragraph 7 to obtain certification regarding the manufacturer's ability to furnish lighting equipment meeting the requirements of this specification. Furnish two copies of the testing laboratory's report to the Airports Service for review and approval consideration. The manufacturer offering the material for qualification bears the cost of tests.

a. In addition to the test reports by the independent testing laboratory, the manufacturer furnishes parts lists, installation instructions including wiring , diagrams, and drawings to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591, for review and approval.

b. Upon approval of the independent testing laboratory's test reports and the additional data required in paragraph 7, which have shown satisfactory conformance to specification requirements, the Airports Service will list the name of the qualified manufacturer and a description of his light fixture in Advisory Circular 150/5345-1C, Approved Airport Lighting Equipment.

c. If the manufacturer has satisfactory laboratory facilities, the tests may be performed at the factory; and such tests witnessed by a representative of the Federal Aviation Administration, Airports Service, Washington, D.C. 20591. The manufacturer furnishes written reports of these tests to Airports Service, Washington, D.C. 20591, Attention: AS-500.

d. The furnishing of products for Federal projects,which prove to be unequal to the approved equipment, will be sufficient cause for removal of the equipment and the manufacturer's name from the list of approved equipment.

e. At any time after approval has been granted under the above conditions, make available, upon written request from Federal Aviation Administration, Airports Service, a certified copy of factory test reports on the latest production run of equipment.

f. Manufacturers shall not make a change of materials or manufacturing methods or revision of catalog numbers of approved equipment without prior approval of Federal Aviation Administration, Airports Service, Washington, D.C. 20591.

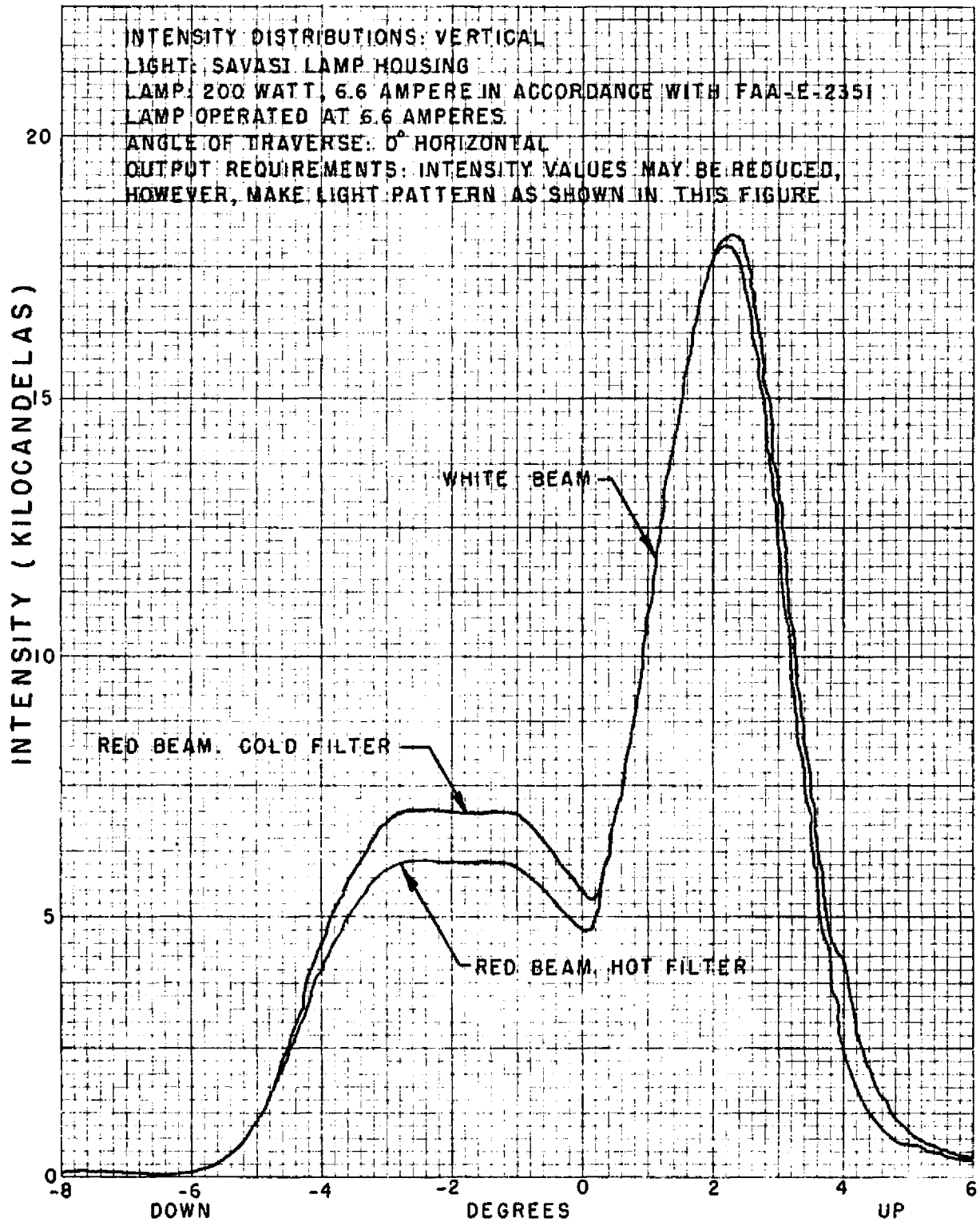


FIGURE 1. VERTICAL INTENSITY DISTRIBUTION FOR SAVASI

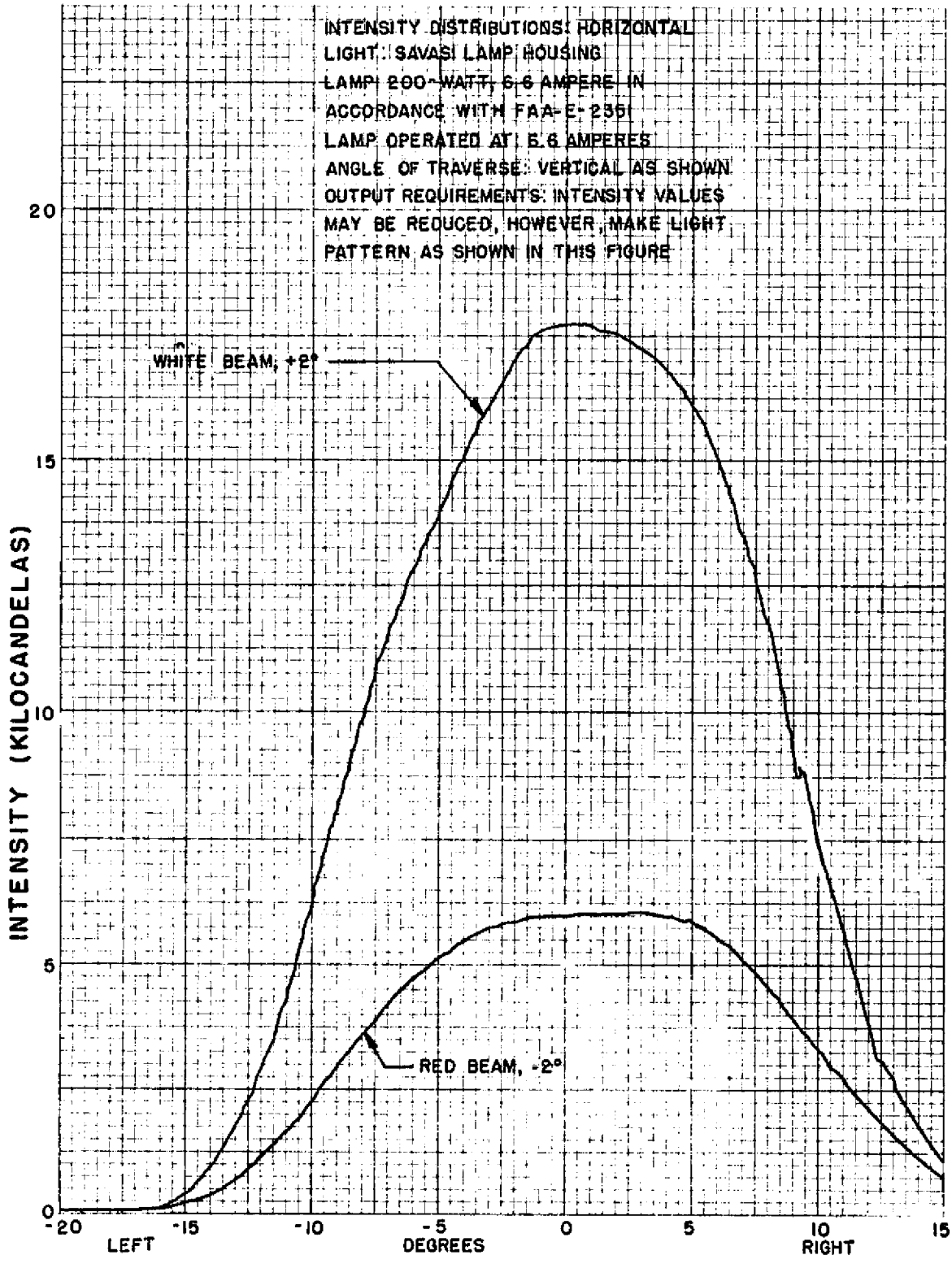
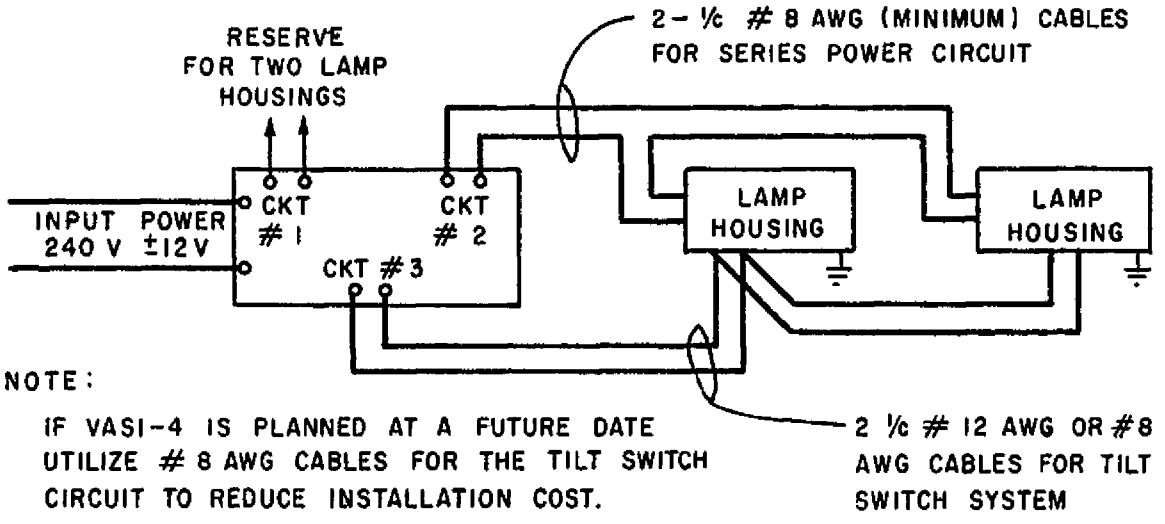
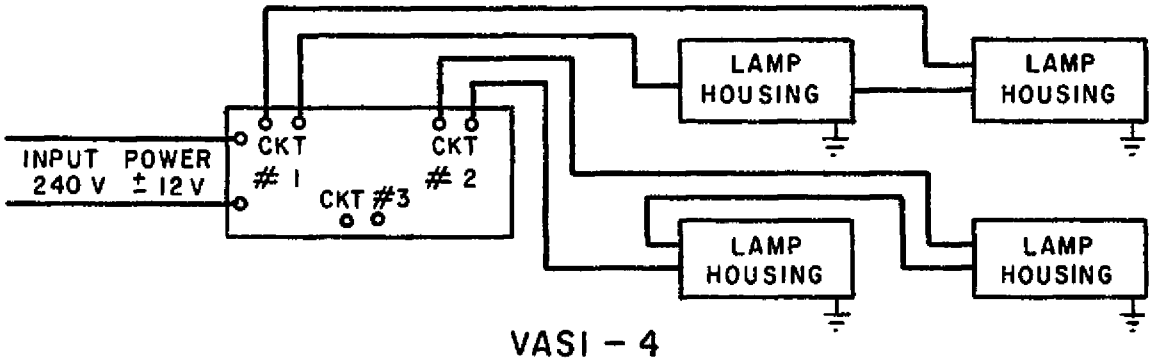


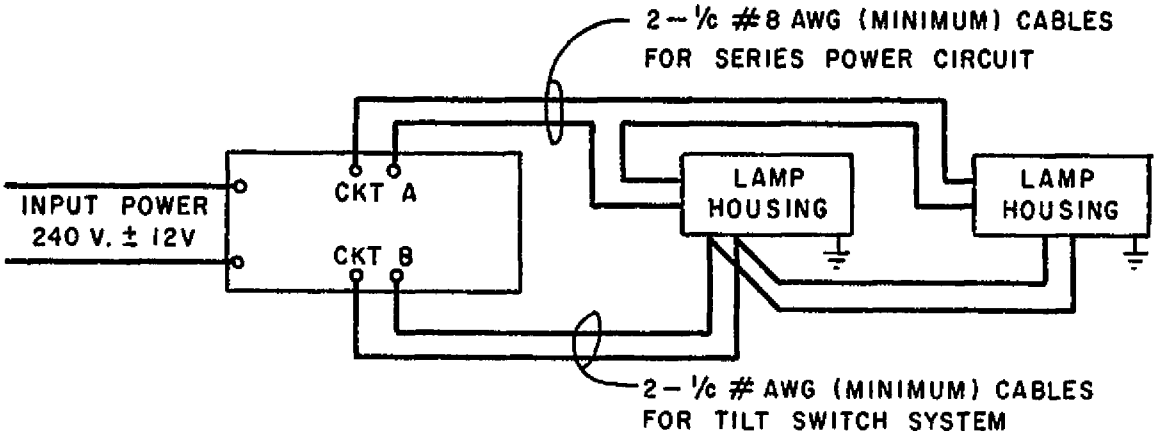
FIGURE 2. HORIZONTAL INTENSITY DISTRIBUTION FOR SAVASI



VASI - 2



VASI - 4



SAVASI

FIGURE 3. TYPICAL CONSTANT VOLTAGE OPERATION OF VASI AND SAVASI

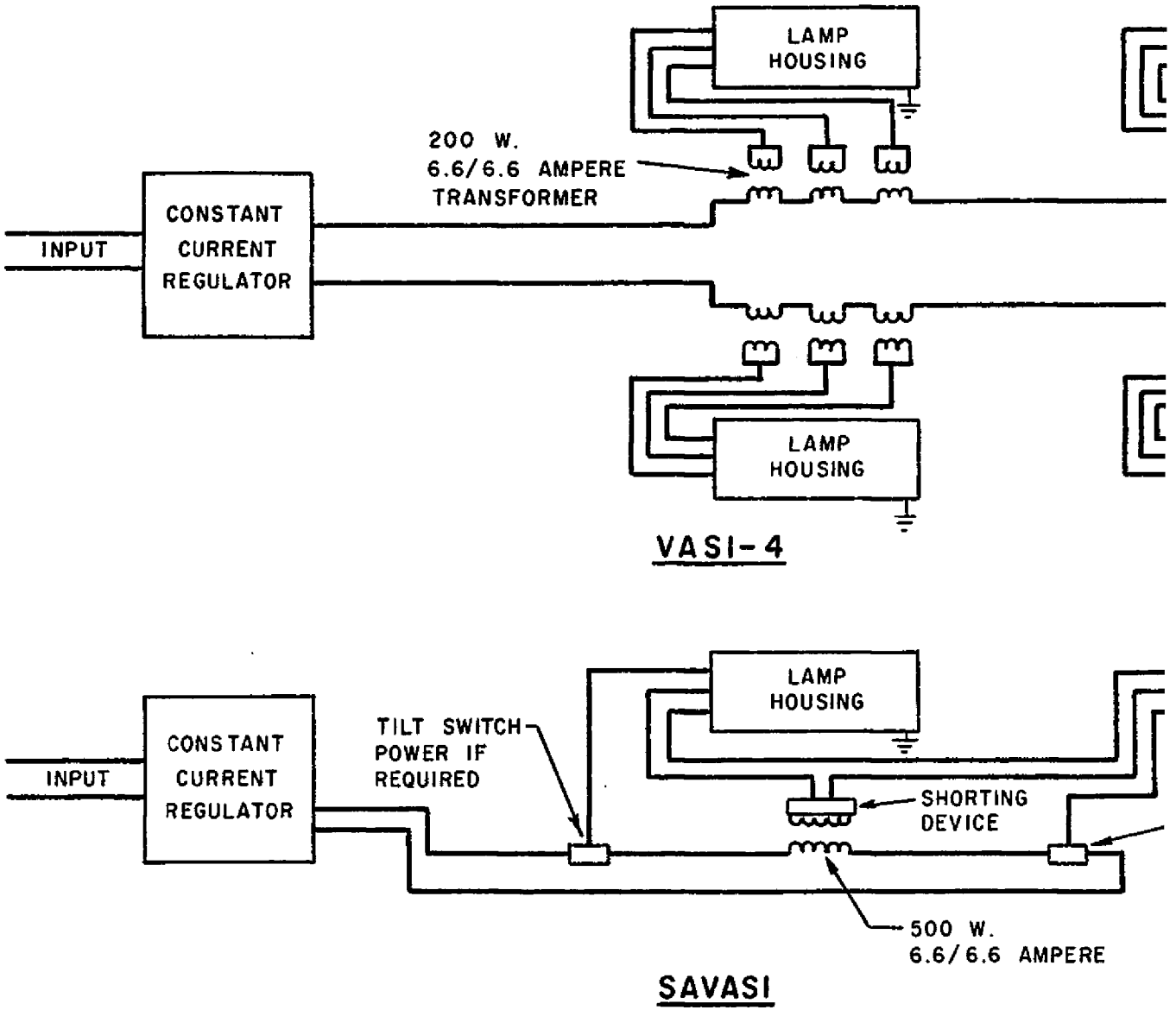


FIGURE 4. TYPICAL SERIES CONNECTIONS OF VASI AND SAVAS

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ADVISORY CIRCULAR

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

SUBJECT: SPECIFICATION FOR L-851 VISUAL APPROACH SLOPE INDICATORS AND ACCESSORIES

1. PURPOSE. This advisory circular describes the specification requirements for visual approach slope indicator (VASI) and simple abbreviated visual approach slope indicator (SAVASI) equipment and accessories.

2. CANCELLATION. Advisory Circular 150/5345-28A, Specification for L-851 Visual Approach Slope Indicators, dated 17 March 1970.

3. HOW TO OBTAIN THIS CIRCULAR. Additional copies of this circular, AC 150/5345-28B, Specification for L-851 Visual Approach Slope Indicators and Accessories, may be obtained from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

Clyde W. Pace Jr.

CLYDE W. PACE, JR.
Acting Director, Airports Service

Initiated by: AS-550

1. APPLICABLE PUBLICATIONS. The following publications of the issue in effect on the date of application for qualification (see paragraph 8) apply to this circular. This circular governs in case of conflict with referenced publications.

   a. Military Specifications. Obtain copies of MIL-T-27535, Transformer, Power, Isolation; Series Circuit, Airport Lighting General Specification for, from the Commanding Officer, Naval Supply Depot, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120.

   b. FAA Specifications. Obtain copies of FAA specifications from the Department of Transportation, Federal Aviation Administration, Facility Installation Service, Configuration Control Branch, FI-110, Washington, D.C. 20591.

      (1) FAA-E-1328c, Visual Approach Slope Indicator Lamp Housing Assembly.

      (2) FAA-E-2351a, Lamp, Par 64, VASI.

   c. FAA Advisory Circulars. Obtain copies of advisory circulars and references from the Department of Transportation, Distribution Unit, TAD-484.3, Washington, D.C. 20590.

      (1) AC 150/5340-14C, Economy Approach Lighting Aids.

      (2) AC 150/5340-16C, Medium Intensity Runway Lighting System and Visual Approach Slope Indicators for Utility Airports.

2. EXPLANATION OF REVISIONS. In addition to minor changes in the text, the following changes have been made:

   a. Mounting requirements for SAVASI revised.

   b. Aiming and calibration requirements changed.

   c. Details added for SAVASI and VASI-2 adapter units.

   d. Details added for series operation of SAVASI.

   e. Requirements added for tilt switch design.

   f. Photometric requirements revised.

   g. Typical system wiring diagrams added.

3. SYSTEMS SELECTION CONSIDERATIONS.

a. Utility Airports. See Advisory Circular 150/5340-16B for selection considerations for VASI-2 and SAVASI, and configuration details for SAVASI. VASI-2 configuration details are contained in Advisory Circular 150/5340-14B.

b. Other Than Utility Airports. See Advisory Circular 150/5340-14B for selection considerations and configuration details for VASI-2 and VASI-4.

4. SYSTEM COMPONENTS.

a. SAVASI. The following components are furnished by the equipment manufacturer for each installation.

(1) Provide two SAVASI lamp housings per runway end installation. Each housing contains one Specification FAA-E-2351a, Type II 6.6 ampere, 200-watt halogen cycle lamp. Each housing also contains a filter lens assembly and the necessary accessories in the optical and electrical systems required to conform with this specification. Include mounting flanges and provisions for attaching the lamp housing to supporting legs in accordance with FAA-E-1328c, paragraph 3.4.13.1.

(2) Provide one adapter unit with each set of two SAVASI lamp housings. The adapter unit meets the requirements of paragraph 6b(3).

(3) Provide one tilt switch system for lamp housings. The tilt switch system meets the requirements of paragraph 6a(2).

(4) Provide at least one aiming bar and calibration bar with a storage and carrying case for use at each airport. Additional aiming bars, if required, should be specified when ordering equipment. The aiming bar and calibration bar with a storage carrying case meet the requirements of FAA-E-1328c, paragraphs 3.5, 3.5.1, and 3.5.2.

b. VASI-2. The following components are furnished by the equipment manufacturer for each installation.

(1) Provide two VASI lamp housings per runway end. These two VASI lamp housings are called a VASI-2 installation. Furnish each lamp housing with three Specification FAA-E-2351a, Type II,

the high brightness setting (6.4-6.6 amperes) to a low brightness setting within the range of 4.8-5.7 amperes. The automatic switching is obtained with a photoelectric control as specified in paragraph 6a(3)(c) and the necessary auxiliary circuitry in the adapter unit.

(c) Provide a photoelectric control designed to permit a high brightness of the lamp housing when the ambient lighting reaches 58±2 footcandles and a low brightness when the ambient lighting reaches 35±2 footcandles. Provide a time delay of between 5 to 20 seconds to prevent false switching due to light from vehicles, lighting, and intermittent cloud conditions.

(d) Provide a shorting bar in the adapter unit to check the current in the lamp circuit. See Figure 3 for the AWG size and number of cables between the adapter unit and VASI lamp housings. Cables are not a part of this specification.

(e) A constant current regulator may be used in lieu of a constant voltage power supply providing the installed unit can meet the requirements of paragraph 5b, and the input power factor and efficiency (corrected) are each at least 90 percent. See Figure 4 for a typical wiring diagram.

(4) Aiming Bar. The aiming bar meets the requirements of FAA-E-1328c, paragraph 3.5. Provide permanent instruction on this bar on how to use the unit.

(5) Calibration Bar. The calibration bar meets the requirements of FAA-E-1328c, paragraph 3.5.1. Make provision on the calibration bar to check the aiming bar's accuracy at 0 degree, 3 degrees, and 6 degrees, as a minimum. Provide permanent instructions on the bar on how to use this unit.

(6) Carrying and Storage Case. The carrying and storage case meet the requirements of FAA-E-1328c, paragraph 3.5.2.

b. SAVASI.

(1) Lamp Housing Assembly. The design and construction of the lamp housing is optional provided the performance and test requirements in FAA-E-1328c are met. Utilize pressure type terminal blocks in the lamp housing, of the proper rating, that can connect Number 8 AWG or Number 12 AWG wire. Design the optical

distribution to meet the requirements in Figures 1 and 2. restrict the overall length and front face of the housing to less than three feet. Glass, plastic, or other material in the aperture opening is not acceptable. Make the aperture an open space. Provide accessories for mounting the lamp housing on the type vertical supports specified in FAA-E-1328c, paragraph 3.4.13.1. The vertical supports are not a part of this specification. The lamp housing may be designed to mount on not less than two, nor more than four vertical supports. The lamp housing in its installed position must be stable. The minimum components furnished with the lamp housing are specified in paragraph 4a(1). Make the aiming line for the optical system, the bottom of the transition bar, and the top of the bottom aperture plate.

(2) Tilt Switch System. Provide a tilt switch system in accordance with paragraph 6a(2).

(3) Adapter Unit. Provide an adapter unit to permit the operation of two of the lamp housings specified in paragraph 6b(1) in a SAVASI configuration.

(a) Design and construct the adapter unit to meet the environmental requirements of FAA-E-1328c. Make provisions to mount the adapter unit on frangible supports.

(b) Design the adapter unit to operate with a 240-volt (60 H_z) $\pm$12-volt input power. Provide a minimum power rating of 600 watts. Include provisions to permit one series circuit consisting of two Specification FAA-E-2351a, 200 watt, Type II lamps to be operated within a maximum current range of 6.4-6.6 amperes. This current range is obtainable with the adapter unit separated at least 500 feet from the lamp housings and the two lamp housings are physically separated 400 feet. Make provisions to automatically switch the high brightness setting of the lamp housings (6.4-6.6 amperes) to a low brightness setting within the range of 5.2-5.7 amperes.

(c) Provide a shorting bar in the adapter unit to check the current in the lamp circuit. See Figure 3 for the AWG size and number of cables between the adapter unit and the SAVASI lamp housing. Cables are not a part of this specification.

(4) Aiming Bar. The aiming bar meets the requirements of paragraph 6a(4).

(5) Calibration Bar. The calibration bar meets the requirements of paragraph 6a(5).

(6) Carrying and Storage Case. The carrying and storage case meets the requirements of paragraph 6a(6).

(7) Series Operation of SAVASI. The SAVASI lamp housings specified in paragraph 6b(1) may be operated in a series circuit. In lieu of the adapter unit specified in paragraph 6b(3), utilize a 500 watt, 6.6 ampere transformer in accordance with Specification MIL-T-27535 and the referenced drawing 27305-1. The 500-watt transformer is not a part of this specification. In addition to the transformer, the SAVASI requires a tilt switch system, paragraph 6a(2) and a shorting device that will short-circuit the secondary of the 500-watt transformer if the lamp circuit shown in Figure 4 is open circuited. The shorting device is a part of this specification.

c. Name Plates. Provide a name plate permanently and legibly filled in with at least the following:

(1) Lamp Housing.

(a) Designation: SAVASI lamp housing or VASI lamp housing, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

(2) Adapter Unit.

(a) Designation: SAVASI adapter or VASI adapter, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Rating: _____ volts _____, amperes, single phase, 60 H_z.

(d) Manufacturer's part number.

(3) Aiming Bar.

(a) Designation: SAVASI aiming bar or VASI aiming bar, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

(4) Calibration Bar.

(a) Designation: SAVASI calibration bar or VASI calibration bar, whichever is applicable.

(b) Identification: FAA-L-851.

(c) Manufacturer's part number.

d. Material and Workmanship. Use components and materials of industrial quality or better. Perform workmanship in accordance with high grade commercial practice.

e. Parts List and Installation Instructions. Furnish a complete parts list, which includes the manufacturer's name and identifying part number, for each item listed, together with installation instructions for each installation. Provide a parts list and installation instructions with individual assemblies when shipped for maintenance or replacement purposes. Furnish sufficient drawings and instruction to indicate clearly the method of assembly and installation.

f. Option. If specified, furnish an aiming bar with the capable of obtaining at least three specified fixed angles. This bar may be used in lieu of the aiming bar specified in paragraph 6a(4) if the effective angle of the VASI installation is an angle that will not require resetting a changing elevation. Make the accuracy of the aiming bar at the specified angle equivalent to the accuracy of the bar specified in paragraph 6a(4). Provide a procedure for calibrating the aiming bar. Utilize no mechanical moving parts in the design of the aiming bar. The preset angles may be designated with bubble type levels having an accuracy within ± 2 minutes.

7. TEST.

a. Qualification.

(1) Lamp Housings. Subject at least one sample SAVASI and VASI lamp housing, tilt switch, and VASI lamp out feature included to all test required in FAA-E-1328c. Perform photometric test on the SAVASI lamp housing to determine compliance with Figures 1 and 2.

(a) Tilt Switch System. Check the tilt switch system for the SAVASI and VASI equipment to determine compliance with paragraph 6a(2) through 6a(2)(c).

(b) Lamp Out Feature. Check the lamp out feature to determine compliance with FAA-E-1328c, paragraph 3.4.14.

(2) Adapters. Perform test on the VASI and SAVASI adapter units to determine compliance with all sections of paragraphs 5b, 6a(3), and 6(b)(3).

(3) Aiming and Calibration Bars. Perform checks on the VASI and SAVASI aiming and calibration bars to determine compliance with all requirements of FAA-E-1328c and paragraphs 6a(4) and 6a(5).

b. Production.

(1) VASI and SAVASI Lamp Housings. Subject the VASI and SAVASI lamp housings to the test specified in FAA-E-1328c, paragraph 4.10.

(2) Aiming and Calibration Bars. Subject the aiming and calibration bars to the test specified in FAA-E-1328c, paragraph 4.11.

c. Additional Test. Make additional inspections and tests as deemed necessary by the Federal Aviation Administration, Airports Service, Washington, D.C. 20591, to determine compliance with this specification.

8. QUALIFICATION. Furnish sample lighting equipment to an independent testing laboratory acceptable to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591. Test the equipment as described in paragraph 7 to obtain certification regarding the manufacturer's ability to furnish lighting equipment meeting the requirements of this specification. Furnish two copies of the testing laboratory's report to the Airports Service for review and approval consideration. The manufacturer offering the material for qualification bears the cost of tests.

a. In addition to the test reports by the independent testing laboratory, the manufacturer furnishes parts lists, installation instructions including wiring , diagrams, and drawings to the Federal Aviation Administration, Airports Service, Washington, D.C. 20591, for review and approval.

b. Upon approval of the independent testing laboratory's test reports and the additional data required in paragraph 7, which have shown satisfactory conformance to specification requirements, the Airports Service will list the name of the qualified manufacturer and a description of his light fixture in Advisory Circular 150/5345-1C, Approved Airport Lighting Equipment.

c. If the manufacturer has satisfactory laboratory facilities, the tests may be performed at the factory; and such tests witnessed by a representative of the Federal Aviation Administration, Airports Service, Washington, D.C. 20591. The manufacturer furnishes written reports of these tests to Airports Service, Washington, D.C. 20591, Attention: AS-500.

d. The furnishing of products for Federal projects,which prove to be unequal to the approved equipment, will be sufficient cause for removal of the equipment and the manufacturer's name from the list of approved equipment.

e. At any time after approval has been granted under the above conditions, make available, upon written request from Federal Aviation Administration, Airports Service, a certified copy of factory test reports on the latest production run of equipment.

f. Manufacturers shall not make a change of materials or manufacturing methods or revision of catalog numbers of approved equipment without prior approval of Federal Aviation Administration, Airports Service, Washington, D.C. 20591.

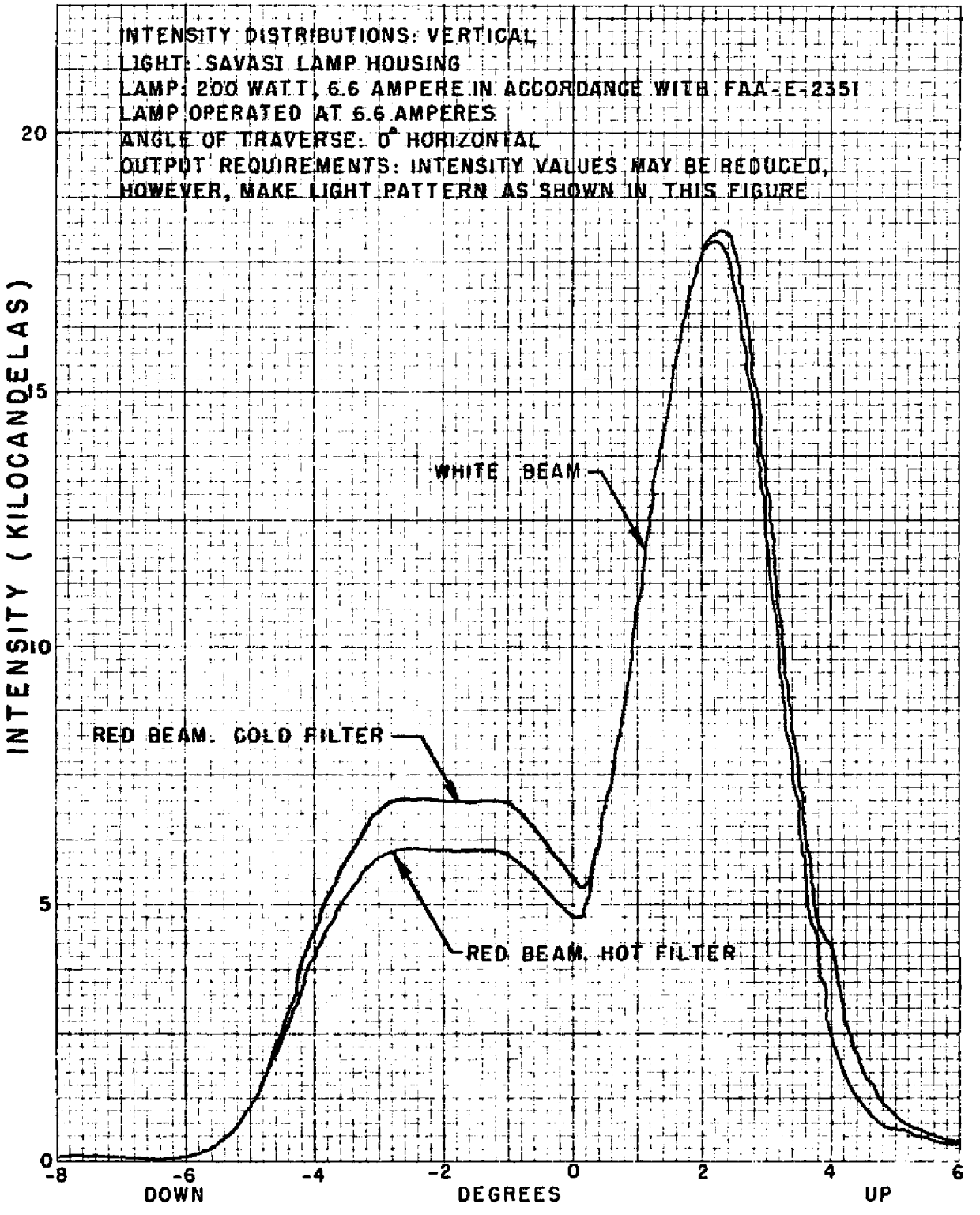


FIGURE 1. VERTICAL INTENSITY DISTRIBUTION FOR SAVASI

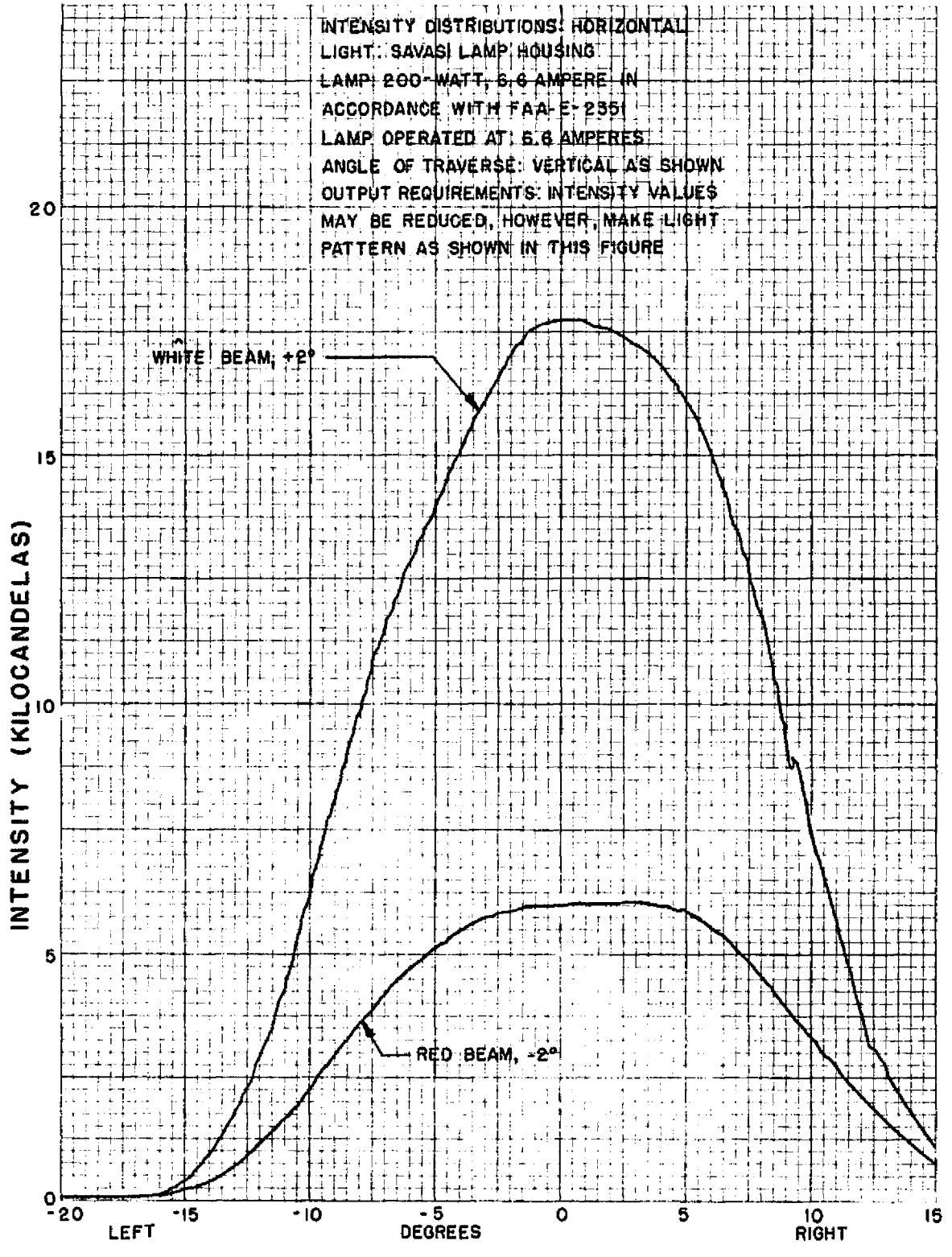
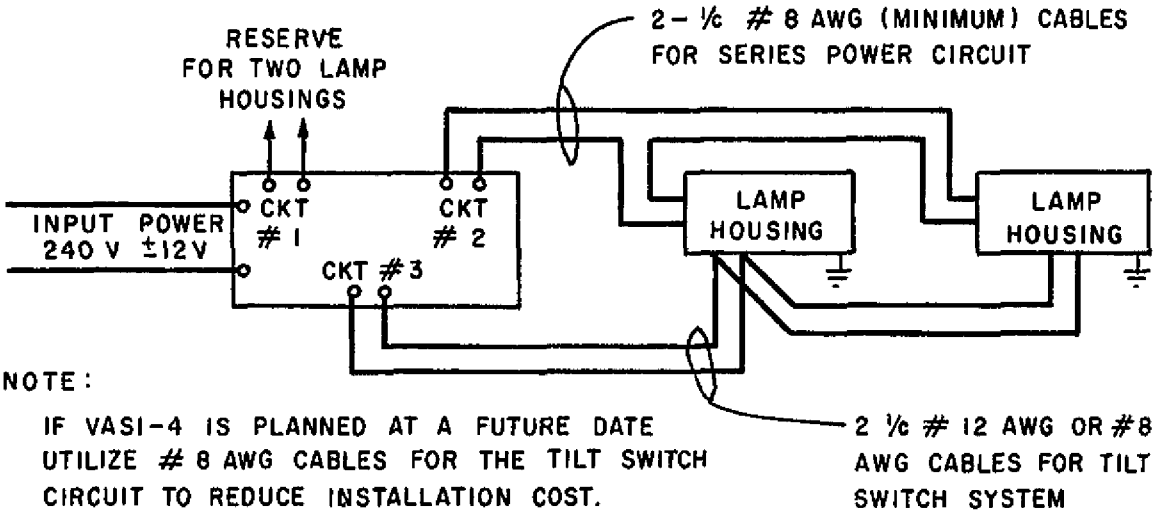
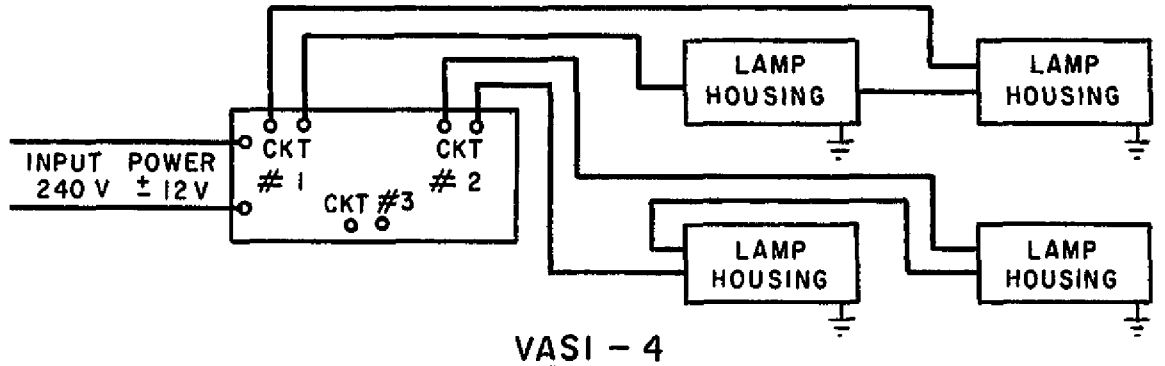


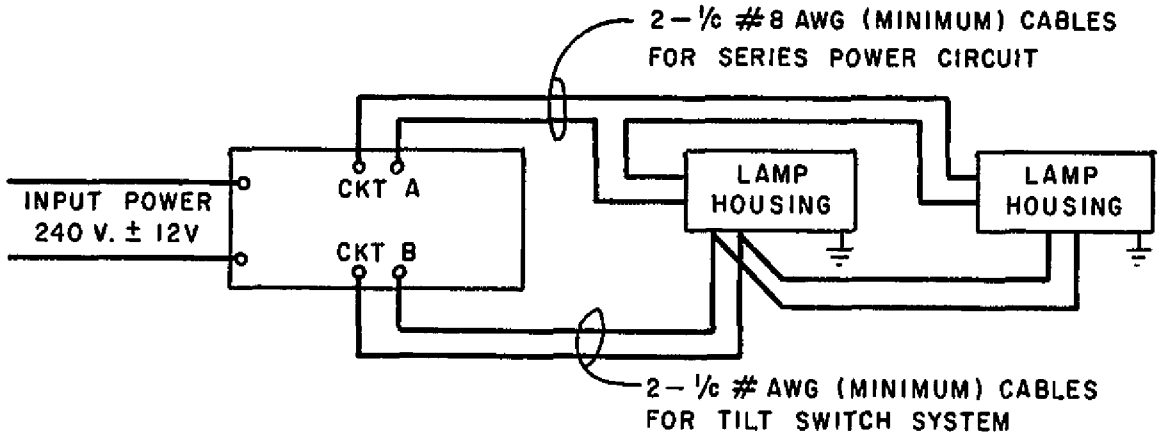
FIGURE 2. HORIZONTAL INTENSITY DISTRIBUTION FOR SAVASI



VASI - 2



VASI - 4



SAVASI

FIGURE 3. TYPICAL CONSTANT VOLTAGE OPERATION OF VASI AND SAVASI

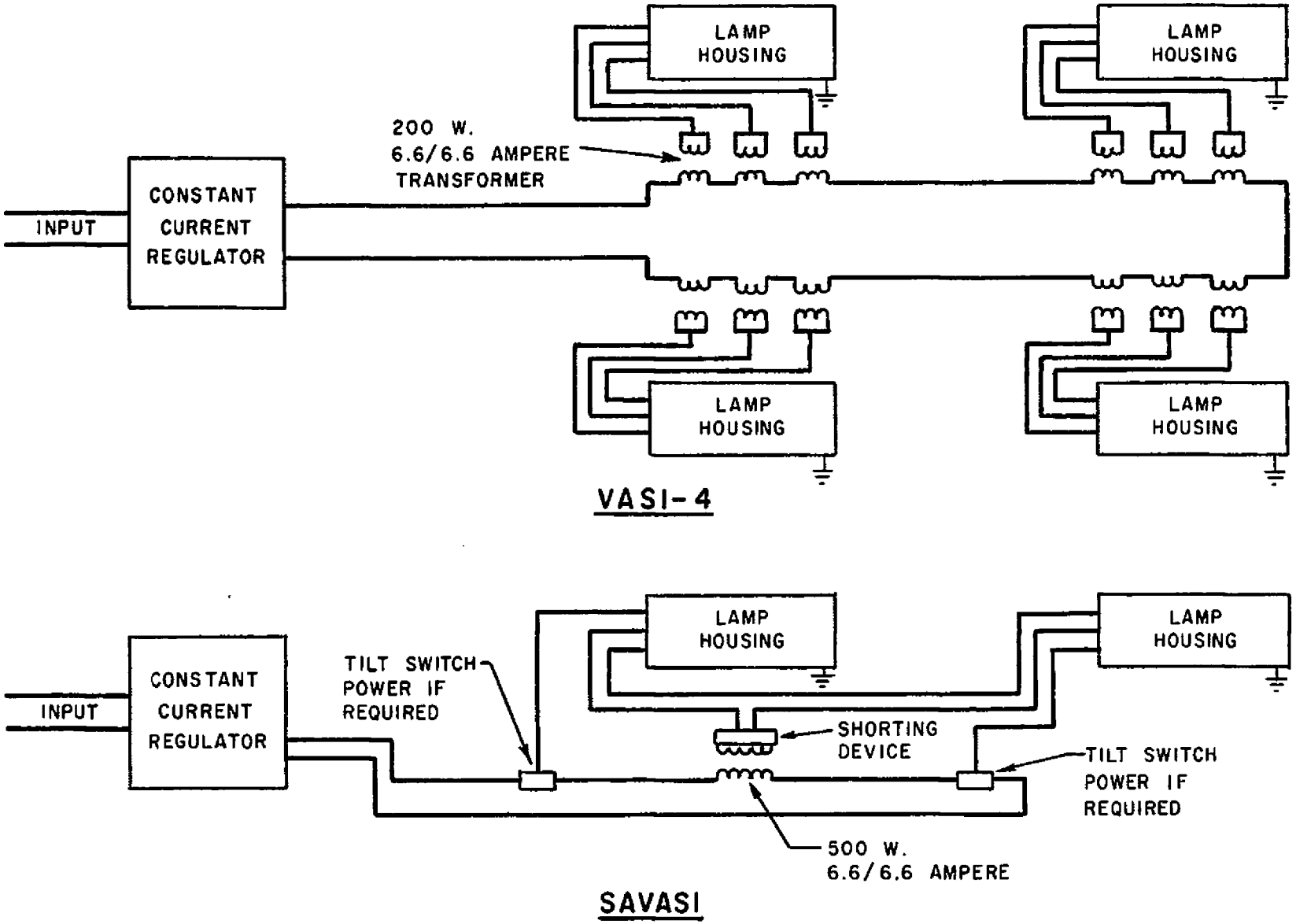


FIGURE 4. TYPICAL SERIES CONNECTIONS OF VASI AND SAVASI