

MILITARY SPECIFICATION

OSCILLATOR: HIGH VOLTAGE

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

1. SCOPE

1.1 This specification covers one type of transistorized, high-voltage, oscillator.

2. APPLICABLE DOCUMENTS

2.1 The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

SPECIFICATIONS

Federal

QQ-N-290	-Nickel Plating (Electrodeposited)
QQ-S-781	-Steel Strapping, Flat
PPP-B-566	-Box, Folding, Paperboard
PPP-B-585	-Box, Wood, Wirebound
PPP-B-601	-Box, Wood, Cleated-Plywood
PPP-B-621	-Box, Wood, Nailed and Lock-Corner
PPP-B-636	-Box, Fiberboard
PPP-B-640	-Box, Fiberboard, Corrugated, Triple-Wall
PPP-B-676	-Box, Setup
PPP-P-291	-Paperboard, Wrapping, Cushioning
PPP-S-760	-Strapping, Nonmetallic, (and Connectors)
PPP-T-45	-Tape, Gummed, Paper, Reinforced and Plain, for Sealing and Securing

THIS DOCUMENT CONTAINS 20 PAGES.

FSC 5855

MIL-O-52374C

PPP-T-76 -Tape, Pressure-Sensitive Adhesive Paper,
Water Resistant, (for Carton Sealing)

PPP-T-97 -Tape, Pressure-Sensitive Adhesive,
Filament Reinforced

Military

MIL-E-1/1049 -Electron, Tube, Image Converter, Type 6914 and
6914A

MIL-R-11 -Resistor, Fixed, Composition (Insulated)
General Specification for

MIL-B-18/253 -Battery, Dry, BA-1100/U

MIL-T-27 -Transformer and Inductor (Audio, Power and High
Power Pulse) General Specification for

MIL-P-116 -Preservation, Methods of

MIL-S-19500 -Semiconductor Device, General Specification for

MIL-S-23586 -Sealing Compound, Electrical, Silicone Rubber,
Accelerator Required

MIL-C-39003 -Capacitor, Fixed, Electrolytic, Tantalum, Solid-
Electrolyte, Established Reliability, General
Specification for

MIL-C-39014 -Capacitor, Fixed, Ceramic Dielectric (General
Purpose) Established Reliability, General
Specification for

STANDARDS

Military

MIL-STD-105 -Sampling Procedures and Tables for Inspection
by Attributes

MIL-STD-129 -Marking for Shipment and Storage

MIL-STD-130 -Identification Marking of U. S. Military Property

MIL-STD-202 -Test Methods for Electronic and Electrical
Component Parts

MIL-STD-781 -Reliability Tests, Exponential Distribution

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

3. REQUIREMENTS

3.1 Description. - The high-voltage oscillator, hereinafter called the oscillator, shall be a solid-state, electronic device for converting 6.75 volts dc (vdc) input to 2700 volt ac peak-to-peak output at a frequency of 1.2 to 2.0 Kilohertz (kHz) and shall conform to figure 1 and as specified herein.

3.2 Preproduction model. - The supplier shall furnish oscillators for inspection within the time frame specified (see 6.2) to prove, prior to starting production, that his production methods and choice of design detail will produce oscillators that comply with the requirements of this specification. Inspection shall be as specified herein.

3.3 Initial production. - The supplier shall furnish oscillators (see 6.2) for inspection as specified in 4.4.

3.4 Materials and components. - Materials and components shall be as specified herein. Materials and components not specified shall be selected by the contractor and shall be subject to all provisions of this specification.

3.4.1 Insulating material. - The interior circuitry of the oscillator shall be encapsulated in sealing compound conforming to MIL-S-23586.

3.4.2 Housing material. - Housing material shall be copper-flashed steel and shall be nickel plated in accordance with Type III, Class 1 of QQ-N-290.

3.4.3 Components.

3.4.3.1 Resistors. - Resistors shall conform to MIL-R-11.

3.4.3.2 Capacitors. - Tantalum capacitors shall conform to MIL-C-39003. Ceramic capacitors shall conform to MIL-C-39014.

3.4.3.3 Semiconductors. - Transistors and diodes shall conform to MIL-S-19500.

3.4.3.4 Transformers. - Transformers shall conform to MIL-T-27.

3.5 Dimensions and weight.

3.5.1 Dimensions. - Dimensions shall be as shown on figure 1 and as specified herein.

3.5.2 Weight. - The oscillator shall not exceed 1-3/4 ounces total weight.

3.6 Burn-in. - Each oscillator shall be operated with an input of 6.75 vdc for 100 hours.

3.7 Normal operation. - With an input current of 20 milliamperes (ma) maximum and instantaneous peaks not greater than 60 ma the oscillator shall not be damaged, (6.3.1) and shall meet the specified output voltages of Table I under all conditions specified in Table I.

TABLE I

DC Input Voltage	DC Output Load	Total Capacitance of Output Load Performance Picofarrads (pf)	AC Output Voltage Volts Peak-to-Peak
6.75	No load (see 6.3.2)	25	2700 \pm 100
6.75	No load	15	2700 \pm 100
6.75	Full load (see 6.3.3)	55	2700 \pm 100 - 150
6.75	Overload (see 6.3.4)	25	2700 \pm 100 - 200
6.00	Full load	55	2400 \pm 100 - 150

3.8 Environmental temperature. - The oscillator shall not be damaged by storage, operation, thermal shock or humidity and shall meet specified operational requirements under the following conditions (see figure 2):

- a. Storage

At plus 68° C for 2 hours and at minus 54° C for 2 hours.
- b. Operation

With an input current of 20 ma maximum and instantaneous peaks not greater than 60 ma, an output frequency of 1.2 to 2.0 kHz and at temperatures from plus 52° C to minus 54° C with atmospheric pressures from 30 to 20 inches of mercury and under all load and input conditions specified in Table I.
- c. Thermal Shock

From plus 52° C to room temperature (see 6.3.5) and from minus 54° C to room temperature.
- d. Humidity

A 90 to 98 percent relative humidity at temperatures from +30° C to +50° C (see figure 3).

3.9 Shock. - While operating with 6.75 volts dc input, no load on the output and a total capacitive load of 25 pf, the oscillator shall not be damaged and shall produce an output voltage of 2700 volts peak-to-peak plus or minus 100 volts when subjected to six 100 g (see 6.3.6) shocks applied in each of three mutually perpendicular directions. The shock impacts shall be nominal half sine wave pulses having a minimum of 100 g's at peak amplitude. The duration of each shock pulse shall be 6 milliseconds + 2 milliseconds measured between the 10 percent values of the peak amplitude. The energy under the shock curve shall be not less than 0.25 g-second and the after oscillations shall be not greater than 15 percent of the peak amplitude of the nominal half sine wave pulse.

3.10 Vibration. - The oscillator shall not be damaged and shall meet the requirements of 3.7 after being rigidly mounted, singly or in groups, and vibrated with simple harmonic motion in three mutually perpendicular planes over a frequency range of 10 to 55 Hz with an amplitude of 0.10 inch total excursion for 10 minutes in each plane. There shall be no voltage applied to the oscillator during the vibration.

3.11 Rise time. - The oscillator shall start and reach steady state (see 6.3.7) conditions within 5 seconds under the following conditions.

- a. An input voltage of 6.00 and 6.75 volts dc.
- b. Full load.
- c. A total capacitive load of 55 pf.
- d. At any ambient temperature between +52° C and -54° C.

3.12 Noise level. - The oscillator noise shall be not greater than 40 decibels when measured at a maximum distance of one inch from the oscillator while operating. (Reference level for noise measurements - 1000 Hz sound wave having an intensity of 20 micronewtons per square meter.)

3.13 Stray field. - With an input voltage of 6.75 volts dc, and the output at full load and 55 pf, the oscillator stray field (see 6.3.8) shall be not greater than one gauss when measured at a maximum distance of one half inch from the oscillator.

3.14 Operational safety.

a. The oscillator, with open circuit shall not be damaged when subjected to a reverse polarity input voltage of 6.75 volts dc for 1 minute.

b. The oscillator shall start, operate and not be damaged when subjected to an input voltage of 6.75 volts dc and the output:

- (1) Short circuited (see 6.3.9) for 1 minute.
- (2) Open circuited (see 6.3.10) for 5 minutes.
- (3) Full load for 1 hour.

3.15 High voltage output socket. - The high voltage output socket of the oscillator shall not be damaged when tested in accordance with 4.6.11.

3.16 Mean time between failure. - The oscillators shall exhibit a specified mean time between failure (MTBF) of 4,000 hours.

3.17 Identification markings. - The oscillator shall be identified in accordance with MIL-STD-130 and as shown in figure 1.

3.18 Workmanship. - The oscillator shall be free of burrs, sharp edges, chips, blisters, corrosion, scratches, mars, or other defects. The oscillator shall be free of grease, oil, dirt, dust, flux or other foreign material. The processes of fabrication and testing shall not deteriorate the characteristics of oscillator performance, material or appearance.

4. QUALITY ASSURANCE PROVISIONS

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

4.1.1 Components and material inspection. - The supplier is responsible for insuring that components and materials used, are manufactured, examined, and tested as specified herein and in accordance with referenced specifications and standards.

4.2 Classification of inspection. - Inspection shall be classified as follows:

- a. Preproduction (4.3).
- b. Initial production (4.4).
- c. Quality conformance (4.5).
- d. Inspection comparison (4.7).
- e. Inspection of preparation for delivery (4.8).

4.3 Preproduction inspection.

4.3.1 Examination. - Each preproduction oscillator shall be examined in accordance with Table II. Presence of one or more defects shall be cause for rejection of that oscillator and may be cause for termination of the examination.

4.3.2 Tests. - Following the successful completion of the examination specified in Table II the preproduction models shall be subjected to the tests in Table III. Tests shall be conducted in the order listed. Failure of any test shall be cause for rejection of that oscillator and may be cause for termination of preproduction testing.

TABLE II EXAMINATION

DEFECT	REQUIREMENT PARAGRAPH
MAJOR	
101. Material not as specified	3.4
102. Dimensions not as specified	3.5.1
MINOR	
201. Weight not as specified	3.5.2
202. Identification marking not as specified	3.17
203. Workmanship not as specified	3.18

4.4 Initial production. - The initial production oscillators shall be selected at random by the Government from the first 25 oscillators being produced from production tooling and will be examined as specified in Table II and tested as specified in Table III in the order listed to determine conformance to the requirements of this specification. The inspection will be performed by the contractor utilizing production test equipment. Acceptance of the initial production oscillators shall not exclude the remaining oscillators from the quality conformance inspection and acceptance provisions specified in Section 4.

4.4.1 Inspection failure. - Failure of any initial production oscillator to meet any requirement specified herein during and as a result of the examination and tests specified in 4.4 shall be cause for rejection of the initial production oscillators and shall be cause for refusal by the Government to continue acceptance of production oscillators until evidence has been provided by the supplier that corrective action has been taken to eliminate the deficiencies. Correction of such deficiencies shall be accomplished by the supplier at no cost to the Government on oscillators previously accepted and produced under the contract. Any deficiencies found as a result of the initial production inspection will be considered prima facie evidence that all oscillators accepted prior to the completion of the initial production inspection are similarly deficient unless evidence to the contrary is furnished by the supplier and such evidence is acceptable to the contracting officer.

TABLE III TEST SCHEDULE

TEST	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Burn-in	3.6	4.6.2
Normal operation	3.7	4.6.3

TABLE III TEST SCHEDULE Con't

TEST	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Rise time	3.11	4.6.7
Operational safety	3.14	4.6.10
Noise level	3.12	4.6.8
Stray field	3.13	4.6.9
Environmental temperature	3.8	4.6.4
Shock	3.9	4.6.5
Vibration	3.10	4.6.6
High voltage output socket	3.15	4.6.11
Mean time between failure	3.16	4.6.12

4.5 Quality conformance inspection.

4.5.1 Inspection lot. - Unless otherwise specified in the contract or purchase order, for purposes of inspection a lot shall be as defined in MIL-STD-105.

4.5.2 Sampling. - Samples shall be selected in accordance with MIL-STD-105. AQL and inspection level shall be as specified in 4.5.4.2.

4.5.3 Examination. - The oscillators shall be examined in accordance with Table II. Presence of one or more defects shall be cause for rejection.

4.5.4 Tests. - Tests in Table IV and VI shall be conducted in the order listed. Tests in Table V may be conducted in any sequence.

4.5.4.1 Group "A" individual tests. - Each oscillator shall be subjected to the tests in Table IV. Failure of any test shall be cause for rejection.

TABLE IV GROUP "A" TEST SCHEDULE

TEST	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Burn-in	3.6	4.6.2
Normal operation	3.7	4.6.3

4.5.4.2 Group "B" samples. - Samples selected in accordance with 4.5.2 and which have passed the tests specified in 4.5.4.1 shall be subjected to the tests in Table V. AQL shall be 1.0 percent defective, inspection level S3 combined.

TABLE V GROUP "B" TEST SCHEDULE

TEST	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Rise time	3.11	4.6.7
Noise level	3.12	4.6.8
Stray field	3.13	4.6.9
Shock	3.9	4.6.5
Vibration	3.10	4.6.6

4.5.4.3 Group "C" special sampling. - This inspection shall consist of the tests specified in Table VI and shall be performed on sample units that have been subjected to and passed the tests in 4.5.4.1.

TABLE VI GROUP "C" SPECIAL SAMPLING

TEST	REQUIREMENT PARAGRAPH	TEST PARAGRAPH
Environmental temperature	3.8	4.6.4
Operational safety	3.14	4.6.10
High voltage output socket	3.15	4.6.11
Mean time between failure	3.16	4.6.12

4.5.4.3.1 Sampling for inspection. - Three (3) sample units shall be selected at random for inspections in Table VI, except for MTBF, from every 100 produced or every 30 days, whichever occurs first. A minimum of ten (10) units shall be tested for MTBF (see 4.6.12) selected from oscillators which have met the requirements of Group A, Table IV. The first samples selected shall be at the start of the contract from the first quality conformance inspection production lot (see 4.5.4.3).

4.5.4.3.2 Noncompliance. - The contractor shall immediately report in writing each Group C failure occurrence, including details of the failure and characteristics affected. The contractor shall immediately investigate the cause of failure and within 5 working days report the results of the investigation. As soon as practicable the contractor shall submit a report on details of the proposed corrective action on (a) the processes and materials, as applicable, and (b) all oscillators which were manufactured under the same conditions, and which may be considered subject to the same failure. Reports shall be forwarded to the responsible technical activity designated in the contract or purchase order through the Government Quality Assurance Representative. After corrective action has been taken an additional sample equal in size to the first sample shall be subjected to the special sampling inspection (all inspections or the inspection which the sample failed, at the option of the Government). Final acceptance and shipment will be withheld until the special sampling reinspection results have shown that the corrective action is effective.

4.5.5 Reinspection of conforming Group C sample unit. Unless otherwise specified, sample units which have been subjected to and passed Group C inspection may be accepted on the contract or order provided all damage is repaired and the sample units are resubjected to and pass Group A inspection.

4.6 Inspection procedures.

4.6.1 Test conditions. - Tests shall be conducted in accordance with the test procedures specified herein. Unless otherwise specified in the test procedures test conditions shall be as follows:

- a. The oscillator shall be connected to the test circuit as shown in figure 4.
- b. Input voltage to the oscillator shall be 6.00 and 6.75 ± 0.025 volts dc.
- c. Output voltage is the voltage measured across C_1 in figure 4.
- d. Total capacitance of the load (Multiplier, the Jennings Probe and stray wire) shall be 15 pf maximum.
- e. No load.
- f. Environmental chambers used for tests shall maintain the specified temperature within plus or minus 2° C and the relative humidity within plus or minus 5 percent.
- g. S_1 (see figure 4) closed.
- h. All tests shall be conducted at room temperature.
- i. All meters used during tests shall have been calibrated within 30 days of the start of testing, and thereafter as required and at intervals not to exceed 6 months. All meters shall be accurate within 1.0 percent of full scale reading, except the meter used to measure V_1 which shall be accurate within 0.5 percent of full scale reading.

4.6.2 Burn-in. - Operate the oscillator continuously with a 25 pf load applied for 100 hours. Failure of any oscillator to operate for 100 hours continuously shall constitute failure of this test.

4.6.3 Normal operation. - Connect the oscillator to the circuit shown in figure 4. Operate the oscillator under all load and input conditions specified in Table I. Failure to meet the requirements of 3.7 shall constitute failure of this test.

4.6.4 Environmental temperature. - Place the oscillator in a test chamber and gradually, in not less than 30 minutes, raise the temperature to plus 68° C and hold at this temperature for a minimum of 2 hours. At the end of this 2 hour period, gradually in not less than 15 minutes, lower the chamber temperature to plus 52° C and hold at this temperature for a minimum of 30 minutes. At the end of this period, operate the oscillator with a total capacitive load of 25 pf. Measure the input current, (MA) (see figure 4), output voltage and output frequency and record these values. Repeat the above procedure with total capacitive loads of 15 pf (no load) and 55 pf (full load). Remove the oscillator from the chamber to room temperature and hold at this temperature while operating for not less than one hour. Monitor and record the output voltage. After recording the voltage, inspect for damage. Replace the oscillator in the chamber and gradually, in not less than 30 minutes, reduce the chamber temperature to minus 54° C and hold at this temperature for two hours. During the final hour of this period, reduce the atmospheric pressure to 20 inches of mercury and repeat the tests specified above that were performed at plus 52°C. At the conclusion of these tests increase the atmospheric pressure to 30 inches of mercury, remove the oscillator from the chamber and hold, while operating at room temperature for not less than one hour. Monitor and record the output voltage and inspect the oscillator for damage. Failure to meet the requirements of 3.8, or evidence of damage or at the conclusion of the above testing shall constitute failure of this test.

4.6.4.1 Humidity. - Place the oscillator in a chamber with an internal temperature of plus 30° C and a relative humidity of 90 to 98 percent and soak for 4 hours. Raise the temperature of the chamber to plus 50° C in not more than 2 hours. Maintain the relative humidity of 90 to 98 percent and soak for 4 hours. Lower the temperature of the chamber to plus 30° C in not more than 2 hours. This constitutes one complete cycle as shown in figure 3. Perform the above cycle six times. At the conclusion of the 6 cycles operate the oscillator with 6.75 vdc input and a 25 pf load across the output. Failure to produce an output of 2700 ± 100 volts or evidence of damage shall constitute failure of this test.

4.6.5 Shock. - Test the oscillator in accordance with Method 202 of MIL-STD-202. Mount the oscillator securely to the shock testing apparatus. While the oscillator is operating subject the oscillator to six 100 g shock impulses applied in each of three mutually perpendicular directions. Monitor the output voltage before, during and after the application of the shock pulses. Inspect for damage. Failure to meet the requirements of 3.9 shall constitute failure of this test.

4.6.6 Vibration. - Secure the oscillator to the vibration table. Vibrate the oscillator with simple harmonic motion in three mutually perpendicular planes over a frequency range of 10 to 55 Hz with an amplitude of 0.10 inch total excursion. In 1 minute vary the frequency from 10 Hz to 55 Hz and return to 10 Hz. Repeat this frequency sweep 10 times. Failure to meet the requirements of 3.10 shall constitute failure of this test.

4.6.7 Rise time. - Place the oscillator in the environmental chamber and adjust the temperature to plus 52° C. Hold at this temperature for 30 minutes. With a total capacitive load of 55 pf adjust the light source (see figure 4) for full load condition. Open S₁ and discharge (short V₂) the multiplier completely. Close S₁ and adjust power supply to 6.75 vdc and measure the rise time and input current required for the oscillator to start and reach steady-state condition. Repeat the above procedure at -54° C and a 6.0 volt input. Failure to meet the requirements of 3.11 shall constitute failure of this test.

4.6.8 Noise level. - Operate the oscillator intermittently at full load and 55 pf and measure the oscillator noise level at a distance of one inch from the oscillator. Failure to meet the requirements of 3.12 shall constitute failure of this test.

4.6.9 Stray field. - Energize the oscillator with 6.75 volts dc. Apply the full load and 55 pf. Measure the magnetic stray field at a distance of one-half inch from the oscillator. Failure to meet the requirements of 3.13 shall constitute failure of this test.

4.6.10 Operational safety. - Apply a reverse polarity of 6.75 volts dc input to the oscillator for not less than one minute with an open circuit on the oscillator output. Disconnect the input voltage and inspect the oscillator for damage. Repeat the above procedure with a normal polarity input and a short circuit on the oscillator output. Remove the short circuit and allow the oscillator to operate for 5 minutes with an open circuit on the oscillator output. Inspect for damage. Connect the oscillator to the test circuit shown in figure 4 with a total capacitive load of 55 pf using a BA-1100/U battery, conforming to MIL-B-18/253 for the input voltage. Operate the oscillator under full load conditions for not less than one hour and monitor input current and ac output voltage. Failure to meet the requirements of 3.14 shall constitute failure of this test.

4.6.11 High voltage output socket. - The output socket shall be mated with a maximum 0.085 ± 0.005 inch length and 0.038 ± 0.001 inch diameter pin 500 times. Failure of the socket to require a minimum extracting pull of 4 ounces from the pin at the end of the test or evidence of damage to the socket shall constitute failure of this test.

103. Materials not as specified for level A or B.
104. Oscillators not intermediate packaged in the quantities specified for level A or B.
105. Each oscillator not individually packaged for level C.
106. Oscillators not packed in quantities specified for level A or B.
107. Strapping not zinc coated for level A.
108. Fiber board boxes not reinforced with tape for level B.
109. Marking illegible, incomplete, or incorrect.

5. PREPARATION FOR DELIVERY

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

5.1.1 Level A.

5.1.1.1 Cleaning. - Each oscillator, high voltage shall be cleaned in accordance with process C-1 of MIL-P-116.

5.1.1.2 Drying. - Each oscillator, high voltage shall be dried in accordance with the applicable procedure of MIL-P-116.

5.1.1.3 Preservation application. - None required.

5.1.1.4. Unit packaging.

5.1.1.4.1. Oscillator. - Each oscillator, shall be individually packaged method III, as follows: Cushion each oscillator, by wrapping in paperboard conforming to PPP-P-291, type 1, secure the wrap with gummed paper tape conforming to PPP-T-45, type III, grade A. Place the cushioned item within a close-fitting box conforming to PPP-B-566, Variety 1 or PPP-B-676, Class A. Box closure shall be in accordance with applicable box specification.

5.1.1.4.2 Intermediate package. - A quantity of 25 each oscillators packaged as specified in 5.1.1.4.1 shall be placed within a closefitting box conforming to PPP-B-566, Variety 1 or PPP-B-676, Class A. Fill all voids with paperboard conforming to PPP-P-291, type 1 to prevent movement. Closure shall be in accordance with the applicable box specification.

5.1.2 Level C. - Oscillator, high voltage shall be preserved and packaged in a manner that will afford adequate protection against physical and environmental damage during shipment, handling and limited intransit storage.

5.2 Packing. - Packing shall be level A, B or C as specified. Shipping containers for all levels shall be capable of stacking and supporting superimposed loads, during shipment and storage without damaging the container or its contents.

5.2.1 Level A. - A quantity of oscillators packaged as specified in 5.1.2.4.2 shall be packed within a close-fitting box conforming to PPP-B-601, overseas type, PPP-B-621, style 4, class 2, or PPP-B-585, style 2 or 3, class 3. Fiberboard boxes being placed directly in shipping containers shall be waterproofed with tape conforming to PPP-T-76, in accordance with the taping requirements of the appendix of the box specification. Closure and strapping shall be in accordance with the applicable container specification or appendix thereto, except that metal strapping shall conform to QQ-S-781, type 1, class B.

5.2.2 Level B. - A quantity of oscillators packaged as specified in 5.1.1.4.2 shall be packed within a close-fitting box conforming to PPP-B-640, class 2, style E or PPP-B-636, type CF, class weather-resistant. The gross weight of boxes conforming to PPP-B-640 shall not exceed 250 pounds. Closure shall be in accordance with the appendix of the applicable box specification. Reinforcing shall be by nonmetallic strapping or pressure-sensitive filament tape banding conforming to PPP-S-760, type II and PPP-T-97, type IV respectively; selection of the material and application shall be in accordance with the appendix of the applicable box specification.

5.2.3 Level C. - A quantity of oscillators packaged as specified in 5.1.1.4.2 shall be packed within a close-fitting box conforming to PPP-B-640, class 2, style E or PPP-B-636, type CF, class domestic. The gross weight of boxes conforming to PPP-B-640 shall not exceed 250 pounds. Closure shall be in accordance with the appendix of the applicable box specification. Reinforcing shall be by nonmetallic strapping, or pressure-sensitive filament tape banding conforming to PPP-S-760, type II and PPP-T-97, type IV respectively; selection of the material and application shall be in accordance with the appendix of the box specification.

5.3 Marking. - In addition to any special marking required by the contract or order, interior packages and exterior shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. - The oscillator is intended to be used to provide a high voltage AC input to the multiplier section of an image intensifier assembly of a night vision system.

6.2 Ordering data. - Procurement documents should specify the following:

- a. Title, number and date of this specification.
- b. Time frame for submission of preproduction models and number required.

- c. When initial production is required and number required.
- d. Level of preservation and packaging and level of packing required (see 5.1 and 5.2).

6.3 Definitions.

6.3.1 Damage. - Damage is defined as:

- a. Electrical failure or malfunctioning, including arcing and corona.
- b. Cracks, breakages, deformation, corrosion, or deterioration of finish.
- c. Flashing or flickering of the output waveshape.

6.3.2 No load. - The condition of no radiation incident on the photocathode of the image converter with the converter energized.

6.3.3 Full load. - With the image converter energized, the amount of radiation on the photocathode is adjusted to produce 35 milliwatts of power in the image converter, ($V \times A = 35$ milliwatts) (see figure 4).

6.3.4 Overload. - With the image converter energized, the amount of radiation on the photocathode is adjusted to produce 50 milliwatts of power in the image converter, ($V \times A = 50$ milliwatts) (see figure 4).

6.3.5 Room temperature. - Room temperature is defined as $23^{\circ} C \pm 3^{\circ} C$.

6.3.6 "g". - "g" is acceleration or deceleration of 32.17 feet per second per second caused by the force of gravity.

6.3.7 Steady state. - The condition is which circuit values remain essentially constant, after initial transient or fluctuating conditions have disappeared.

6.3.8 Stray field. - The leakage magnetic flux that spreads outward from an inductor and does no useful work.

6.3.9 Short circuit. - Short circuit is the condition of a direct short circuit applied between case ground and the output terminal of the oscillator.

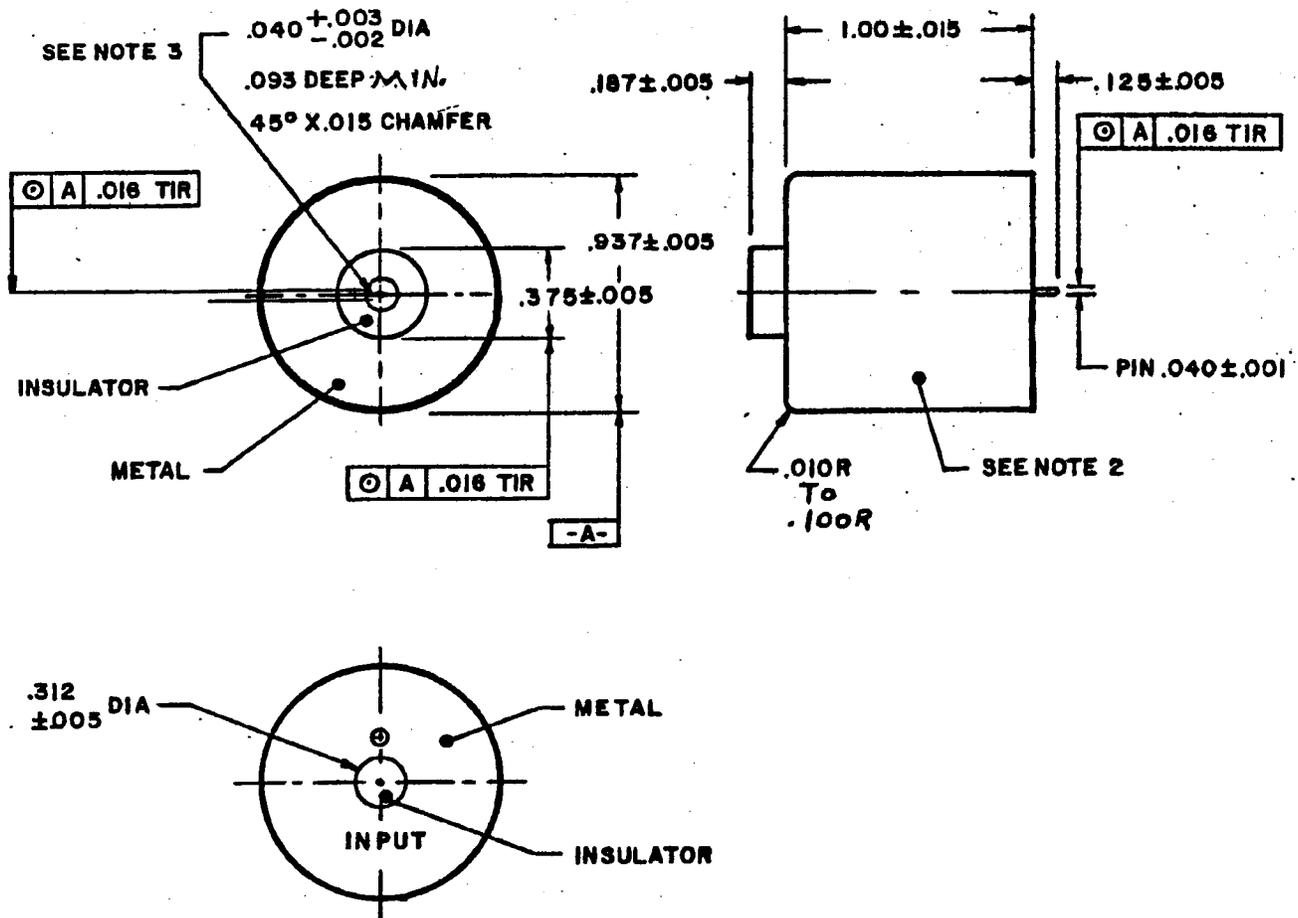
6.3.10 Open circuit. - Open circuit is the condition of no external load applied to the output terminals of the oscillator.

Custodian:
Army-EL
Navy-SH
Air Force-84

User Activity:
Navy- OS

Preparing Activity:
Army-EL

Project Number 5855-0020



NOTES:

1. PERMANENTLY MARK TERMINAL INFORMATION AS SHOWN
2. PERMANENTLY MARK IDENTIFICATION, SERIAL NUMBER, CONTRACT NUMBER
3. SOCKET TO HOLD .038 DIA .090 LG PIN, WITH A 4 OZ MIN PULL
4. SOCKET TO BE FLUSH WITH INSULATOR
5. SOCKET TO BE SOLID (AS OPPOSED TO SLOTTED)
6. EXPOSED METAL HOUSING TO BE NICKEL PLATED AND SHALL BE THE NEGATIVE CONTACT

FIGURE 1 HIGH VOLTAGE OSCILLATOR

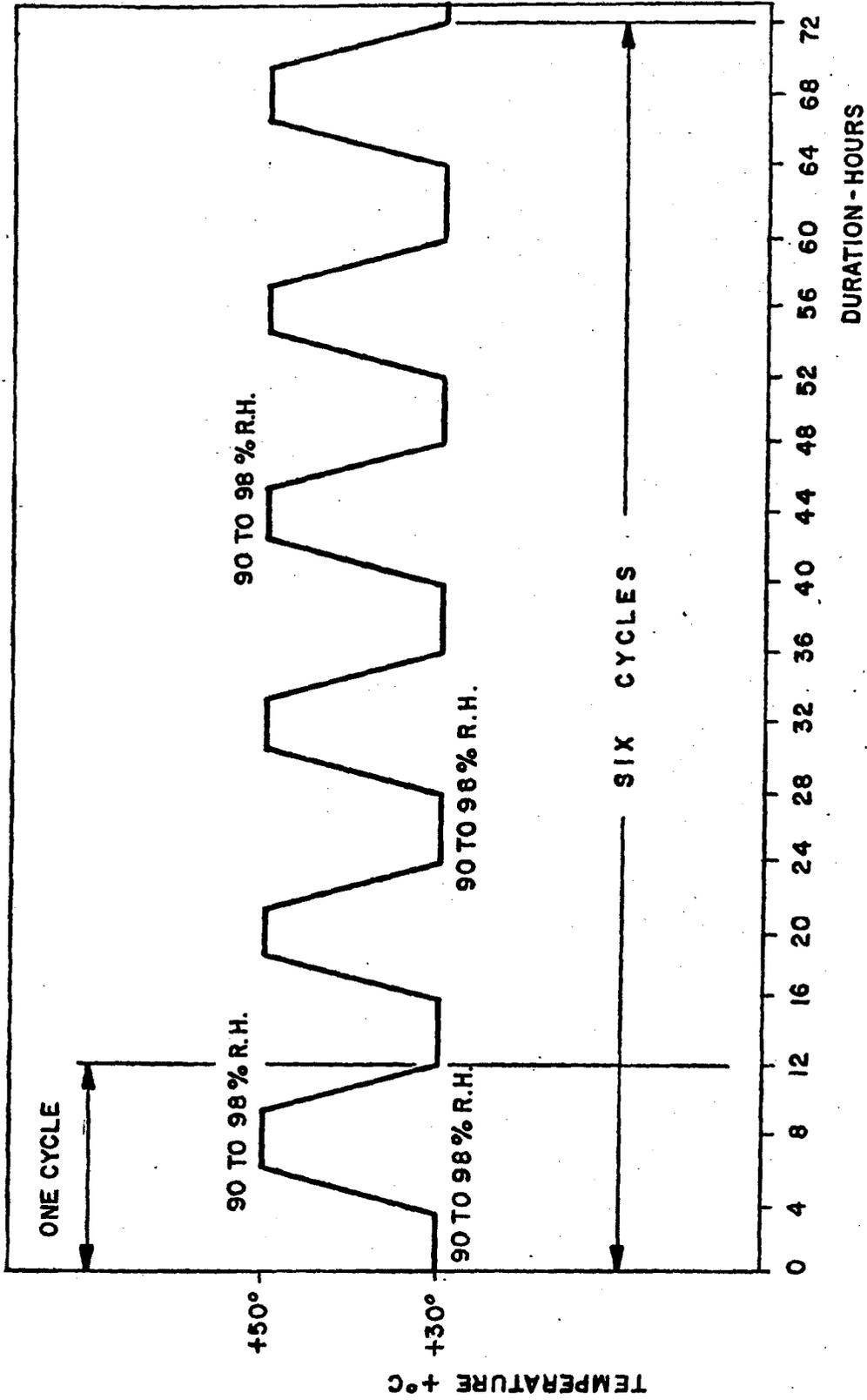
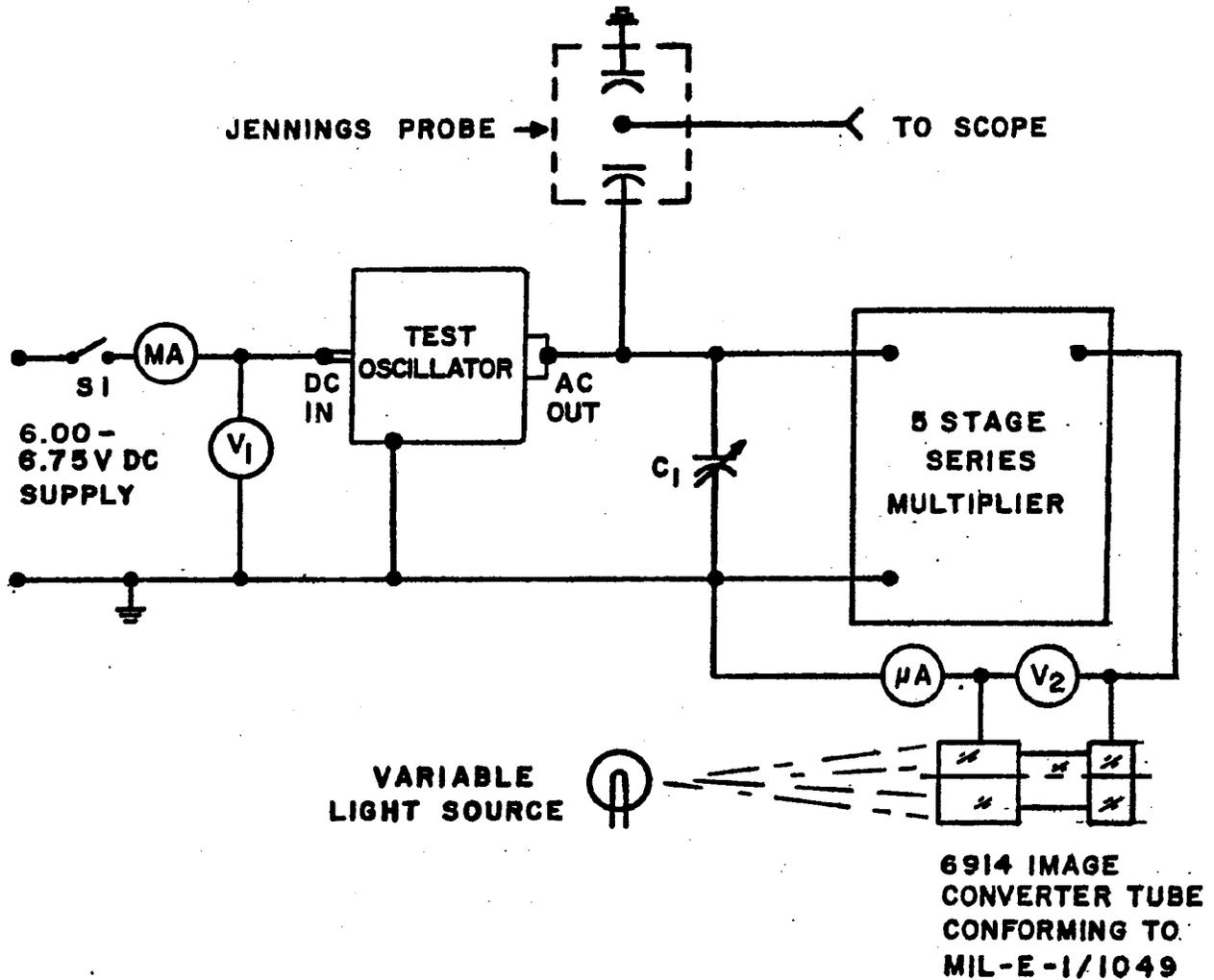


FIGURE 3 RELATIVE HUMIDITY TEST CYCLES



NOTES:

1. C_1 APPROXIMATELY 40pf NOMINAL, SELECT FOR 55pf TOTAL LOAD ON OSILLATOR
2. MULTIPLIER TO APPLY NOT MORE THAN 16KV TO THE IMAGE CONVERTER TUBE
3. CAPACITORS USED IN THE MULTIPLIER DOUBLER CIRCUIT SHALL HAVE A MINIMUM CAPACITANCE OF 1000pf

FIGURE 4 OSCILLATOR TEST CIRCUIT