

INCH-POUND

MIL-PRF-1/1658C
16 June 2003
SUPERSEDING
MIL-PRF-1/1658B(USAF)
6 May 1998

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON
TYPE 8789

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

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Hydrogen.
See figure 1.
Mounting position: Vertical, base down.
Weight: 9 pounds nominal.

ABSOLUTE RATINGS:

| Parameter Unit | Ef V ac | epy kv | epx kv | Ebb kV dc | egy v | egx v | Ecc V dc | ib a | Ib A dc | Ip Aac | tj μs |
|-------------------|------------|--------------|--------------|--------------|-----------|----------|-------------|---------|------------|-----------|----------|
| Maximum | 6.6 | 33 <u>1/</u> | 33 <u>2/</u> | --- | <u>3/</u> | 650 | --- | 2,000 | 4.0 | 72 | 0.01 |
| Minimum | 6.0 | 7 | 5% epy | 3.5 | --- | --- | --- | --- | --- | --- | --- |
| Test condition | 6.3 | 33 | --- | --- | 1,100 | --- | 0 | --- | --- | --- | --- |

| Parameter Unit | prp | dik/dt a/μs | Pb | tk sec | TA °C | Cooling | Eres Vac |
|-------------------|-----|----------------|----------------------|-----------|----------|-----------|---------------|
| Maximum | --- | 10,000 | 30 x 10 ⁹ | <u>5/</u> | +75 | <u>6/</u> | 5.5 <u>8/</u> |
| Minimum | --- | --- | --- | 900 | -55 | --- | 3.5 |
| Test condition | 465 | --- | --- | 900 | --- | <u>7/</u> | <u>9/</u> |

See footnotes at end of table I.

GENERAL:

Qualification - Required.

TABLE I. Testing and inspection.

| Inspection | Method | Conditions | Acceptance Level <u>25/</u> | Symbol | Limits | | Unit |
|---|--------|---|-----------------------------|--------|--------|-------|------|
| | | | | | Min | Max | |
| <u>Qualification inspection</u> | | | | | | | |
| Operation (3) <u>7/ 10/ 11/ 12/</u> | ---- | TA = 75°C, except t = 5 hours | ---- | egy | ---- | 1,100 | v |
| Life-test (2) provisions <u>7/ 11/ 13/ 14/</u> | ---- | epy = 25 kv; pr = 740; lb = 4.0 Adc (min); egy = 1,200 v; Zg = 50 Ω (min); t = 1,000 hours | ---- | ---- | ---- | ---- | ---- |
| Life-test (2) end points: | | | | | | | |
| Operation (1) | ---- | Zg = 50 Ω (min) | ---- | egy | ---- | 1,200 | v |
| DC anode voltage (1) | 3246 | egy = 1,200 v; Zg = 50 Ω (min) | ---- | Ebb | ---- | 3,000 | V dc |
| Time jitter | 3261 | egy = 1,200 v; Zg = 50Ω (min) | ---- | tj | ---- | 0.01 | μs |
| <u>Conformance inspection, part 1</u> | | | | | | | |
| Dimensions | ---- | See figure 1 | 1.0 | ---- | ---- | ---- | ---- |
| Heater current (cathode) | 3241 | | 0.65 | lf | 22 | 35 | Aac |
| Heater current (reservoir) | 3241 | Eres = 4.5 V ac | 0.65 | lres | 3.0 | 10.0 | Aac |
| DC anode voltage (1) <u>15/</u> | 3246 | Eres = 105 percent of optimum value | 0.65 | Ebb | ---- | 2,500 | V dc |
| Instantaneous start <u>7/ 10/ 16/</u> | ---- | Eres = 105 percent of optimum reservoir voltage; epy = 24 kv (min) | 0.65 | ---- | ---- | ---- | ---- |
| Operation (1) <u>7/ 10/ 11/ 17/ 18/</u> | ---- | epy = 36 kv; t = 1 hour | 0.65 | egy | ---- | 1,100 | v |
| Reservoir voltage (1) <u>19/</u> | ---- | Operation (1) | 0.65 | Eres | 3.5 | 5.5 | V dc |
| Emission <u>20/</u> | 3251 | ik = 2,000 a; tp = 5.0 μs ± 10 percent; pr = 60 pps ± 10 percent; tr = 0.5 μs (max) | 0.65 | egk | ---- | 300 | v |

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

| Inspection | Method | Conditions | Acceptance Level <u>25/</u> | Symbol | Limits | | Unit |
|--|--------|--|-----------------------------|--------------|--------|-------|---------|
| | | | | | Min | Max | |
| <u>Conformance inspection, part 2</u> | | | | | | | |
| Dimensions | ---- | See figure 1 | 6.5 | ---- | ---- | ---- | ---- |
| DC anode voltage (2) <u>21/</u> | 3246 | Eres = 95 percent of optimum value | 6.5 | Ebb | ---- | 2,500 | V dc |
| Operation (1A) <u>7/ 11/ 18/ 22/</u> | ---- | Operation (1) | 6.5 | egy | ---- | 1,100 | v |
| Operation (2) <u>7/ 11/ 13/ 17/ 18/</u> | ---- | epy = 25 kv; t = 1 hour; pr = 740; lb = 4.0 A (min) | 6.5 | egy | ---- | 1,100 | v |
| Operation (2A) <u>7/ 11/ 18/ 22/</u> | ---- | Operation (2) | 6.5 | egy | ---- | 1,100 | v |
| Anode delay time | 3256 | Operation (1A) t = 2 minutes | 6.5 | tad | ---- | 1.0 | μ s |
| Anode delay time drift <u>23/</u> | 3256 | Anode delay time | 6.5 | Δ tad | ---- | 0.1 | μ s |
| Time jitter <u>24/</u> | 3261 | Operation (1A); except epy = 7.0 kv | 6.5 | tj | ---- | 0.01 | μ s |
| Sweep frequency vibration | ---- | <u>4/</u> | ---- | ---- | ---- | ---- | ---- |
| Shock | ---- | <u>4/</u> | ---- | ---- | ---- | ---- | ---- |
| <u>Conformance inspection, part 3</u> | | | | | | | |
| Life-test (1) provisions <u>7/ 10/ 11/ 14/</u> | ---- | Group C; egy = 1,200 v; Zg = 50 Ω (min); t = 500 hours | ---- | ---- | ---- | ---- | ---- |
| Life test (1) end points: | ---- | | | | | | |
| Operation (1) | ---- | Zg = 50 Ω (min) | ---- | egy | ---- | 1,200 | v |
| DC anode voltage (1) | 3246 | egy = 1,200v; Zg = 50 Ω (min) | ---- | Ebb | ---- | 3,000 | V dc |
| Time jitter | 3261 | egy = 1,200v; Zg = 50 Ω (min) | ---- | tj | ---- | 0.01 | μ s |

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

- 1/ Instantaneous starting is not recommended. When it is absolutely necessary, the maximum permissible epy is 22 kv and it shall not be attained in less than 0.04 second.
- 2/ In pulsed operation, the peak inverse voltage shall not exceed 5.0 kv during the first 25 μ s following the pulse.
- 3/ The driver pulse, measured at the tube socket with thyatron grid disconnected: 1,300 volts minimum; 2,500 volts maximum; $t_r = 0.35 \mu$ s maximum; grid pulse duration 2.0 μ s minimum. Impedance of drive circuit 10 to 25 ohms.

4/ Shock and vibration tests.

- (a) Shock tests. Shock tests shall be performed in accordance with MIL-STD-202, method 205, except as noted. Shock machines of the same type as specified but with rubber impact pads for more reproducible shock acceleration patterns may be used. The tube shall be mounted on suitable rigid fixtures in the position described below by means of its mounting flange. The tube shall not be clamped, braced, or supported by means other than its mounting flanges.

The tube shall be subjected to three blows in each of the following positions:

| <u>Position of tube elevator assembly</u> | <u>Intensity and duration of blow</u> |
|---|---------------------------------------|
| Vertical - base down | 50 G, 11 ms |
| Horizontal - center line through heater terminals, vertical | 50 G, 11 ms |
| Horizontal - center line through heater terminals, horizontal | 50 G, 11 ms |

The tests shall be performed with both heater and reservoir at substantially full operating temperatures. Means for detecting heater current vibrations and shorts between anode and grid and between grid and cathode shall be provided. No temporary or permanent change in heater or reservoir currents or temporary or permanent shorts between electrodes shall occur.

- (b) Vibration tests. Vibration tests shall be performed as specified in MIL-STD-202, method 201. Tube shall be vibrated as described for 2 hours each in the vertical direction, in the horizontal direction parallel to the heater connections, and in the horizontal direction perpendicular to the heater connections.
- (c) After shock and vibration tests, the tube shall meet all the conformance inspection, part 1 and part 2 test requirements. An aging period not to exceed 1 hour is permitted after mechanical tests.
- (d) The anode terminal extension may be removed during performance of the shock and vibration tests.
- (e) For the purpose of defining a production "lot", quantities of types 7390 and 8789 produced concurrently, shall be combined to constitute a "lot". Tests may be performed prior to installation of permanent leads and adaptive mounting plate.
- 5/ Standby operation, with heater and reservoir voltage on, is not recommended. Where standby operation is necessary, provisions shall be made to operate the tube at full equipment conditions for a minimum of 2 hours during each 12-hour period of standby.
- 6/ Cooling is preferred at high duty conditions.
- 7/ Approximately 15 cfm of air may be directed at grid seal and lower envelope.
- 8/ The optimum reservoir voltage for operation in accordance with operation (1) condition is inscribed on the base of the tube and must be held within ± 2.5 percent. Applications involving other operation conditions will necessitate the re-determination of the optimum reservoir voltage.
- 9/ Except as otherwise specified, adjust reservoir voltage to value indicated on the tube within ± 5 percent.

TABLE I. Testing and inspection - Continued.

- 10/ The anode circuit constants shall be chosen so that at $e_{py} = 33.0$ kv under resonant charging conditions; $i_b = 2,000$ amps minimum; dik/dt shall be 10,000 amps/ μs minimum; $t_p = 2.5 \mu s \pm 10$ percent; $prr = 500$ pps minimum. The tube shall be tested in the test circuit shown on figure 4.

Warning: These conditions are specified only for the purpose of determining circuit constants. The actual operating voltage and repetition rates for each test are specified in the conventional manner under the particular conditions or under the general test conditions. Tests performed at repetition rates less than the resonant charging rate shall be made with a hold-off diode in the charging circuit.

Grid pulse measured at tube socket with thyatron grid disconnect: $t_r = 0.35 \mu s$ minimum; $t_p = 2.0 \mu s$ maximum; internal impedance of driver: 75 ohms minimum.

- 11/ There shall be no evidence of deleterious anode heating during the test.

- 12/ The tube shall be capable of operating under the following conditions:

- (a) Apply cathode heater voltage and adjust reservoir voltage to 95 percent of the optimum reservoir voltage and allow both to warm up for 15 minutes.
- (b) Raise anode voltage directly to the specified voltage at a rate of not less than 30 kv per minute.
- (c) The tube shall operate at the specified anode voltage for a total of 2 hours which may include one interruption. A total of four interruptions at any anode voltage is permitted provided that the total test time required to perform this part of the operation test does not exceed 135 minutes.
- (d) After the above operation at full anode voltage, increase the reservoir voltage to 105 percent of the optimum value. The tube shall continue to operate for an additional 2 hours with not more than one interruptions.
- (e) After the above operation at full anode voltage, decrease the reservoir voltage to optimum value. The tube shall continue to operate for an additional hour without interruption.

- 13/ The anode circuit constants shall be chosen so that at $e_{py} = 25.0$ kv under resonant charging conditions; $i_b = 1,000$ minimum; rate of rise of dik/dt shall be 5,000 amps/ μs minimum; $t_p = 5.0 \mu s \pm 10$ percent; $prr = 500$ minimum. The tube shall be tested in the test circuit shown on figure 4.

Warning: These conditions are specified only for the purpose of determining circuit constants. The actual operating voltage and repetition rates for each test are specified in the conventional manner under the particular conditions or under the general test conditions. Tests performed at repetition rates less than the resonant charging rate shall be made with a hold-off diode in the charging circuit.

Grid pulse measured at tube socket with thyatron grid disconnected: $t_r = 0.35 \mu s$ minimum; $t_p = 2.0 \mu s$ maximum; internal impedance of driver: 75 ohms minimum.

- 14/ During every 96-hour period, the life test shall be shut off for a minimum of 30 minutes.

- 15/ This test shall be performed in the same circuit as operation (1) test and within 60 seconds following the conclusion of the operation (1) test. The anode voltage shall be increased until the tube starts to conduct current. Ebb shall be below the specified limit.

- 16/ This test shall be the first test performed after the holding period. The tube shall operate satisfactorily on pushbutton starting within three attempts when the e_{py} is applied to the tube under test in such a manner as to rise from 0 to 24 kv minimum within 0.04 second. (The filter in the rectifier shall be designed so that the e_{py} reaches at least 9.0 kv within 0.015 second.) The intervals between successive attempts to instantaneously start the tube shall be not less than 10 or more than 30 seconds. Any tube failing to start within three attempts will be considered a failure.

TABLE I. Testing and inspection - Continued.

- 17/ The tube shall be capable of operating under the following conditions:
- (a) Apply cathode heater voltage and adjust reservoir voltage to 105 percent of the optimum value and allow both cathode and reservoir to warm up for 15 minutes.
 - (b) Raise anode voltage directly to the specified voltage at the rate of not less than 30 kv per minute.
 - (c) The tube shall operate at the specified anode voltage for a total of 60 minutes which may include one interruption. A total of six interruptions at any anode voltage is permitted provided that the total test time required to perform the operation test does not exceed 120 minutes.
- 18/ No anode or grid voltage other than that required for an instantaneous start test shall have been applied to the tube for a minimum period of 2 hours prior to this test.
- 19/ The optimum reservoir voltage shall be determined for each tube under these conditions, shall be inscribed permanently on the base of each tube, and shall be within the limits specified for reservoir voltage (1).
- 20/ With the anode floating, the positive pulse shall be applied to the grid of the tube. Measure the voltage between grid and cathode not more than 2.5 μ s maximum after the beginning of the current pulse. The average voltage shall not rise during the last 4.0 μ s. As an alternate, the test may be conducted by connecting the grid to the anode through a 1-ohm resistance and reading epk. The limit for this reading will be the same as that for egk in the emission test.
- 21/ This test shall be performed in the same circuit as operation (1A) test and within 60 seconds following the conclusion of the operation (1A) test. The anode voltage shall be increased until the tube starts to conduct current. Ebb shall be below the specified limit.
- 22/ The tube shall be capable of operating at the following conditions:
- (a) Apply cathode heater voltage and adjust reservoir voltage to 95 percent of the optimum reservoir voltage and allow both to warm up for 15 minutes.
 - (b) Raise anode voltage directly to the specified voltage at a rate of not less than 30 kv per minute.
 - (c) The tube shall operate at the specified anode voltage for a total of 60 minutes which may include one interruption. A total of six interruptions is permitted provided that the total test time required to perform the operation test does not exceed 120 minutes.
- 23/ During the interval between 2 and 60 minutes of the anode delay time test, the Δ tad relative to the tad value observed on the anode delay time test shall not exceed the specified value.
- 24/ The tj should be measured at 50 percent of the pulse amplitude and shall be not greater than the amount specified after 60 seconds of operation.
- 25/ This specification sheet uses accept on zero defect sampling plan, in accordance with MIL-PRF-1, table III.

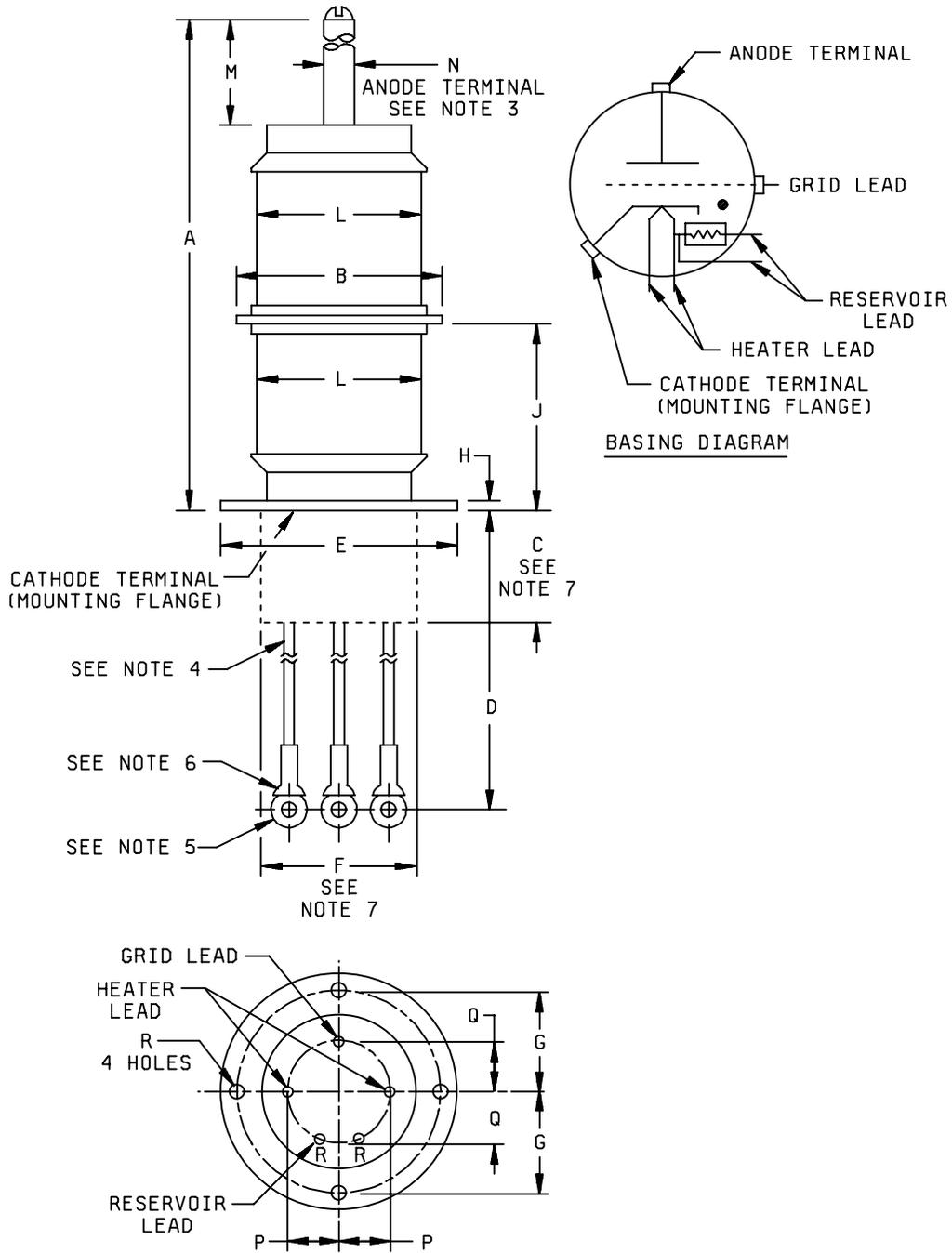


FIGURE 1. Outline drawing of electron tube type 8789.

MIL-PRF-1/1658C

| Ltr | Dimensions (see note b) | | | |
|--|-------------------------|--------|--------|--------|
| | Millimeters | | Inches | |
| Conformance inspection, part 1 | | | | |
| | Min | Max | Min | Max |
| A | 428.63 | 479.43 | 16.875 | 18.875 |
| B | ---- | 142.88 | ---- | 5.625 |
| Conformance inspection, part 2 | | | | |
| D | 304.80 | 330.20 | 12.000 | 13.000 |
| E | 214.12 | 217.42 | 8.430 | 8.560 |
| G | 96.60 | 97.10 | 3.803 | 3.823 |
| Conformance inspection, part 3 (see note i) (see notes c, e, f, g, and h) | | | | |
| C | ---- | 76.20 | ---- | 3.000 |
| F | ---- | 160.32 | ---- | 6.312 |
| J | 95.25 | 146.05 | 3.750 | 5.750 |
| L | 111.13 | 117.48 | 4.375 | 4.625 |
| M | ---- | 285.75 | ---- | 11.250 |
| N | 15.24 | 16.51 | 0.600 | 0.650 |
| P | 25.40 | 50.80 | 1.000 | 2.000 |
| Q | 22.23 | 47.63 | 0.875 | 1.875 |
| R | 7.85 | 8.00 | 0.309 | 0.315 |
| Nominal dimensions (see note a) | | | | |
| H | 3.18 | | 0.125 | |

NOTES:

1. Dimensions without tolerances are for information only and are not required for inspection purposes.
2. Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
3. Anode terminal shall be No. 10-32 UNC-2A roundhead machine screw 3/8 inch (9.53 mm) long with washer. The anode terminal extension may be removed for shipment.
4. Leads shall be flexible. Lead connections shall be suitably identified. Lead connections, lead identification, lead insulation, and lead insulation sleeving shall be inspected under periodic check and shall be as follows:

| Lead | Color | Lead insulation | Type | Sleeving Color |
|---------------|-----------------|-----------------|------|----------------|
| H (heater) | Yellow | | HA-1 | Yellow |
| G (grid) | Yellow or Green | | HA-1 | Green |
| R (reservoir) | Red | | HA-1 | Red |

5. Lead terminal shall be in accordance with figure 2.
6. Insulation sleeving shall be as specified in MIL-I-3190.
7. Dimensions C and F define extent of rigid portion of tube below mounting flange. Clearance for this part of tube shall be provided in equipment.
8. Holes R shall be inspected for orientation by using the base gage outlined on figure 3.
9. These dimensions shall be checked during the initial production and once each succeeding 12-calendar months in which there is production. An accept on zero defect sampling plan shall be used, with a sample of three tubes with an acceptance number of zero. In the event of failure, the dimension checks shall be made a part of conformance inspection, part 2, code level D, with an acceptance level of 6.5 (see note 10). The regular "12-calendar months" sampling plan shall be reinstated after three consecutive samples have been accepted.
10. This specification sheet uses accept on zero defect sampling plan, in accordance with MIL-PRF-1, table III.

FIGURE 1. Outline drawing of electron tube type 8789 - Continued.

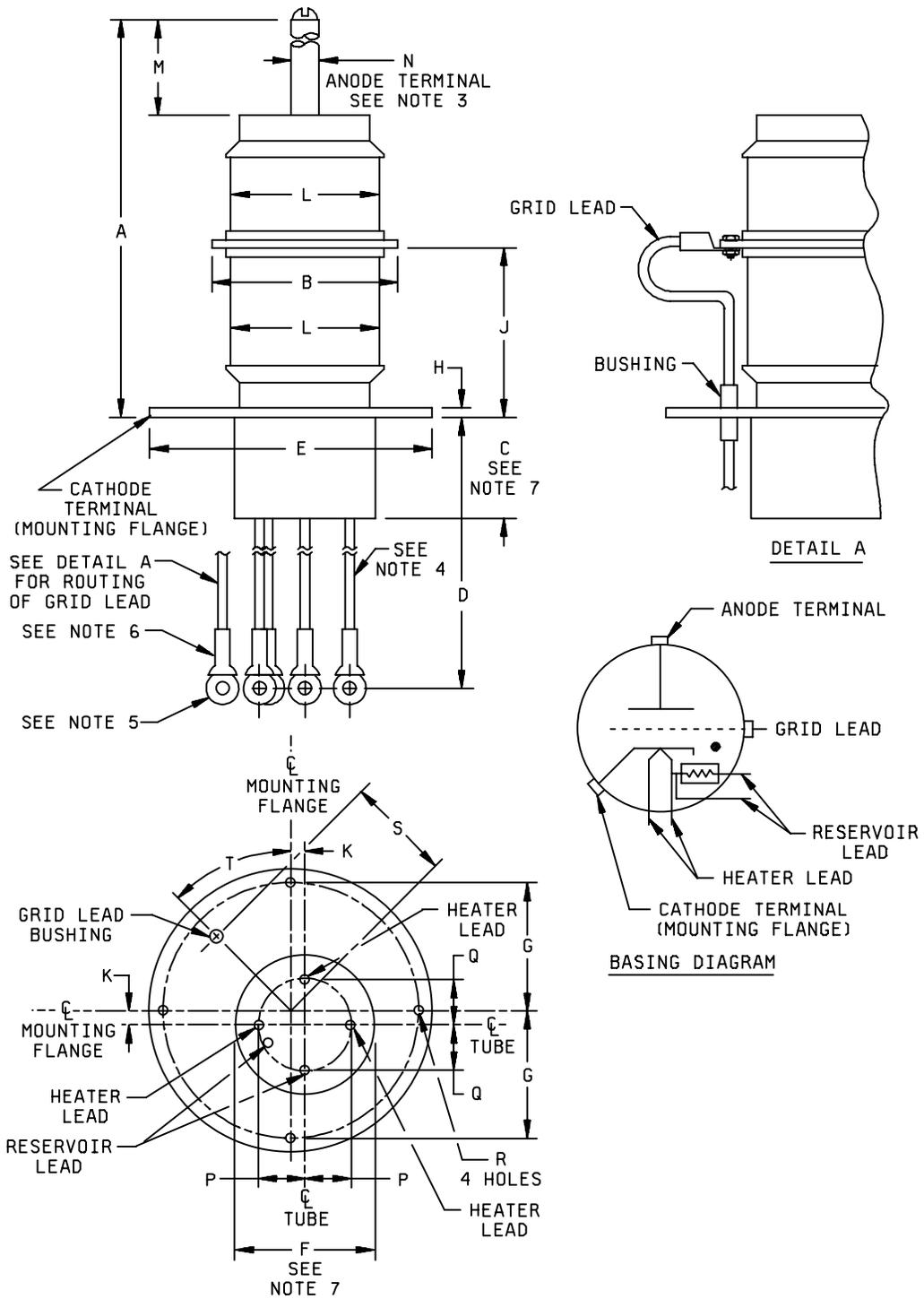


FIGURE 1A. Alternate outline drawing of electron tube type 8789.

MIL-PRF-1/1658C

| Ltr | Dimensions | | | |
|---|-------------|--------|--------|--------|
| | Millimeters | | Inches | |
| Conformance inspection, part 1 | | | | |
| | Min | Max | Min | Max |
| A | 428.63 | 479.43 | 16.875 | 18.875 |
| B | ---- | 142.88 | ---- | 5.625 |
| Conformance inspection, part 2 | | | | |
| D | 241.30 | 266.70 | 9.500 | 10.500 |
| E | 214.12 | 217.42 | 8.430 | 8.560 |
| G | 96.60 | 97.10 | 3.803 | 3.823 |
| Conformance inspection, part 3 (see notes c, e, f, g, h, and i) | | | | |
| C | ---- | 76.20 | ---- | 3.000 |
| F | ---- | 160.32 | ---- | 6.312 |
| J | 95.25 | 146.05 | 3.750 | 5.750 |
| K | 4.75 | 11.10 | 0.187 | 0.437 |
| L | 111.13 | 117.48 | 4.375 | 4.625 |
| M | ---- | 285.75 | ---- | 11.250 |
| N | 15.24 | 16.51 | 0.600 | 0.650 |
| P | 25.40 | 50.80 | 1.000 | 2.000 |
| Q | 22.23 | 47.63 | 0.875 | 1.875 |
| R | 7.85 | 8.00 | 0.309 | 0.315 |
| S | ---- | 80.16 | ---- | 3.156 |
| Nominal dimensions (see note a) | | | | |
| H | 3.18 | | 0.125 | |
| T | 45° ± 10° | | | |

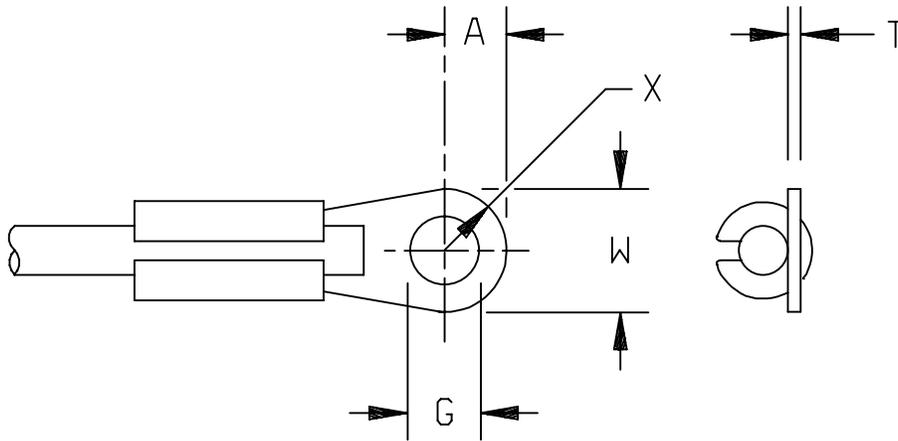
NOTES:

- Dimensions without tolerances are for information only and are not required for inspection purposes.
- Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
- Anode terminal shall be No. 10-32 UNC-2A roundhead machine screw 3/8 inch (9.53 mm) long with washer. The anode terminal extension may be removed for shipment.
- Leads shall be flexible. Lead connections shall be suitably identified. Lead connections, lead identification, lead insulation, and lead insulation sleeving shall be inspected under periodic check and shall be as follows:

| <u>Lead</u> | <u>Color</u> | <u>Lead insulation</u> | <u>Type</u> | <u>Sleeving Color</u> |
|---------------|-----------------|------------------------|-------------|-----------------------|
| H (heater) | Yellow | | HA-1 | Yellow |
| G (grid) | Yellow or Green | | HA-1 | Green |
| R (reservoir) | Red | | HA-1 | Red |

- Lead terminal shall be in accordance with figure 2.
- Insulation sleeving shall be as specified in MIL-I-3190.
- Dimensions C and F define extent of rigid portion of tube below mounting flange. Clearance for this part of tube shall be provided in equipment.
- Holes R shall be inspected for orientation by using the base gage outlined on figure 3.
- These dimensions shall be checked during the initial production and once each succeeding 12-calendar months in which there is production. An accept on zero defect sampling plan shall be used, with a sample of three tubes with an acceptance number of zero. In the event of failure, the dimension checks shall be made a part of conformance inspection, part 2, with an acceptance level of 6.5 (see note 10). The regular "12-calendar months" sampling plan shall be reinstated after three consecutive samples have been accepted.
- This specification sheet uses an accept on zero defect sampling plan, in accordance with MIL-PRF-1, table III.

FIGURE 1A. Alternate outline drawing of electron tube type 8789 - Continued.



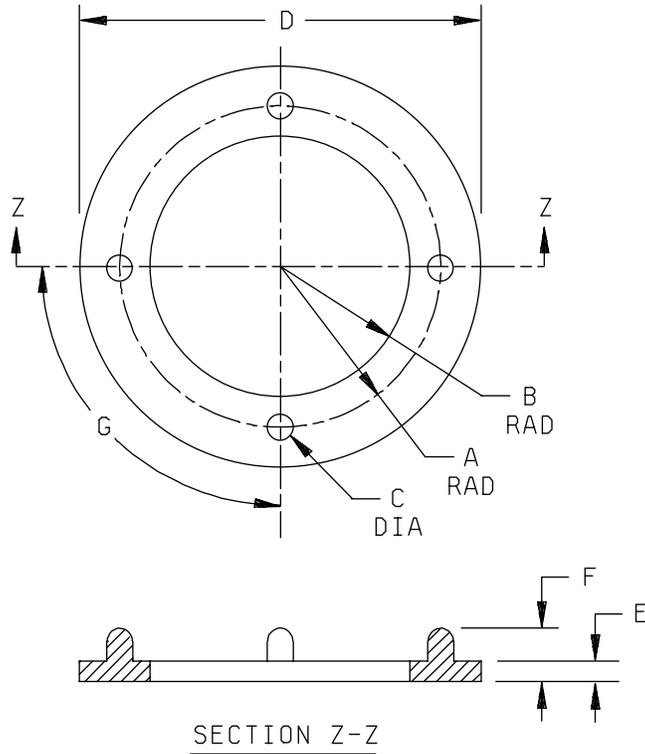
| Lead | Lug designation | G | | | | W | |
|-----------------|-----------------|--------|-------|-------------|------|--------|-------------|
| | | Inches | | Millimeters | | Inches | Millimeters |
| | | Min | Max | Min | Max | Max | Max |
| Reservoir, Grid | #10 | 0.187 | 0.207 | 4.75 | 5.26 | 0.395 | 10.03 |
| Heater | 0.250 | 0.260 | 0.313 | 6.60 | 7.95 | 0.605 | 15.37 |

| Lead | Lug designation | A | | X | | T | |
|-----------------|-----------------|--------|-------------|--------|-------------|--------|-------------|
| | | Inches | Millimeters | Inches | Millimeters | Inches | Millimeters |
| | | Max | Max | Min | Min | Max | Max |
| Reservoir, Grid | #10 | 0.200 | 5.08 | 0.275 | 6.99 | 0.060 | 1.52 |
| Heater | 0.250 | 0.305 | 7.75 | 0.380 | 9.65 | 0.060 | 1.52 |

NOTES:

- Dimensions are in inches.
- Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
- There shall be no obstruction within the distance X from the center of the lug screw hole.
- Lugs or terminals shall be permanently marked as follows:
 - H (heater)
 - G (grid)
 - R (reservoir)

FIGURE 2. Pressure type terminal lugs with insulating sleeves.



| Ltr | Dimensions | | | |
|-----|------------|-----------------|-------------|------------------|
| | Inches | | Millimeters | |
| | Min | Max | Min | Max |
| A | 3.812 | 3.814 | 96.82 | 96.88 |
| B | 3.187 | 3.189 | 80.95 | 81.00 |
| C | .2765 | .2775 | 7.02 | 7.05 |
| D | --- | 9.00 DIA Nom | --- | 228.6 DIA Nom |
| E | .296 | .328 | 7.52 | 8.33 |
| F | --- | .250 | --- | 6.35 |
| G | 88° | 92° | 88° | 92° |

NOTES:

1. Dimensions are in inches.
2. Metric equivalents (to the nearest 0.01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.

FIGURE 3. Base gage for electron tube type 8789.

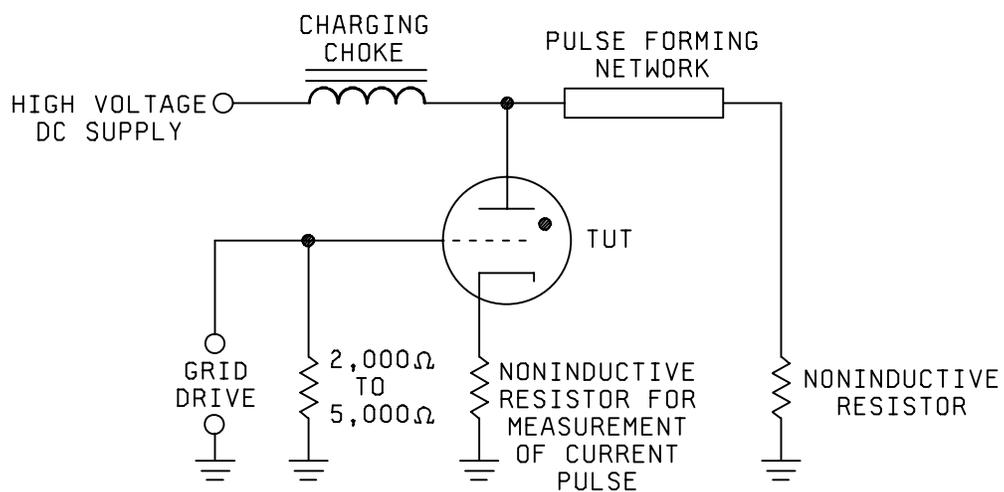


FIGURE 4. Test circuit.

Custodians:
Air Force - 11
DLA - CC

Review activities:
Air Force - 99

Preparing activity:
DLA - CC

(Project 5960-3673)