MINISTRY OF SUPPLY - DLRD(A)/RRE (South)

# VALVE ELECTRONIC CV 1905

| Specification MOS(A)/CV1905<br>Equivalent American Specification - ~~JAN-4-65A~~<br>Issue 1 Dated 9. 8. 54<br>To be read in conjunction with K1001 | SECURITY | |
|---|---|---|
| | Specification | Valve |
| | UNCLASSIFIED | UNCLASSIFIED |

TYPE OF VALVE - Transmitting Tetrode

CATHODE - Thoriated tungsten - Directly-heated

ENVELOPE - Glass - Unmetallised

RETMA DESIGNATION - 4-65A

**MARKING**

See K1001/4 and Note C

**BASE**

B7A

See also Drawing on Page 4

**RATING**

| | | | Note |
|---|---|---|---|
| Filament Voltage | (V) | 6.0 | |
| Filament Current | (A) | 3.5 | |
| Max. Anode Voltage | (kV) | 3.0 | A |
| Max. Anode Current | (mA) | 150 | |
| Max. Screen Voltage | (V) | 400 | A |
| Max. Anode Dissipation | (W) | ~~365~~ | A |
| Max. Grid Dissipation | (W) | 5.0 | A |
| Max. Screen Dissipation | (W) | 10 | A |
| Mutual Conductance | (mA/V) | 4.0 | B |
| Inner $\mu$(g1-g2) | | 6.0 | |
| Max. Frequency for full rating | (Mc/s) | 150 | |
| Max. Bulb Temperature | (°C) | 225 | |

**CONNECTIONS**

| Pin | Electrode |
|---|---|
| 1 | Filament |
| 2 | Screen Grid |
| 3 | Pin omitted |
| 4 | Control Grid |
| 5 | Pin omitted |
| 6 | Screen Grid |
| 7 | Filament |
| TC | Anode |

Amdt 7

**TOP CAP**

See BS 448 6/1.2.

**CAPACITANCES (pF)**

| | |
|---|---|
| Cag | 0.12 |
| Cge | 7.15 |
| Cae | 2.25 |

**DIMENSIONS**

See Drawing on Page 4

**MOUNTING POSITION**

Vertical; upright or inverted

**NOTES**

A. **Absolute maximum values.**

B. Ia = 125 mA; Va = 500V; Vg2 = 250V.

C. In addition to the requirements of K1001/4, the RETMA designation shall also be clearly and indelibly marked on the valve.

To be performed in addition to those applicable in K1001.

| | Test Conditions | | | | | Test | Limits Min. | Limits Max. | No. Tested | Note |
|---|---|---|---|---|---|---|---|---|---|---|
| a | See Note 1 | | | | | Holding Period | - | - | 100% | |
| b | See K1001/AIII | | | | | | | | | |
| | Links to HP | Links to LP | Links to E | | | Capacitances (pF) | | | | |
| | 4 | TC | 1,2,6 & 7 | | | Cag | - | 0.12 | TA | |
| | 4 | 1,2,6 & 7 | TC | | | Cge | 6.0 | 8.3 | 6 per week | 2 |
| | 1,2,6 & 7 | TC | 4 | | | Cae | 1.9 | 2.6 | | |
| c | No voltages<br>See Note 3 | | | | | Vibration | - | - | 100% or S | |
| d | No voltages<br>See Note 4 | | | | | Bump<br>1. Hammer angle = 20°<br>2. Hammer angle = 15° | -<br>- | -<br>- | 20 per week | |
| e | Vf (V) | Va (V) | Vg2 (V) | Vgl (V) | Ia (mA) | | | | | |
| | 6.0 | 0 | 0 | 0 | 0 | Filament Current (A) | 3.2 | 3.8 | 100% or S | |
| f | 6.0 | 1000 | 400 | Adjust | 65 | Reverse Grid Current (μA) | - | 10.0 | 100% | |
| g | 6.0 | 1000 | 400 | Adjust | 65 | Screen Current (mA) | -1.0 | +1.0 | 100% | |
| h | 7.0 | For other test conditions, see Note 5 | | | | Primary Control Grid Emission (μA) | - | -250 | 100% | |
| j | 7.0 | For other test conditions, see Note 6. | | | | Primary Screen Grid Emission (μA) | - | -250 | 100% | |
| k | 6.0 | Anode grid and screen grid strapped with 2.5 kV peak applied. | | | | Peak Emission (A) | 2.0 | - | 100% | |
| m | 6.0 | 1000 | 400 | Adjust | 65 | Grid Voltage (-V) | 38 | 58 | 100% | |
| n | 6.0 | - | 250 | Adjust | - | Inner μ(g1-g2) | 5.0 | 7.0 | 20 per week | 7 |
| p | 6.0<br>f = 150 Mc/s<br>Wa = ~~65W~~ 80 | 1500 | 250 | Adjust | 150 | Power Oscillation<br>Power Output (W) | 110 | - | TA | |
| q | As for Test (p) | | | | | Life (hrs)<br>Life Test End-point<br>1. Peak Emission (A)<br>2. Primary Control Grid Emission (μA)<br>3. Primary Screen Grid Emission (μA) | 500<br>1.6<br>-<br>- | -<br>-<br>-250<br>-250 | Not less than one per week | |

## NOTES

1. Valves will be held without operation for a minimum period of 72 hours after the completion of all manufacturing processes.

2. Measured without shields.

3. Each valve shall be rigidly mounted on a table vibrating with simple harmonic motion at a frequency of 25 ± 2 cps with an amplitude of 0.040 ± .0025 inch (total excursion = 0.08 ± .005 inch), for not less than one minute in each of two mutually perpendicular planes.

4. The Bump Test equipment shall be in accordance with Drawing 123-JAN, or another approved design. The valve shall be mounted in a vertical position and the hammer arm released from an angle of 20° and allowed to strike the glass envelope one blow at an angle of 45° to the plane of the press seal. The test shall be performed three times. The hammer shall strike the valve in such a position that free pendulum motion is obtained without excessive wobble. The valve shall meet the specification after this test.

   In the second part of the test, the hammer angle shall be 15° and the valves shall be subjected to a similar test except that suitable indicating potentials shall be applied to the electrodes through a short-indicating device. There shall be no shorts.

5. With anode and screen grid 'floating', the 50 c/s, AC voltage applied to the control grid through suitable rectifiers, shall be adjusted to heat the grid during the positive half-cycles and give a mean Ig1 = 90 mA DC. The grid emission shall be measured during the negative half-cycles. Minimum duration of test = 15 secs.

6. With anode 'floating', the 50 c/s, AC voltage applied to the screen grid through suitable rectifiers, shall be adjusted to heat the grid during the positive half-cycles and give a mean Ig2 = 50 mA DC. The grid emission shall be measured during the negative half-cycles. Minimum duration of test = 15 secs.

7. With anode 'floating'; DC grid voltage adjusted to make Ig2 = 40 mA

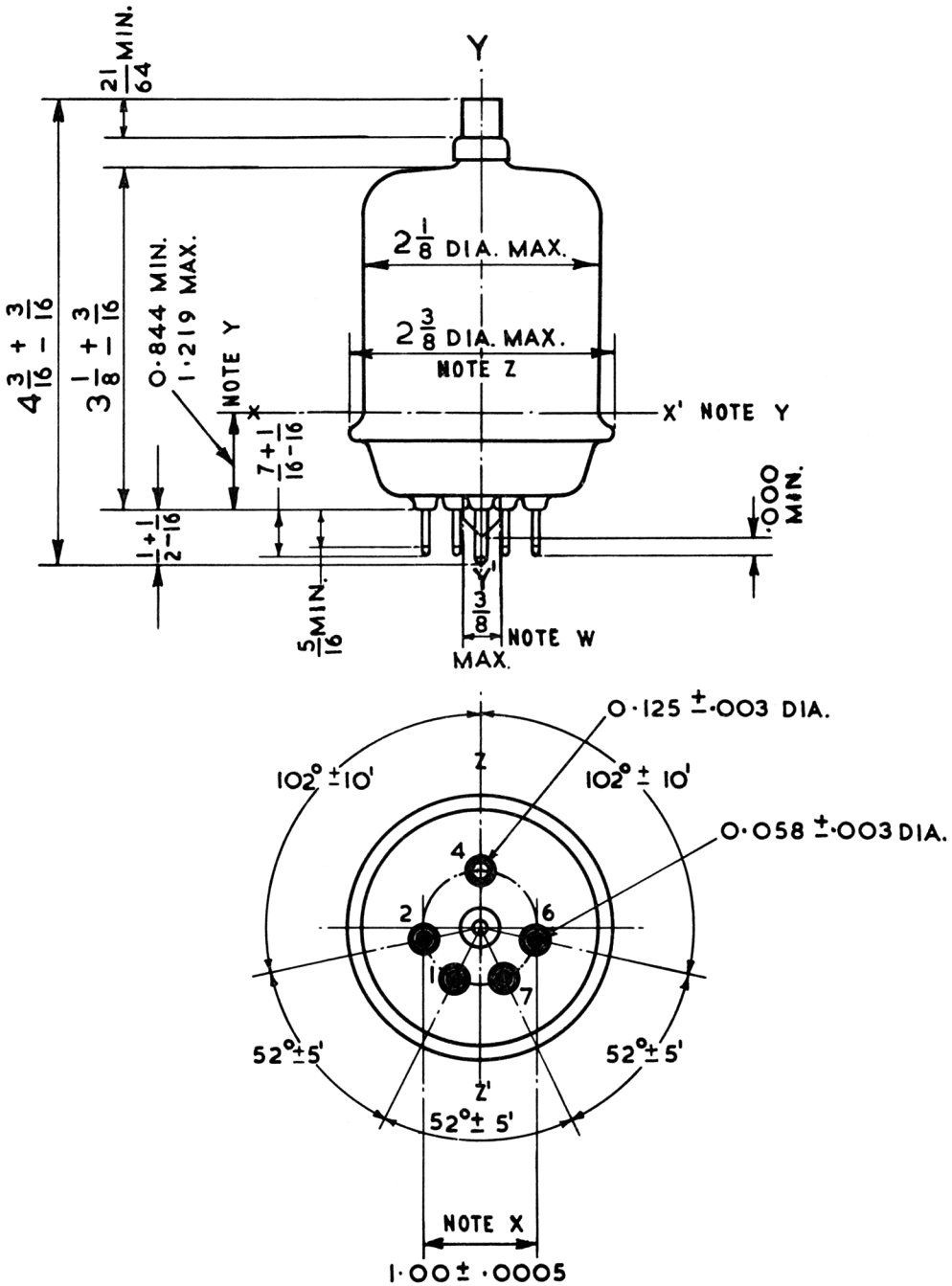
## DRAWING NOTES

W. The axis YY' is defined as the axis of the base pin gauge described in Note X.

X. The tube base should be capable of entering to a distance of 0.375 in. a flat-plate gauge having four holes 0.080 in. ± .0005 and one hole 0.145 in. ± .0005 all arranged on a 1.000 in. ± .0005 circle at specified angles on the outline. A 0.500 in. ± 0.010 hole at the centre of the pin circle is also required. The axis YY' is defined by the centre of this hole.

Y. Dimension J is measured by inserting the tube in the base pin gauge described in Note X and then lowering a gauge plate having a hole 2.063 ins. + 0.003 - .000 in diameter until the plate rests on the seal flange at position XX'. The centre-line of the hole shall be coincident with the axis at YY' within 0.150 in. with the gauge plate parallel to the top surface of the base pin gauge, the dimension J is measured between the bottom surface of the gauge plate and the top surface of the base pin gauge. This distance shall be 0.844 in. minimum and 1.219 in. maximum.

Z. Minimum diameter of tube-seal flange will be such that a ring gauge having I.D. of 2.125 in. minimum to 2.128 in. maximum and a thickness of 0.125 in. ± 0.010 will not pass the flange when tried at any angle.




ALL DIMENSIONS IN INCHES.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV 1905 ISSUE 1. DATED 9.8.54

AMENDMENT NO.1.

Page 1. Rating

Amend Max Anode Dissipation to read 80W.

Page 2. Test (P) Under Test Conditions.

Amend Wa = 65W to read Wa = 80W.

July, 1965.

T.V.C. for R.R.E.

N.229265

15/11/65