UNITED KINGDOM ATOMIC ENERGY AUTHORITY (A.E.R.E.)

# CV6044

| Specification D. At. En. CV.6044<br>Issue 1 dated 18th Feb. 1960<br>To be read in conjunction with K.1001 | SECURITY<br>Specification: Unclassified<br>Valve: Unclassified |
|---|---|

TYPE OF VALVE: Decade Scaling Tube
CATHODES: Cold
ENVELOPES: Glass Unmetallised
PROTOTYPE: VX.9194

MARKING: See K1001/4

BASE: International Octal

| RATING | Rectangular Pulse Drive | Sine Wave Drive | Notes |
|---|---|---|---|
| Max. Striking Voltage (V) | 350 | 350 | |
| Nominal Maintaining voltage at .45 mA (V) | 190 | 190 | |
| Max. Anode Current (uA) | 550 | 550 | |
| Min. Anode Current (uA) | 250 | 250 | |
| Max. Speed (Digits/sec) | 4,000 | 2,000 | |
| Max. Input Signal Peak to Peak (V) | 140 | 171 | |
| Max. Guide Bias (V) | 60 | | 1, 3 |
| Max. $K_0$ Bias (V) | -20 | | 1 |
| Max. $K_0$ Load (K ) | 100 | | |
| Max. Guide Bias Resistance (K ) | 220 | | |
| RECOMMENDED OPERATION | | | |
| Supply Voltage (V) | 400 | 400 | 1 |
| Anode Resistor (K ) | 470 | 470 | |
| Signal Amplitude (V) | 120 | 55 | 2 |
| Both Guides | | | |
| Pulse Duration (uS) | 80 | | |
| Both Guides | | | |
| Signal Delay, 2nd Guide (uS) | 80 | | |
| Signal Delay, 2nd Guide (degrees) | | 45 | |
| Bias Voltage (V) | 35 | 9 | 1, 3 |
| Both Guides | | | |
| Bias Voltage $K_0$ (V) | -10 | -10 | 1 |
| Output Cathode Load (K ) | 33 | 33 | |

CONNECTIONS

| Pin | Electrode |
|---|---|
| 1 | $K_{1-9}$ |
| 3 | 1st Guides |
| 4 | Anode |
| 5 | 2nd Guides |
| 7 | $K_0$ |

DIMENSIONS

See Fig. 1 page 4

NOTES

1. Relative to $K_{1-9}$ Electrodes.
2. Signal for sine wave drive specified in V.R.M.S.
3. With rectangular pulse drive at high speeds this guide bias must be maintained, e.g. by D.C. restoration. The test circuit of fig. 2., page 4, is applicable.

Z.22289. NATO Stock Number 5960-99-037-4269

TESTS

To be performed in addition to those applicable in K1001

# CV6044

| | Test | Test Conditions | AQL % | Insp. Level | Symbol | Limits | | Units | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Min. | Max. | | |
| | GROUP A | | | | | | | | |
| | Acceptance Tests | | | | | | | | |
| a | Insulation | To be measured between any one electrode and parallel combination of all the others at 170V. | | 100% | | 100 | | M | 1 |
| b | Striking Voltage | A - $K_o$<br>$V_b$ = 350V | | 100% | $V_s$ | | | | 1, 3 |
| c | Scaling Accuracy | $V_b$ = 400V<br>$V_1$ = +35V<br>$V_2$ = -40V<br>T = 60uS<br>Frequency = 4.0 Kc/s. | | 100% | | | | | 1, 2 |
| d | Running Voltage | $V_b$ = 400V | | 100% | $V_r$ | 184 | 194 | V | 1, 4 |
| | GROUP B | | | | | | | | |
| | Life Test | Combined AQL | 1.5 | IA | | | | | |
| a | Survival running life test | $V_b$ = 500V<br>$V_1$ = +35V<br>$V_2$ = -40V<br>T = 60uS | | | | | | | 5, 7 |
| | Tests to be performed at end of survival running test. | | | | | | | | |
| b | Scaling Accuracy | $V_b$ = 400V<br>$V_1$ = +35V<br>$V_2$ = -40V<br>T = 60uS<br>Frequency = 4.0 Kc/s. | | | | | | | 2 |
| c | Running Voltage | $V_b$ = 400V | | | $V_r$ | 176 | 206 | V | 4 |

TESTS (Cont'd)

# CV6044

| | Test | Test Conditions | AQL % | Insp. Level | Symbol | Limits Min. | Limits Max. | Units | Notes |
|---|---|---|---|---|---|---|---|---|---|
| | GROUP C | | | | | | | | |
| | Electrical Retest<br>Not more than 7 days prior to application for Services final approval | | | | | | | | 6 |
| a | Scaling Accuracy | $V_b$ = 400V<br>$V_1$ = +35V<br>$V_2$ = -40V<br>T = 60uS<br>Frequency = 4.0 Kc/s | | 100% | | | | | 2 |
| b | Running Voltage | $V_b$ = 400V | | 100% | $V_r$ | 184 | 194 | | 4 |

NOTES

1. Tests of Group A are to be applied directly after completion of manufacture.

2. The tube shall scale without error the first applications of test signals (illustrated in fig.4 on page 4). Test signals are to be applied for at least 1/10th second. The test circuit of fig.3 page 4 is applicable.

3. $K_{1-9}$ 1st guide and 2nd guide electrodes to be disconnected. Ambient illumination of valve to be 5 - 50 lumen per square foot. Valve to conduct in less than 10 seconds.

4. The $K_{1-9}$ 1st guide and 2nd guide electrodes will be successively earthed through a suitable make before break type switch to cause 30 gaps to conduct in turn. The running voltage across each gap shall be within the specified limits. For this test the $K_o$ and $K_{1-9}$ electrode will be commoned. The test circuit to fig.2 page 4 is applicable. The measurement of the running volts is to be made between 0.1 and 2.0 seconds after the contacts of the make before break type switch have broken.

5. The valves selected for this test are to be run in the circuit shown in fig.5 page 4. One application of the pulses shown in fig.4 page 4 is to be made every 85 ± 5 hours. The tube is to receive 20 such pulses and then be removed. A valve which fails to step on the application of the test pulses shall be rejected. The normal guide bias is to be +60V which will be reduced to +35V immediately prior to the application of pulses.

6. During the period between the completion of Group A tests and the commencement of Group C tests no further processing shall be applied.

7. A lot shall consist of not more than one calendar month's production or 1301 whichever is the greater. For lots of 800 and less sampling codes should be as for lots of 801 - 1300.

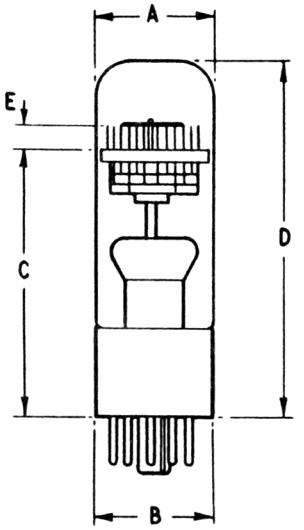


Fig. 1

| DIMENSION | A | B | C | D |
|---|---|---|---|---|
| MIN. (mms.) | 27·5 | 28 | 64 | 82·5 |
| MAX. (mms.) | 29·5 | 29·9 | 69 | 87·5 |

MAXIMUM ECCENTRICITY RADIUS 15·75 mms.

DIMENSION E WHICH WILL NORMALLY BE 6·0 ±0·5 mm., IS DETERMINED BY THE ASSEMBLY JIGS. FACILITIES MUST BE AVAILABLE FOR THESE JIGS TO BE CHECKED BY THE INSPECTING AUTHORITY AT WEEKLY INTERVALS.

ANGULAR DISPLACEMENT BETWEEN THE $K_0$ ELECTRODE AND BASE PIN No.6 SHOULD BE 0° ± 12°. THIS DISPLACEMENT SHOULD BE MEASURED ABOUT AN AXIS PASSING THROUGH THE CENTRE OF THE BASE AND THE CENTRE OF THE ANODE SECTION OF THE ENVELOPE

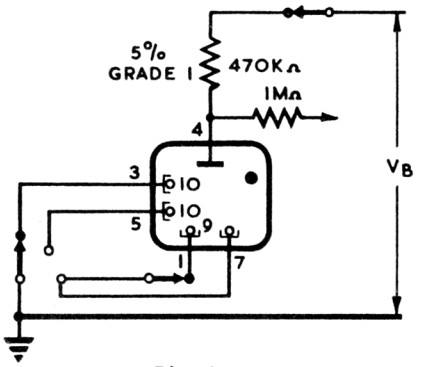


Fig. 2

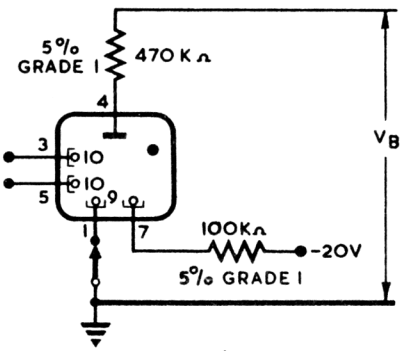


Fig. 3

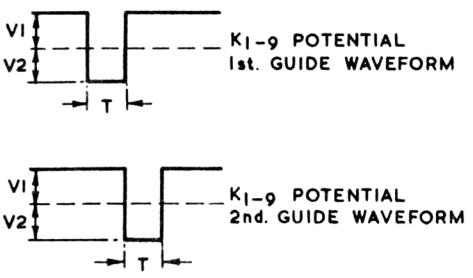


Fig. 4

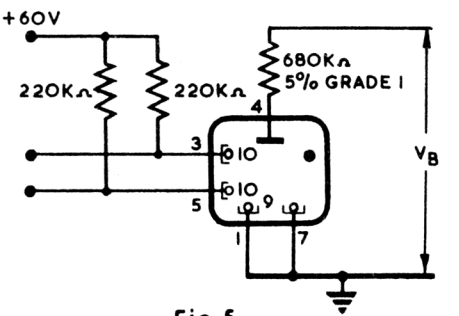


Fig. 5

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION CV 6044
ISSUE NO.1 DATED 18.2.1960
AMENDMENT NO.1.

Page 1. Add:

Note 4. NATO Stock Number is
5960-99-037-4269.

T.V.C. for U.K.A.E.A.

July, 1965.
N.229259

15/4/65