VALVE ELECTRONIC

CV6100

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

Specification D. At. En./CV.6100/Issue 1

Dated 18th January, 1962.

To be read in conjunction with K.1001

SECURITY	
Specification	Valve
Unclassified	Unclassified

TYPE OF VALVE: Decade Scaling Tube
CATHODES: Cold
ENVELOPES: Glass Unmetallised
PROTOTYPE: VX.9194/4

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 (μA)	550	550	
Min. Anode Current (μA)	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. Output Cathode Bias (V)	-20		1
Max. Output Cathode Load (KΩ)	100		
Max. Guide Bias Resistance (KΩ)	220		
RECOMMENDED OPERATION			
Supply Voltage (V)	400	400	1
Anode Resistor (KΩ)	470	470	
Signal Amplitude Both Guides (V)	120	55	2
Pulse Duration Both Guides (μS)	80		
Signal Delay, 2nd Guide (μS)	80		
Signal Delay, 2nd Guide (degrees)		45	
Bias Voltage Both Guides (V)	35	9	1,3
Output Cathode Bias Voltage (V)	-10	-10	1
Output Cathode Load (KΩ)	33	33	

CONNECTIONS

Pin	Electrode
1	K_M
2	K_D
3	1st Guides
4	Anode
5	2nd Guides
6	K_A
7	K_B
8	K_G

DIMENSIONS

See Fig. 1 Page 4

NOTES

1. Relative to the other cathode 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.

To be performed in addition to those applicable in K1001

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

	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
	GROUP C								
	Electrical Retest								6
	Not more than 7 days prior to application for Services final approval								
a	Scaling Accuracy	$V_b = 400V$ $V_1 = +35V$ $V_2 = -40V$ $T = 60\mu S$ 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.

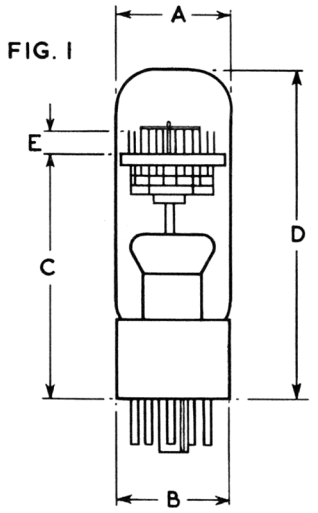
3. Other cathodes 1st guide and 2nd guide electrodes to be disconnected. Illuminations of valve to be 5 - 50 lumens per square foot. Valve to conduct in less than 10 seconds.

4. The other cathodes 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 output cathode and other cathode electrodes 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 $\pm$ 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.

FIG. 1



DIMENSIONS

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 15·75mms

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

FIG. 2

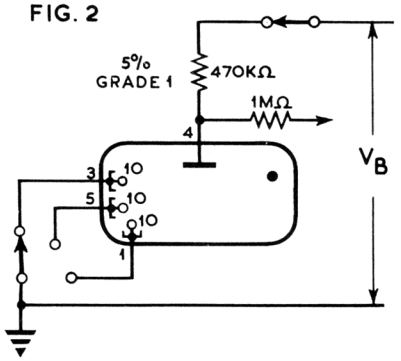


FIG. 3

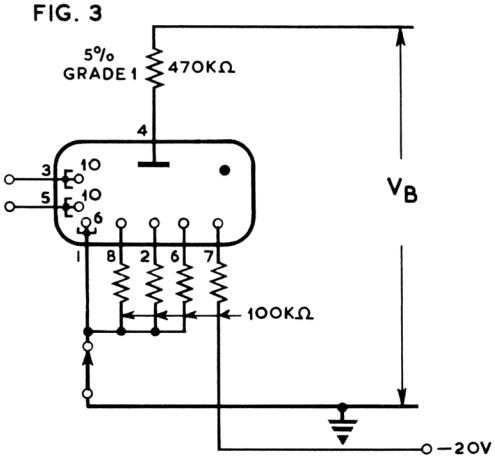


FIG. 4

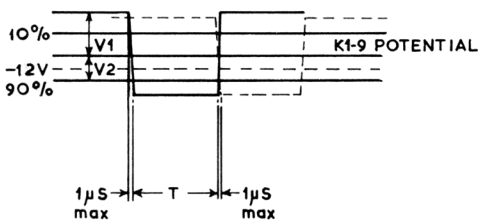


FIG. 5