CV2271

MINISTRY OF SUPPLY (A.E.R.E.)

VALVE ELECTRONIC

Specification M.O.S./CV 2271/Issue 1
Dated 7.7.52
To be read in conjunction with K.1001

SECURITY

Specification	Valve
UNCLASSIFIED	UNCLASSIFIED

TYPE OF VALVE - Decade Scaling Tube
CATHODES - Cold
ENVELOPE - Glass Unmetallised
PROTOTYPE - GC10B

MARKING

See K.1001/4

RATING	Rectangular Pulse Drive		Sine Wave Drive	Notes
Maximum striking voltage (V)		350		
Nominal Maintaining voltage at .3 mA (V)		191		
Max. Anode current (μA)		550		
Min. Anode current (μA)		250		
Max. speed (digits/sec)	4000		2000	
Max. Input signal peak to peak (V)	140		171	
RECOMMENDED OPERATION				
Supply voltage (V)	400		400	1
Anode resistor (KΩ)	680		680	
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)	60		9	1, 3
Bias voltage K_0 (V)	-20		-20	1
Output Cathode load (KΩ)	150		150	

See K1001/A1V/D2 M Dimension (ii) applies

BASE

International Octal

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 voltage must be maintained, e.g. by D.C. restoration.

TESTS

To be carried out in addition to those in K.1001

Insulation test of K1001 not applicable

	TEST CONDITIONS							TEST	LIMITS		No.
									Min.	Max.	Tested
	V_B (V)	Gap	V_1 (V)	V_2 (V)	T (μS)	Freq. kc/s	Notes				
a	350	K_o					4	Gap for striking			100%
b	400	Select					5	Position of discharge; 4 electrodes.			100%
c	400	Select					6	Maintaining voltage at .3 mA (V); 30 electrodes.	186	196	100%
d								Insulation between any one electrode and parallel combination of all others at 160V. (MΩ)	100		100%
e	400	-	35	-40	60	4.0	7	Scaling accuracy.			100%
f	400	-				2.0	8	Scaling accuracy.			100%
g	Repeat test e above.						3,7	Scaling accuracy.			100%
h	Repeat test c above.						3,6	Maintaining voltage			100%

NOTES

1. Tests a, b, c, d, e, f above will be applied directly after completion of manufacture.
2. After the completion of tests listed in Note 1 above, all valves will be shelved for 4 weeks during which no tests or ageing processes will be applied.
3. After the completion of the shelf period of Note 2 above, tests g and h as specified above will be performed in order.
4. K_{1-9} electrodes to be disconnected. Dimension C of tube (page 3) to be in darkness. Remainder of valve to be in normal room daylight. A K_c gap to strike on application of potential. Test circuit of Fig. 2 page 3 applicable.
5. The K_{1-9}, 1st Guide, 2nd Guide and K_o electrodes will be connected to earth in turn and the specified V_B applied. The valve shall strike only at the tip of the appropriate electrode pin. The valve to be fully illuminated by normal room lighting.

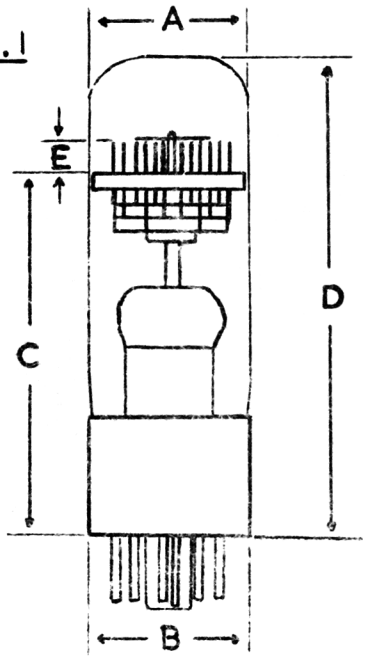
CV2271

6. The K_{1-9}, 1st Guide, 2nd Guide and K_0 electrodes will be successively earthed through a suitable switch to cause the 30 gaps to conduct in turn. The maintaining voltage across each gap shall lie within the specified limits. For this test the K_0 and K_{1-9} electrodes will be connected.) Test circuit of Fig. 2, page 3 applicable.

7. The tube shall scale, without error, the first application of test signals (illustrated in Fig. 4, page 4.) Test signals to be applied for at least 1/10 second.

8. A sine wave signal of 45V.R.M.S. will be applied to the 2nd guides directly and to the 1st guides with a 45° phase advance and with both guides biased at +9v. relative to K_{1-9}. The tube shall scale without error for a minimum period of 1/10 second.) Test circuit of Fig. 3, page 4 applicable.

FIG. 1



DIMENSIONS

Angular displacement between the K_0 electrode and base pin No.6 about the longtitudinal axis to be $0° \pm 12°$. Dimensions A and B to be sufficiently uniform for the tube to be an easy fit inside a uniform cylindrical tube of 90 mm. length and 30 mm. diameter.

DIMENSION	A	B	C	D	E
Min. (mms)	27.5	28	64	82.5	5.5
Max. (mms)	29.5	29.9	69	87.5	6.5

FIG. 2

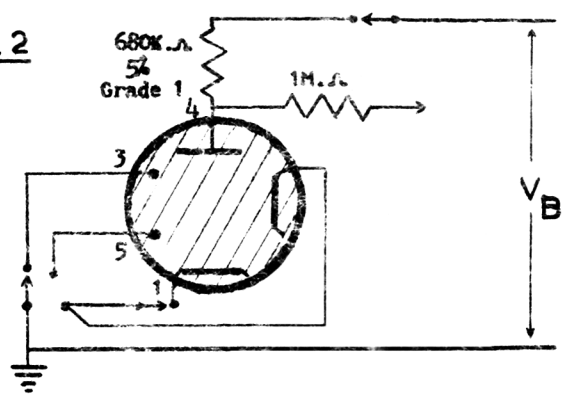


Fig. 2 (Applicable to tests a, b, and c of page 2).

Switching of K_{1-9}, 1st Guide, 2nd Guide and K_0 electrodes to be such as to enable any one of the 30 gaps to be struck as required.

FIG. 3

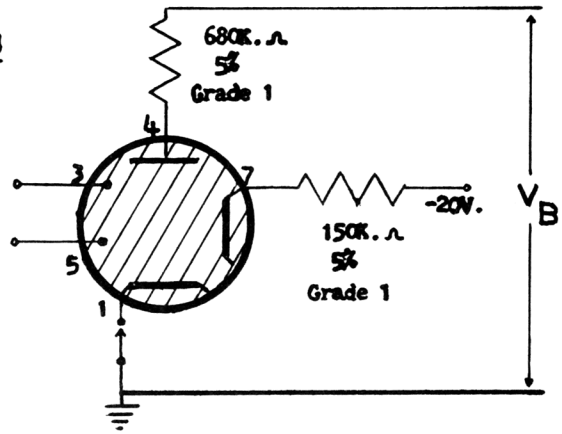


Fig. 3 (Applicable to tests e, f and g of page 2).

1st and 2nd Guide waveforms to be applied as specified under Test Conditions of page 2.

FIG. 4

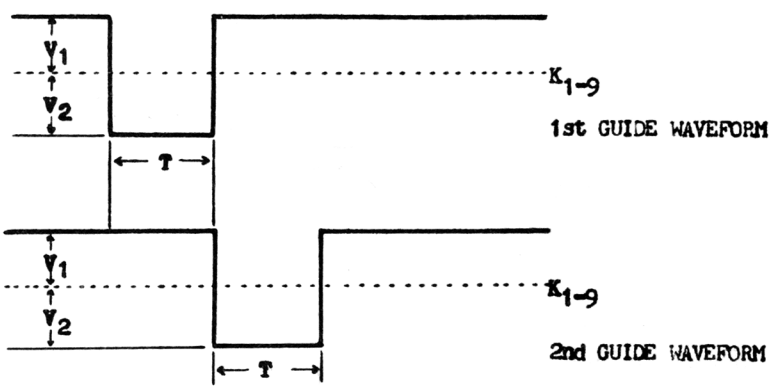


Fig. 4 (Applicable to tests e and g of page 2).