

**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 UNCLASSIFIED	Valve 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	BASE International Octal
Maximum striking voltage (V)		350		CONNECTIONS
Nominal Maintaining voltage at 3 mA (V)		191		
Max. Anode current ( $\mu$ A)		550		Pin
Min. Anode current ( $\mu$ A)		250		Electrode
Max. speed (digits/sec)	4000		2000	1
Max. Input signal peak to peak (V)	140		171	3
				4
				5
				7
				K <sub>1-9</sub>
				1st Guides
				Anode
				2nd Guides
				K <sub>0</sub>
<u>RECOMMENDED OPERATION</u>				
Supply voltage (V)	400		400	DIMENSIONS See Fig.1 Page 4
Anode resistor (K $\Omega$ )	680		680	
Signal Amplitude, both guides (V)	120		55	1
Pulse duration, both guides ( $\mu$ S)	80			
Signal delay, 2nd guide ( $\mu$ S)	80			2
Signal delay, 2nd guide (degrees)			45	
Bias voltage, both guides (V)	60		9	1, 3
Bias voltage K <sub>0</sub> (V)	-20		-20	
Output Cathode load (K $\Omega$ )	150		150	1
<u>NOTES</u>				
1. Relative to K <sub>1-9</sub> 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.				

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<u>TESTS</u>											
To be carried out in addition to those in K <sub>1001</sub>											
<u>Insulation test of K1001 not applicable</u>											
TEST CONDITIONS								TEST	LIMITS		No. Tested
									Min.	Max.	
	V <sub>B</sub> (V)	Gap	V <sub>1</sub> (V)	V <sub>2</sub> (V)	T (μS)	Freq. kc/s	Notes				
a	350	K <sub>0</sub>					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 elect- rodes.	186	196	100%
d								Insulation between any one electrode and paral- lel combination of all others at 150V. (M.A)	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%

<u>NOTES</u>										
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 <sub>1-9</sub> 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 <sub>0</sub> gap to strike on application of potential. )										
Test circuit of Fig. 2 page 3 applicable.										
5. The K <sub>1-9</sub> , 1st Guide, 2nd Guide and K <sub>0</sub> electrodes ) will be connected to earth in turn and the ) specified V <sub>B</sub> applied. The valve shall strike ) only at the tip of the appropriate electrode pin. ) The valve to be fully illuminated by normal room ) lighting.										

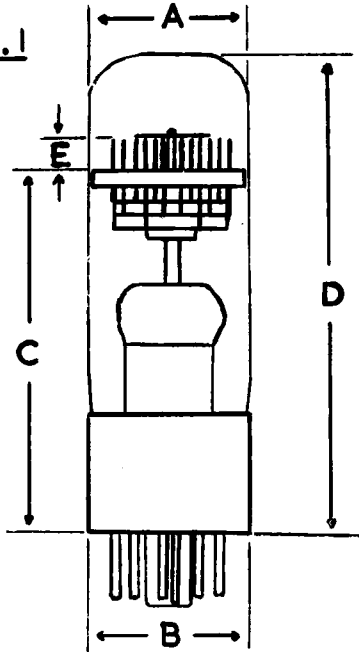
6. The  $K_{1-9}$ , 1st Guide, 2nd Guide and  $K_0$  electrodes will be successively earthed through a suitable switch to cause the 30 gaps to conduct in turn. The maintaining voltage across each gap shall lie within the specified limits. For this test the  $K_0$  and  $K_{1-9}$  electrodes will be connected.
 

) 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.
 

) Test circuit  
) of Fig. 3,  
) page 4  
) applicable.
8. A sine wave signal of 45VR.M.S. will be applied to the 2nd guides directly and to the 1st guides with a  $45^\circ$  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**

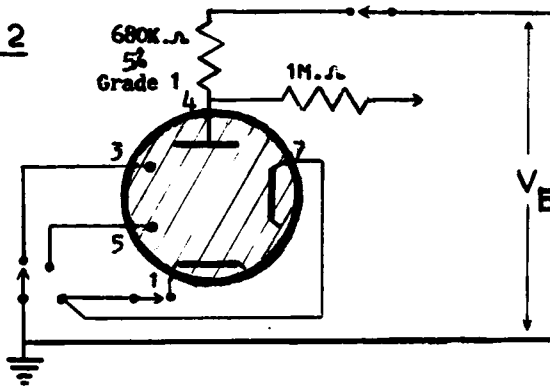


**DIMENSIONS**

Angular displacement between the  $K_0$  electrode and base pin No.6 about the longitudinal axis to be  $0^\circ \pm 12^\circ$ .  
 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

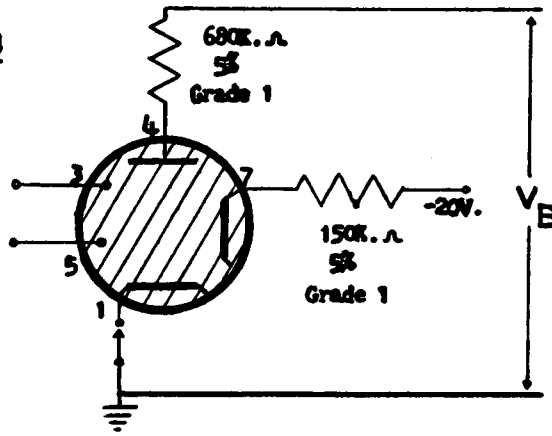
**FIG. 2**



**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.

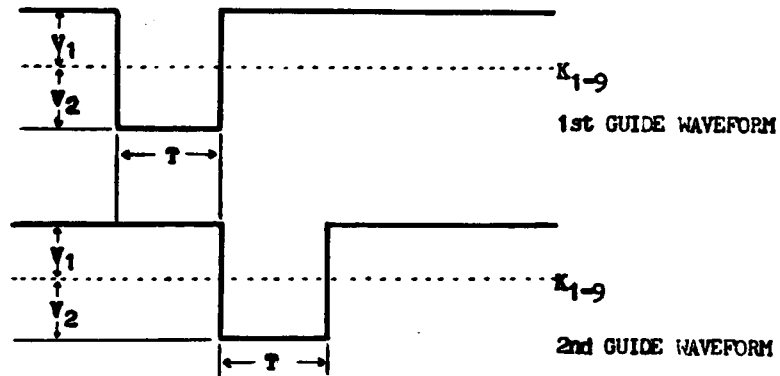
**FIG. 3**



**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).