

MINISTRY OF SUPPLY, R.R.E.

VALVE ELECTRONIC

CV2497

Specification MOS/CV2497 Issue 1 dated 6th March, 1959. To be read in conjunction with K.1001	<u>SECURITY</u> Specification UNCLASSIFIED	Valve UNCLASSIFIED
---	--	-----------------------

Indicates a change ←

<u>Type of Valve:</u> Cathode Ray Tube <u>Type of Deflection:</u> Magnetic <u>Type of Focus:</u> Magnetic <u>Bulb:</u> Glass, internally coated with conductive coating. <u>Faceplate:</u> Non-solarising glass <u>Screen:</u> G.G.4. Aluminium backed <u>Prototype:</u> VCRX437C			<u>MARKING</u> See K.1001/4																																																													
			<u>BASE</u> B9A with exhaust stem in centre. See drawing on page 4.																																																													
			<u>CONNECTIONS</u>																																																													
<table border="1"> <thead> <tr> <th>RATING</th> <th></th> <th>Note</th> </tr> </thead> <tbody> <tr> <td>Heater voltage (v)</td> <td>6.3</td> <td></td> </tr> <tr> <td>Heater current (A)</td> <td>0.6</td> <td>A, F</td> </tr> <tr> <td>Max. anode voltage (kv)</td> <td>25</td> <td>B</td> </tr> <tr> <td>Min. anode voltage (kv)</td> <td>10</td> <td></td> </tr> <tr> <td>Max. h/k voltage (v)</td> <td>300</td> <td>C</td> </tr> <tr> <td>Max. h/k voltage (v)</td> <td>90</td> <td>D</td> </tr> <tr> <td>Max. mean anode current (μA)</td> <td>200</td> <td></td> </tr> <tr> <td>Max. peak anode current (mA)</td> <td>5</td> <td>E</td> </tr> </tbody> </table>			RATING		Note	Heater voltage (v)	6.3		Heater current (A)	0.6	A, F	Max. anode voltage (kv)	25	B	Min. anode voltage (kv)	10		Max. h/k voltage (v)	300	C	Max. h/k voltage (v)	90	D	Max. mean anode current (μA)	200		Max. peak anode current (mA)	5	E	<table border="1"> <thead> <tr> <th>Pin</th> <th>Electrode</th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>grid</td> <td>g</td> </tr> <tr> <td>2</td> <td>heater</td> <td>h</td> </tr> <tr> <td>3</td> <td>Internal connection</td> <td>IC</td> </tr> <tr> <td>4</td> <td>Internal connection</td> <td>IC</td> </tr> <tr> <td>5</td> <td>Cathode</td> <td>k</td> </tr> <tr> <td>6</td> <td>Internal connection</td> <td>IC</td> </tr> <tr> <td>7</td> <td>Spark trap</td> <td></td> </tr> <tr> <td>8</td> <td>heater</td> <td>h</td> </tr> <tr> <td>9</td> <td>See Note F</td> <td></td> </tr> <tr> <td></td> <td>side contact anode</td> <td>a</td> </tr> </tbody> </table>		Pin	Electrode		1	grid	g	2	heater	h	3	Internal connection	IC	4	Internal connection	IC	5	Cathode	k	6	Internal connection	IC	7	Spark trap		8	heater	h	9	See Note F			side contact anode	a
RATING		Note																																																														
Heater voltage (v)	6.3																																																															
Heater current (A)	0.6	A, F																																																														
Max. anode voltage (kv)	25	B																																																														
Min. anode voltage (kv)	10																																																															
Max. h/k voltage (v)	300	C																																																														
Max. h/k voltage (v)	90	D																																																														
Max. mean anode current (μA)	200																																																															
Max. peak anode current (mA)	5	E																																																														
Pin	Electrode																																																															
1	grid	g																																																														
2	heater	h																																																														
3	Internal connection	IC																																																														
4	Internal connection	IC																																																														
5	Cathode	k																																																														
6	Internal connection	IC																																																														
7	Spark trap																																																															
8	heater	h																																																														
9	See Note F																																																															
	side contact anode	a																																																														
<u>TYPICAL OPERATING CONDITIONS</u>			<u>SIDE CONTACT</u> CT.7 on special cone. See drawing on page 4.																																																													
<table border="1"> <thead> <tr> <th>ANODE VOLTAGE</th> <th></th> </tr> </thead> <tbody> <tr> <td>Anode voltage (kv)</td> <td>22</td> </tr> </tbody> </table>			ANODE VOLTAGE		Anode voltage (kv)	22	<u>WEIGHT</u> 1.75 lbs. maximum																																																									
ANODE VOLTAGE																																																																
Anode voltage (kv)	22																																																															
<u>CAPACITANCES</u>			<u>DIMENSIONS</u> See drawing on page 4.																																																													
<table border="1"> <tbody> <tr> <td>Max. Cg - ALL (pf)</td> <td>9</td> </tr> <tr> <td>Max. Cc - ALL (pf)</td> <td>7</td> </tr> <tr> <td>Min. Ca - External coating (pf)</td> <td>500</td> </tr> </tbody> </table>			Max. Cg - ALL (pf)	9	Max. Cc - ALL (pf)	7	Min. Ca - External coating (pf)	500																																																								
Max. Cg - ALL (pf)	9																																																															
Max. Cc - ALL (pf)	7																																																															
Min. Ca - External coating (pf)	500																																																															
<u>NOTES</u>																																																																
A. The nominal heater current may be between 0.3 and 0.6 amp.																																																																
B. The tube shall operate satisfactorily at this voltage at an air pressure equivalent to 5.8" of mercury at 15°C. T.A. Test only.																																																																
C. With cathode positive to heater.																																																																
D. With cathode negative to heater.																																																																
E. For not more than 10/μsec in 400 μsec.																																																																
F. Both 0.3 and 0.6 amp. heaters are allowed. If the current regulation of the heater supply at the base socket is poor, then a 21 ohm 2 watt resistor should be connected between tabs 2 and 9 of the socket. This will ensure that the heater supply delivers 0.6 amp. for both the allowed heaters. Pin 9 for a 0.3 amp. heater is then connected internally to pin 8 and for a 0.6 amp. heater is left without an internal connection. For test (b) a 21 ohm 2 watt resistor shall be included on the valve base between Pins 2 and 9.																																																																

Z.18825.

CV2497/1/1

To be performed in addition to those applicable in K.1001

	Test Conditions	Test	Limits		No. Tested	
			Min.	Max.		
a	See K.1001/5A-13	<u>Capacitances</u> 1. Grid to all other (pf) electrodes 2. Cathode to all other electrode 3. Anode to external coating.	500	1500	9 7 100%	5% (20) 5% (20) 100%
For all tests below $V_h = 6.3$ volts						
b	See Note F on page 1.	Heater current (A)	0.54	0.66	100%	
c	1. Cathode +300v. to heater 2. Cathode -90v. to heater	<u>Heater-Cathode Leakage</u> 1. Leakage current (μ A) 2. Leakage current (μ A)		20 30	100% 100%	
For all tests below except clause J, $V_a = 22$ kv. Spark trap, focus unit deflection coil support and tube external conductive coating to be earthed.						
d	Adjust for optimum focus and V_g for cut off. See K.1001/5A.10	<u>Grid Base</u> - V_g (Value to be noted) (V)	50	100	100%	
e	Grid to be driven positive from cut-off with a pulse 20 μ sec. long and a recurrence frequency of 50 c/s and of amplitude to give a mean light intensity of .0375 candela when measured through an Ilford 624 filter. At the same time, the tube is linearly scanned at 50 kc/s in one direction only to give a line length of 75 mm. Adjust focus field for optimum focus. See Note I.	1. <u>Grid Drive</u> (V) Pulse amplitude. 2. <u>Peak Anode Current</u> (mA) 3. <u>Peak Grid Current</u> (mA) 4. <u>Line Width</u> . Measured at centre of trace (mm)		100 2.0 2.0 1.0	100% 100% 100% 100%	
f	Adjust V_g for cut-off with and without a 1 Megohm grid resistor	<u>Grid Insulation</u> Change in V_g (Volts)		5	100%	
g	With a raster scan to cover the useful screen area adjust V_g to any convenient value and focus field for optimum focus. See Note I.	<u>Useful Screen Area</u> Diameter on the geometric centre of the screen. (mm)	100		100%	

	Test Conditions	Test	Limits		No. Tested	
			Min.	Max.		
h	With no deflecting field adjust focus field for optimum focus and V_g for the lowest convenient light intensity. See Note 1.	Deviation of spot from the geometric centre of the screen (mm)		5	100%	
j	$V_a = 27kV$. $V_g = 175v$. Pre-heat cathode at $V_h = 6.5v$. for at least 10 minutes. Tube to be held with the screen vertical. With the focus field as in test e, view the screen for 30 secs. in darkness.	<u>Flashover and Stray Emission</u> After 15 secs. there shall be no flashover or emission visible at the screen			100%	
k	Defocused raster of any convenient brightness to cover the useful screen area See Note 2.	<u>Blemishes</u> (Stones, bubbles and screen defects.) Above 1.0 mm. diameter 1.0 to 0.5 mm. diameter Below 0.5 mm diameter ignore.	none	6	100%	
l	Sinusoidal vibration of peak to peak amplitude .01 inches at all frequencies between 5 and 100 c/s to be applied (a) axially; (b) radially	Re-test to above specification			T.A.	
m	Tube to be subjected to the condition of K.1001/10.1 for a period of 28 days.	The external coating shall show no signs of blistering or flaking			T.A.	
<p><u>NOTES</u></p> <p>1. Coils Deflecting 104 Reference Number 100/16429 shall be used for the electrical tests, the tube being pushed home into the deflection coil until the neck flare is just touching the deflection coil moulding. Either electromagnetic or permanent magnet focussing may be used.</p> <p>2. If two or more blemishes are separated by a distance not greater than the maximum dimension of the largest blemish in the group; then the group of blemishes shall be considered as one blemish of dimension equal to the maximum overall dimension of the group.</p>						

