

Specification MOA/CV429 Issue 7A, dated 11th September 1961 To be read in conjunction with K1001 and BS448	<p align="center"><u>SECURITY</u></p> <p><u>Specification</u> <u>Valve</u></p> UNCLASSIFIED UNCLASSIFIED
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→ Indicates a change

<p><u>TYPE OF VALVE</u> - Cathode Ray Tube</p> <p><u>DEFLECTION</u> - Magnetic</p> <p><u>FOCUS</u> - Magnetic</p> <p><u>GUN</u> - Tetrode or Triode with no final trimming aperture. Note D</p> <p><u>BULB</u> - Glass. Internal conductive coating</p> <p><u>SCREEN</u> - 009 (Aluminium backed)</p> <p><u>PROTOTYPE</u> - VCRX267</p>	<p align="center"><u>MARKING</u></p> See K1001/4																																																				
	<p align="center"><u>BASE</u></p> See BS448. B12A with metal shell or an approved alternative																																																				
<p align="center"><u>RATING</u></p> All limiting values are absolute	<p align="center"><u>CONNECTIONS</u></p> <table border="0"> <tr> <td>Pin</td> <td>Electrode</td> <td></td> </tr> <tr> <td>1</td> <td>heater</td> <td>h</td> </tr> <tr> <td>2</td> <td>grid</td> <td>g</td> </tr> <tr> <td>6</td> <td>no connection</td> <td></td> </tr> <tr> <td>7</td> <td>no connection</td> <td></td> </tr> <tr> <td>10</td> <td>anode 1</td> <td>a¹</td> </tr> <tr> <td>11</td> <td>cathode</td> <td>k</td> </tr> <tr> <td>12</td> <td>heater</td> <td>h</td> </tr> <tr> <td>Side contact</td> <td>Anode 2</td> <td>a2</td> </tr> </table>	Pin	Electrode		1	heater	h	2	grid	g	6	no connection		7	no connection		10	anode 1	a ¹	11	cathode	k	12	heater	h	Side contact	Anode 2	a2																									
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<p align="center"><u>NOTES</u></p> <p>A. The heater current may be 0.3A or 0.6A nominal.</p> <p>B. The fluoride screen shall not contain beryllium.</p> <p>C. The tube should be operated at its minimum useful brightness in order to prevent damage to the screen material.</p> <p>D. The tube may be supplied with either Tetrode or Triode Gun. In the triode gun version Anode 1 is not used, but provision must be made always in equipments to supply the correct Anode 1 potentials.</p>																																																					

TESTS

GENERAL TEST CONDITIONS

Vh(V) Vg(V) Val(V) Va2(KV) Vhk(V)

6.3 adjust 300 15 0

(Note D)

The centre of the focus coil air gap shall be 120 mms. from the ring gauge plane. An interlaced 405 line TV raster of convenient size may be used when required.

K1001	TEST	TEST CONDITIONS	AQL %	Insp Level	Sym- bol	LIMITS		Units
						Min	Max	
5A.1	General Inspection Dimensions	No Voltages No voltages, see drawing on page		100% 100%				
5A.2	Loose Particles	No voltages		100%				
5A3.1	Insulation			100%				
5A3.2	Grid Insulation Leakage Current	Rg = 10 M.ohms Vg = - 110V		100%	Ig	-	11	µA
5A3.3	Heater-Cathode Leakage Current	Vhk = 150V Val = Va2 = 0		100%	Ihk	-	50	µA
	Heater Current	Note 1		100%	Ih	0.27	0.66	A
→ 5A.10	Negative Grid Cut-off Voltage Vg1	No deflection - Triode gun Tetrode gun		100% 100%	Vg Vg	50 30	90 90	V V
	Negative Grid Voltage Vg2	Ib = 50 µA Defocussed beam, scanned or deflected off usable screen area.					Record Vg1 Record Vg2	V V
	Grid Drive Vg1 - Vg2			100%		10	30	V
5A.7	Focus, Line Width at centre of trace	Linear line scan 250 mm long and 100 µS duration. Grid drive from cut-off by 100 µS pulse of amplitude Vg1-Vg2. f = 100 pps max. Optimum focus or alternatively using raster with frame scan expanded and grid adjusted Vg1-Vg2 volts from cut-off		100%		-	0.5	mm
						-	0.4	mm

K1001	TEST	TEST CONDITIONS	AQL %	Insp Level	Sym-bol	LIMITS		Units
						Min	Max	
5A.7 (Contd)	Unfocussed Spot diameter	No deflection or focussing. Grid pulsed from out-off by 100 μ S pulse of amplitude. Vg1-Vg2.f = 25 pps max.	6.5	IA		-	15	mm
5A.12	Useful Screen Area Diameter on geometric centres	Lowest Convenient light intensity		100%		250	-	mm
5A.11	Displacement of spot from geometric centre of screen.			100%		-	15	mm
	Screen Efficiency measured in terms of Beam Current	Va2 = 9 kV Vg adjusted to give a light intensity of 0.12 candela using focussed raster of convenient size.		100%	Ib	-	8	μ A
5A.17	Persistence measured as decay time to 0.014 foot-lamberts. Note 2.	No focus field Vg adjusted to give screen luminance to 2 foot-lamberts Linear raster of convenient size, uniform screen excitation ; Excitation time = 120 \pm 15 secs.	2.5	I		208	-	secs
	Flashover and Stray emission Note 3	Vg = -200V Va1= 600V Va2= 18 kV Preheat cathode for 10 mins.min. Focus field as in Focus test (5A.7)		100%				
	Gas Ratio measured as ratio $\frac{Ia2}{Ik}$ (Not applicable to Triode gun design)	Va1 = 300V Va2 = -20 V Vg adjusted to give Ik within the range 400 - 1000 μ A Note 4		100%			2×10^{-4}	
5A.1.1	Screen Elemenishes Stones, Bubbles and screen defects	Scan over useful screen area with defocussed raster of convenient bright-ness. Note 5		100%				

K1001	TEST	TEST CONDITIONS	AQL %	Insp Level	Sym- bol	LIMITS		Units
						Min	Max	
5A.14 (Contd)	Limit size No. of blemishes within any circle of 50 mm dia. within the useful screen are total No. of blemishes between 1 and 1.5 mm. Separation between blemishes					-	1.5	mm
						-	5	
						-	10	
						-	4	
5A.13	Capacitances		6.5	IC	Cg-all Ck-all	-	12	pF
						-	12	pF
5A.21	Resistance to external pressure							

NOTES

- The heater current shall not vary by more than 10% from the manufacturer's nominal value.
- To allow for screen temperature coefficient, the minimum decay time limit at any temperature between 15°C and 30°C which is "n" °C above 15°C is :-

$$208 (1 - 0.04)^n \text{ seconds.}$$

- The tube shall be held with the screen horizontal and uppermost. It shall be viewed for 10 seconds in a dark box whilst its neck is tapped with an approved forked rubber covered wooden mallet at a minimum rate of 4 taps per second.

Any flashover or stray emission during the first five seconds, when the beam shall be deflected off the screen, shall be ignored.

During the remaining 5 seconds there shall be no deflection and the tube shall be rejected if flashover or stray emission causes visible screen excitation.

- This test shall be applied not less than 7 days after completion of exhaust process.
- Blemishes below 0.5 mm shall be ignored, except where the separation between them is less than the maximum dimension of the largest blemish in a group.

