

ELECTRONIC VALVE SPECIFICATIONS

Specification MOA/CV6229, Issue 1, Dated August 1968

AMENDMENT No. 1

Page 1. Insert the following amendments as instructed:

- (i) No of Pages - delete "6" and substitute "7".
- (ii) Specification Authority - delete "Ministry of Aviation" and substitute "MINISTRY OF TECHNOLOGY".
- (iii) Specification Title - delete "MOA/CV6229" and substitute "Mintech/CV6229".

January 1969

T.V.C. for R.R.E.

SPECIFICATION MOS/CV6229, ISSUE 1, DATED 1.8.68

Amendment No 2

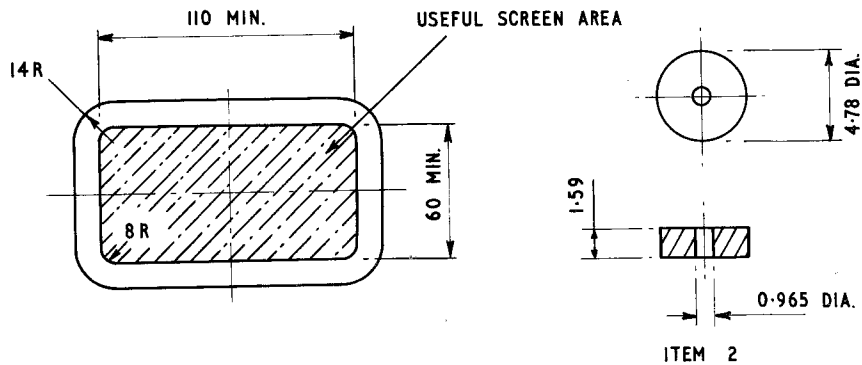
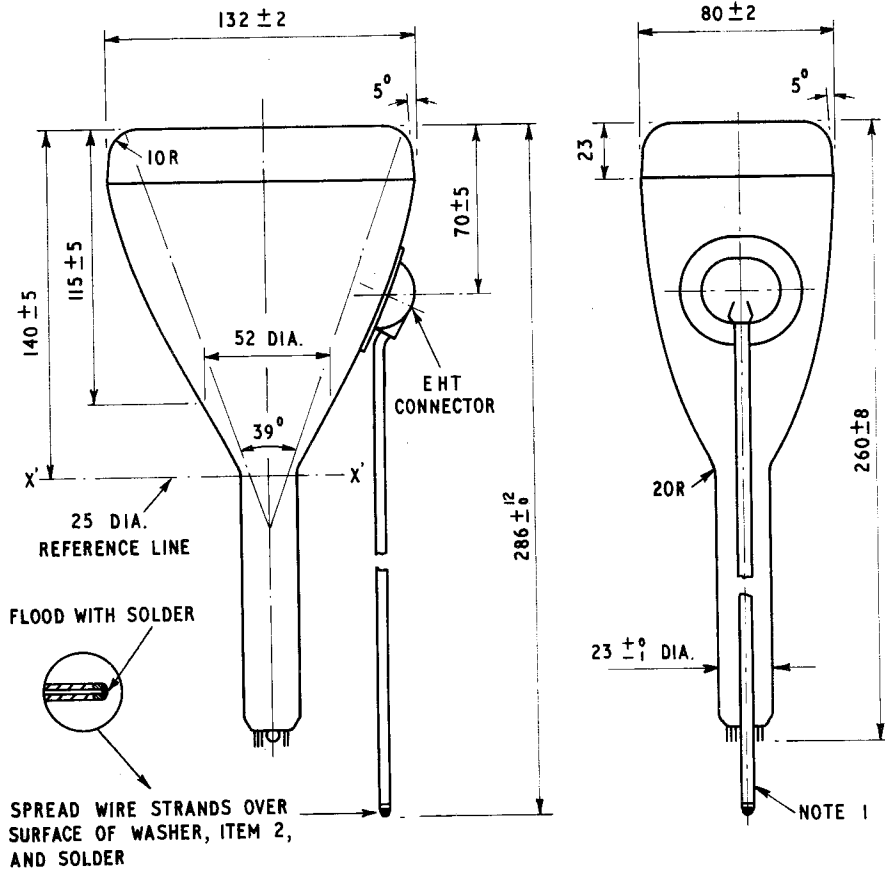
Remove pages 5 and 6
Insert new pages 5 and 6.

K1001 Ref.5A	TEST	TEST CONDITIONS	Insp. Level	Sym- bol	LIMITS		Units
					Min.	Max.	
8.	(bb) Life - period Life end points: Repeat Tests (k),(s) and (n). Screen luminance	Raster Ib = 50 μ A	QA		1000	-	hours
3.9.1	(cc) Heater Modulation		QA				
3.9.2	Cathode Illumination		QA				
3.9.3	Effect of Magnetisa- tion		QA				
Sect. 10.6	(dd) Temperature Cycling - No deterioration in adhesion and appearance of potting compound.	No Voltages 4 cycles over the range -40 $^{\circ}$ C to +80 $^{\circ}$ C	QA				
	(ee) Vibration Fatigue Post Fatigue Tests Repeat Tests (e),(h) (j),(k),(m) and (s).	Focused raster. Frequency range 20 to 200 c/s. Rate of change of frequency 0.2 octaves per minute. Amplitude 4 in/sec or 3.3g whichever is the lesser. Vh = 21V No other voltages Note 2.	QA				

NOTES

- The scale of life testing shall be related to production. For orders of less than 51, at least one tube shall be life tested. For production orders of greater than 50, the production shall be divided into batches of 50, and at least one tube from each shall be life tested. The batch corresponding to the tube undergoing life test shall not be released until the tube has completed 80% of the required life. At the option of the manufacturer, and at his expense, any number of additional tubes may be life tested, in which case the average of the lives of these tubes shall exceed 80% of the required life before the batch can be released. Life test is considered satisfactory when an accumulated total of 500 hours is reached.
- The tube shall be vibrated in each of 3 mutually perpendicular planes for not less than 30 hours, and not less than 100 hours total. Heater switched 1 minute on and 3 minutes off. Minimum peak acceleration 2.5g; frequency 170 \pm 5 c/s.

OUTLINE DRAWING
(THIRD ANGLE PROJECTION)



Note 1: Connector Cable 14/0076" conductors, covered with Silicone rubber insulation, overall diameter $0.240" \pm 0.010"$

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 Date | 1/19/91 | 72.

<u>MINTECH</u> Specification MSA /CV6229 Issue 1 Dated August 1968 To be read in conjunction with K1001 and BS1409	<u>SECURITY</u>	
	<u>Specification</u> Unclassified	<u>Valve</u> Unclassified

→ indicates a change

TYPE OF VALVE - Cathode Ray Tube SCREEN AREA - 3.5 mm x 65 mm <i>10 mm min</i> GUN - Tetrode DEFLECTION - Magnetic FOCUS - Electrostatic BULB - Glass SCREEN - C09 (Aluminium backed) PROTOTYPE - 5 x 3/95J20			<u>MARKING</u> See K1001/4 <u>BASE</u> B9A/D		
<u>RATINGS AND CHARACTERISTICS</u>			<u>CONNECTIONS</u>		
(Absolute, non-simultaneous and not for Inspectorate)			Pin 1 - Grid g 2 - Internal Connection 3 - Cathode k 4 - Heater h 5 - Heater h 6 - Internal Connection 7 - Anode 3 a3 8 - Internal Connection 9 - Anode 1 a1 Side Contact - Anodes 2&4 a2+a4		
Heater Voltage (V)	19	Notes A B	<u>SIDE CONTACT</u>		
Heater Current (A)	0.1		Lead moulded on to cone		
Max. Anode 2 and 4 Voltage (kV)	17.5				
Min. Anode 2 and 4 Voltage (kV)	8		0.7kg max		
Max. Anode 1 Voltage - positive (V)	70				
Max. Anode 1 Voltage - negative (V)	500		See drawing on Page 6		
Max. Anode 3 Voltage (V)					
Min. Anode 3 Voltage (V)					
Max. Heater-Cathode Voltage (V)	200				
<u>Typical Operating Conditions</u>					
<u>NOTE B</u>					
a2 + a4 Voltage (kV)	15				
a3 Voltage for focus (V)	-160				
Cathode Voltage (V)	20				
a1 Voltage for visual cut-off (V)	-150				
<u>CAPACITANCES</u>					
Cg to all (pf)	8				
Ck to all (pf)	8				

NOTES

- A. Anodes 2 + 4 will be referred to as Anode 4 (a4) throughout the tests.
- B. Cathode modulation should be employed, i.e. the grid should be operated at earth or other fixed potential, and all voltages applied with reference to this point. This tube is inefficient with grid modulation unless Anode 1 is also driven.
- C. NATO Stock No. = 5960-99-037-5785

Test conditions unless otherwise stated for an individual test.

1. $V_h(V)$ $V_g(V)$ $V_{a4}(kV)$
19 0 17.5
2. A 200 line non-interlaced raster, frame repetition rate 50 c/s, shall be used when required.
3. All voltages measured with respect to grid.

K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp. Level	Sym- bol	LIMITS		Units
					Min.	Max.	
3.1	(a) General Inspection- Dimensions	No Voltages - see drawing	100%				
3.2.2	(b) Loose Particles	No voltages	100%				
	(c) Capacitances	C_g - all C_k - all	5%			8 8	pf pf
	(d) Heater Current	No voltages except V_h	5%	I_h	0.075	0.125	A
	(e) Gas Test	V_{a1} = 200V V_{a3} = -40V V_{a4} = -40V V_g = 0 Adjust V_k to obtain I_k = 400 uA Measure I_{a4}	100%				I_{a4} 75×10^{-9} A
4.1.2	(f) Grid Insulation	V_h = 21V V_g = -175V R_g = 10 Mohm	100%	I_g		3	μ A
4.1.3	(g) Heater Cathode Leakage Current	V_h = 21V Resistor = 3 Mohm V_{hk} = 175V V_{hk} = -450V	100%			30 40	μ A μ A
4.2.1	(h) Flashover	V_{a1} = -300V V_{a3} = 500V V_{a4} = 20kV V_k = 25V Raster scan.	100%				
4.2.3	and Stray Emission	As above					

TESTS (Cont'd)

K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp. Level	Sym- bol	LIMITS		Units
					Min.	Max.	
	Stray Emission Cont'd	Tube to be viewed in darkened conditions with the screen horizontal and uppermost. Using an approved forked, rubber covered hammer, tap the tube neck for 15 secs. at a rate of 4 taps per second minimum. Tube to be free from stray emission after the first 5 seconds, and for 15 seconds after tapping has ceased.					
	(j) Dark Current	As in test (h) for flashover Measure Ia4	100%	Ia4	-	5	μ A
	(k) Negative Cut-off Voltage (a1)	No deflecting fields. Focused spot. Vk = 20V Va3 adjust for focus Adjust Va1 for visible cut off and measure Va1	100%	Va1	-60 Record	-330	V
	(l) Focus Voltage (Va3)	Va1 as in test (k) Vk = 20V Apply negative pulse to cathode of amplitude 18V. Pulse duration 1 μ S, p.r.f. 50 c/s Adjust Va3 for focus and measure.	100%	Va3	-330	0	V
	(n) Spot Diameter - measured to extinction.	As in test (l)	100%		-	0.75	mm
5A.5.1	(n) Screen Efficiency	Va1 as in test (k) Focused raster 65mm x 115mm Ik = 5 μ A viewed through Wratten Filter C22. Measure luminance	100%		17	-	cd/m^2

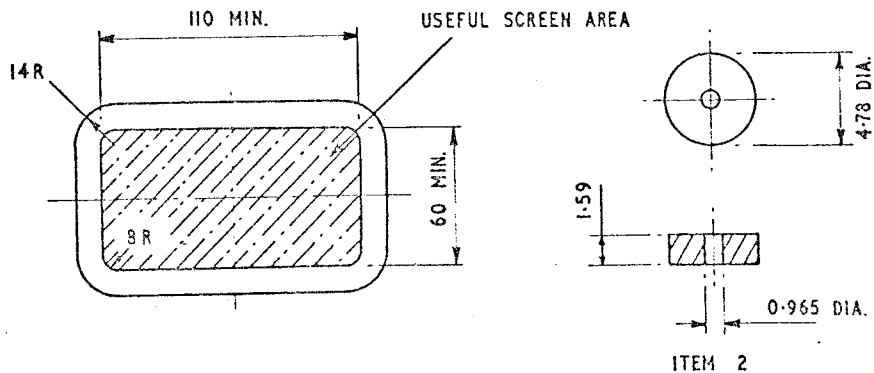
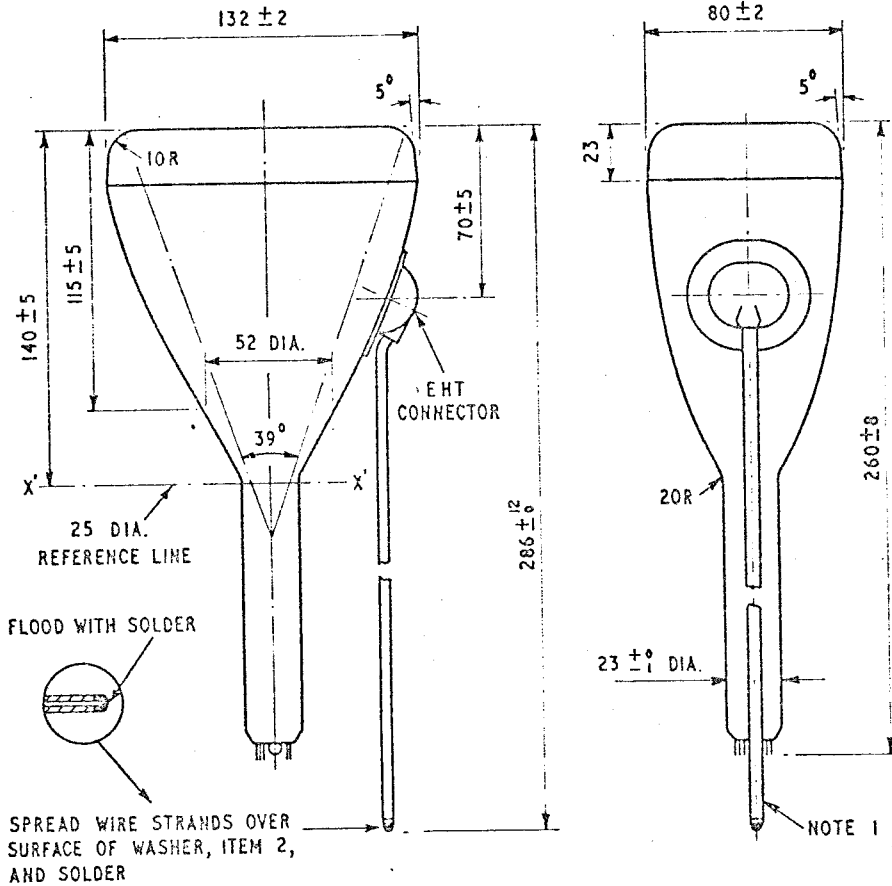
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5A.3.5	(o) Blemishes and Screen Defects. See Drawing on Page 7.	Defocused raster of convenient intensity	100%				
6.3	(p) Useful Screen Area	Va1 as in test (k). Focused raster of convenient intensity.	100%		65x115	-	mm
5A.5.5	(q) Persistence measured as a decay time to 1%	Linear raster of con- venient size, V _k ad- justed to give screen luminance of 6.9 cd/m ² viewed through Wratten Filter C22. Va1 as in Test (k)	100%		70	180	sec.
	(r) Spot Centrality - measured as the distance between the geometrical and electrical centres of the screen	Va1 as in test (k). Focused spot just visible. Mark the position of the spot, rotate the tube through 180 degrees, and mark the new position of the spot. Midway between the two marks is the electrical centre of the screen.	100%		-	7	mm
	(s) Cathode Emission	Va4 = 17.5kV Va3 = 500Volts V _G = 0 Va1 as in Test (k)	100%		300	-	μA
3.7	(t) Holding Period - Repeat test (s)		100%		7	-	days
8.	(u) Life - See Note 1 for inspection levels. Life end points Repeat Tests (k),(s) and (n). Screen luminance	Raster. I _b = 50μA			500	-	hours
7.2	<u>Qualification Approval</u> (aa) Resistance to External Pressure		QA		8.5	-	Cd/m ²

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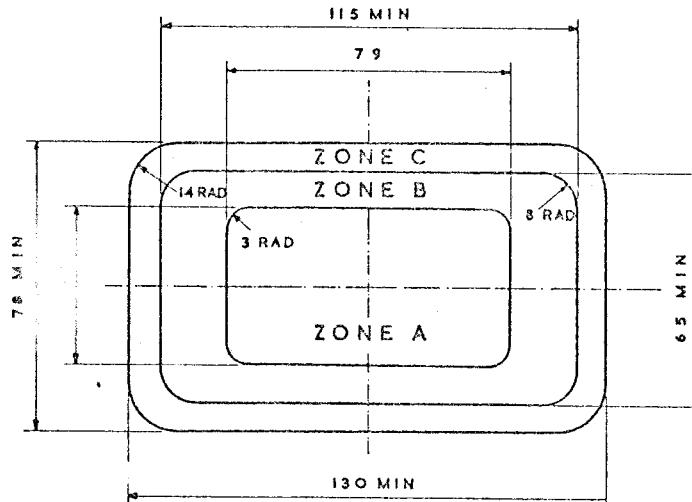
OUTLINE DRAWING
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BLEMISH INSPECTION DIAGRAM

THIRD ANGLE PROJECTION



ZONE C EXTENDS OVER EDGE OF SCREEN DOWN TO MOULD MATCH LINE

		A		B		C
OPAQUE SPOTS STONES AND BUBBLES BURIED RAISED OR OPEN.	SIZE	0.2-0.3	0.3-0.4	0.2-0.3	0.3-0.5	NO LIMIT PROVIDED THEY DO NOT IMPAIR STRENGTH.
	No. PER SIZE	7	2	SEE NOTE (A)	2	
	MIN SEPARATION	6	15	6	15	
	TOTAL No.	7				
SCRATCHES	WIDTH	0.1				0.15
	TOTAL LENGTH	7.5				12

(A) NO MORE THAN 4 ALLOWED IN ANY 50 CIRCLE

DIMENSIONS IN MILLIMETRES