VALVE ELECTRONIC **CV6229**

Amdt 1

Specification ~~MOA~~ MoWEB/CV6229

Issue 1 Dated August 1968

To be read in conjunction with K1001 and BS1409

SECURITY	
Specification	Valve
Unclassified	Unclassified

→ indicates a change

TYPE OF VALVE - Cathode Ray Tube
SCREEN AREA - 115 mm x 65 mm
GUN - Tetrode
DEFLECTION - Magnetic
FOCUS - Electrostatic
BULB - Glass
SCREEN - 009 (Aluminium backed)
PROTOTYPE - 5 x 3/95J20

MARKING

See K1001/4

BASE

B9A/D

RATINGS AND CHARACTERISTICS

(Absolute, non-simultaneous and not for Inspectorate)

			Notes
Heater Voltage	(V)	19	
Heater Current	(A)	0.1	
Max. Anode 2 and 4 Voltage	(kV)	17.5	A
Min. Anode 2 and 4 Voltage	(kV)	8	
Max. Anode 1 Voltage - positive	(V)	70	
Max. Anode 1 Voltage - negative	(V)	500	
Max. Anode 3 Voltage			
Min. Anode 3 Voltage			
Max. Heater-Cathode Voltage	(V)	200	
Typical Operating Conditions			
NOTE B			
a2 + a4 Voltage	(kV)	15	
a3 Voltage for focus	(V)	-160	
Cathode Voltage	(V)	20	
a1 Voltage for visual cut-off	(V)	-150	

CONNECTIONS

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

SIDE CONTACT

Lead moulded on to cone

WEIGHT

0.7kg max

CAPACITANCES

Cg to all	(pf)	8	
Ck to all	(pf)	8	

DIMENSIONS

See drawing on Page 6

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. = 5960-99-037-5786

TESTS

To be performed in addition to those tests applicable in K1001

Test conditions unless otherwise stated for an individual test.

1. Vh(V) 19 Vg(V) 0 Va4(kV) 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	Symbol	LIMITS Min.	LIMITS Max.	Units
3.1	(a) General Inspection-Dimensions	No Voltages - see drawing	100%				
3.2.2	(b) Loose Particles	No voltages	100%				
	(c) Capacitances	Cg - all Ck - all	5%			8 8	pf pf
	(d) Heater Current	No voltages except Vh	5%	Ih	0.075	0.125	A
	(e) Gas Test	Va1 = 200V Va3 = -40V Va4 = -40V Vg = 0 Adjust Vk to obtain Ik = 400 uA Measure Ia4	100%	Ia4		75×10^{-9}	A
4.1.2	(f) Grid Insulation	Vh = 21V Vg = -175V Rg = 10 Mohm	100%	Ig		3	µA
4.1.3	(g) Heater Cathode Leakage Current	Vh = 21V Resistor = 3 Mohm Vhk = 175V Vhk = -450V	100%			30 40	µA µA
4.2.1	(h) Flashover	Va1 = -300V Va3 = 500V Va4 = 20kV Vk = 25V Raster scan.	100%				
	and						
4.2.3	Stray Emission	As above					

Cont'd on Page 3.

TESTS (Cont'd)

K1001 Ref.5A	TEST	TEST CONDITIONS	Insp. Level	Symbol	LIMITS Min.	LIMITS Max.	Units
	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	µA
	(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	-330 Record	V
	(l) Focus Voltage (Va3)	Va1 as in test (k) Vk = 20V Apply negative pulse to cathode of amplitude 18V. Pulse duration 1 µS, p.r.f. 50 c/s Adjust Va3 for focus and measure.	100%	Va3	-330	0	V
	(m) 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 µA viewed through Wratten Filter C22. Measure luminence	100%		17	-	cd/m^2

K1001 Ref.5A	TEST	TEST CONDITIONS	Insp. Level	Sym-bol	LIMITS		Units
					Min.	Max.	
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 convenient size, Vk adjusted 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 Vg = 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. Ib = 50µA			500 8.5	— -	hours Cd/m^2
7.2	<u>Qualification Approval</u> (aa) Resistance to External Pressure		QA				

K1001 Ref.5A	TEST	TEST CONDITIONS	Insp. Level	Sym-bol	LIMITS Min.	LIMITS Max.	Units
8.	(bb) Life - period Life end points: Repeat Tests (k),(s) and (n). Screen luminance	Raster Ib = 50μA	QA		1000 5.0	– –	hours Cd/m^2
3.9.1 3.9.2 3.9.3	(cc) Heater Modulation Cathode Illumination Effect of Magnetisation		QA QA 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

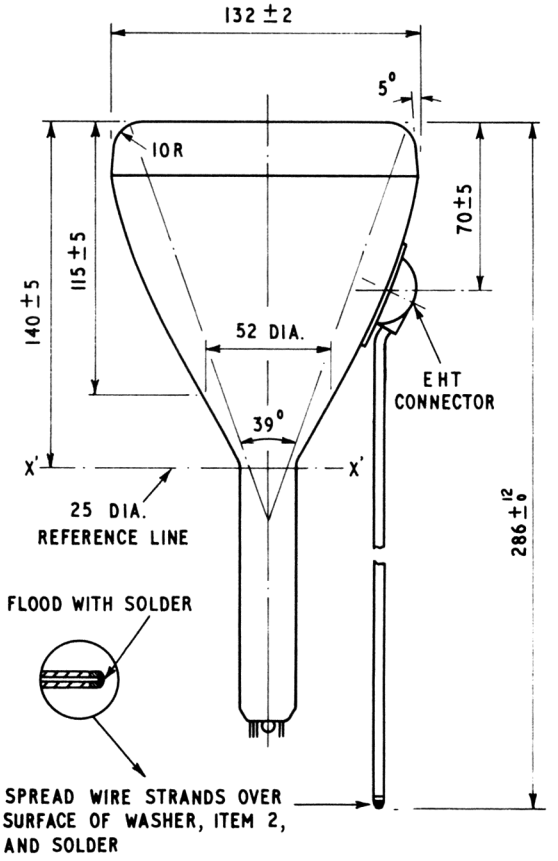
1. The scale of life testing shall be related to production. For orders of less than 51, at least one tube shall be life tested. For production orders of greater than 50, the production shall be divided into batches of 50, and at least one tube from each shall be life tested. The batch corresponding 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.

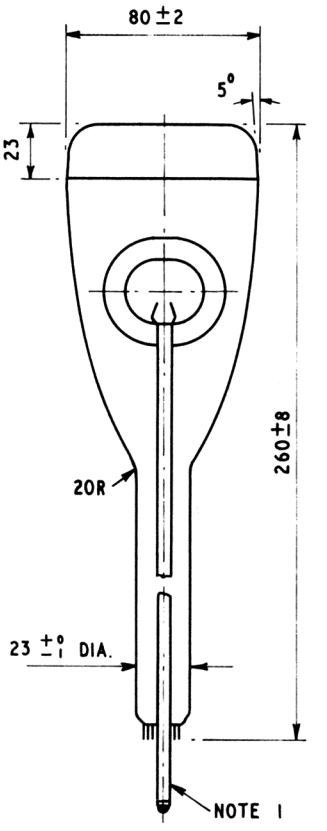
2. The tube shall be vibrated in each of 3 mutually perpendicular planes for not less than 30 hours, and not less than 100 hours total. Heater switched 1 minute on and 3 minutes off. Minimum peak acceleration 2.5g; frequency 170 ± 5 c/s.

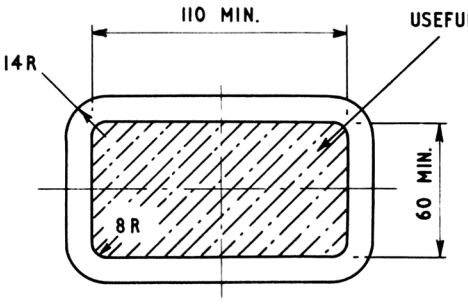
[This is the revised sheet] Amdt 2

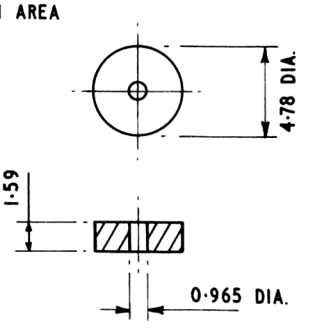
CV6229

OUTLINE DRAWING
(THIRD ANGLE PROJECTION)





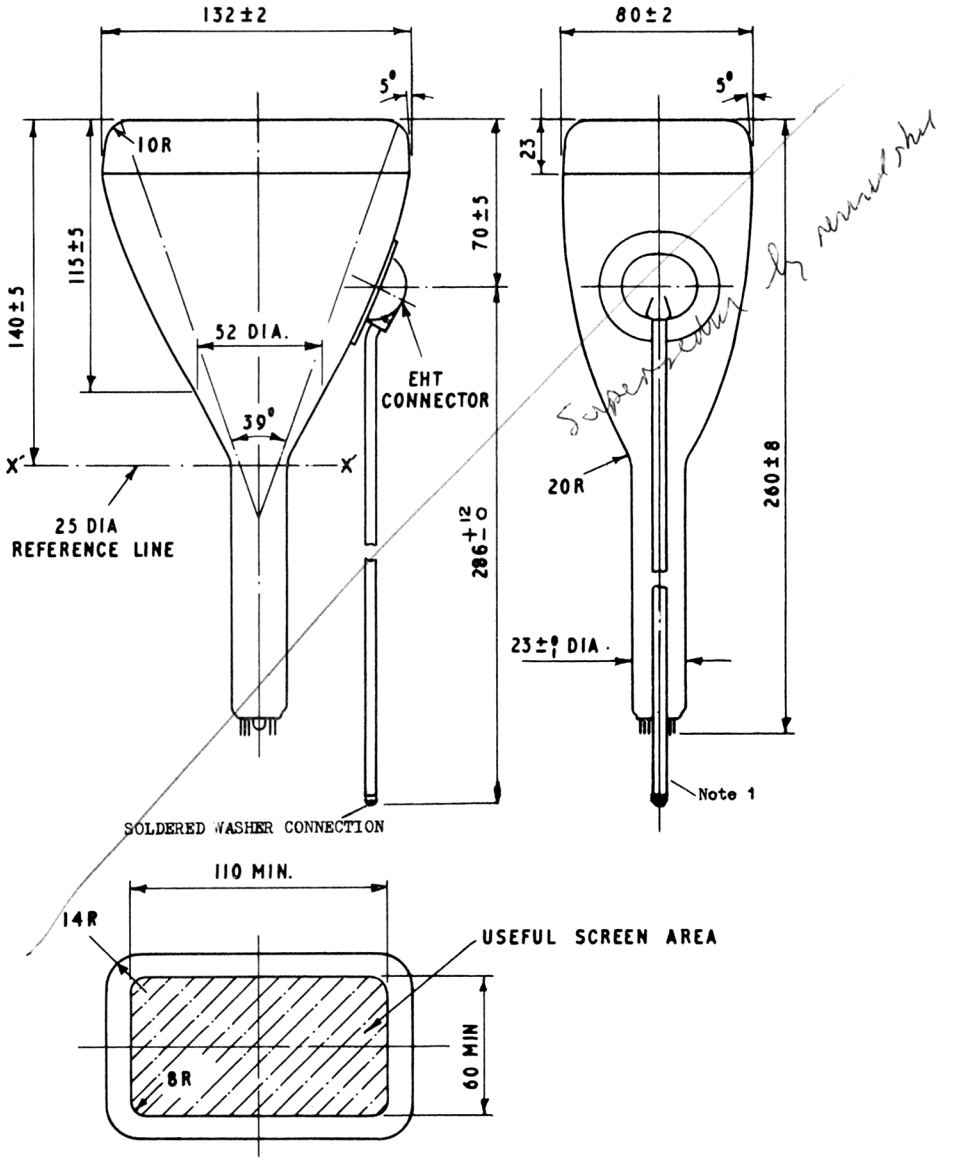




ITEM 2

Note 1: Connector Cable 14/·0076" conductors, covered with Silicone rubber insulation, overall diameter 0·240" ± ·010"

OUTLINE DRAWING
(THIRD ANGLE PROJECTION)



Note 1: Connector Cable 14/.0076" conductors, covered with Silicone rubber insulation, overall diameter 0.240" ± .010".

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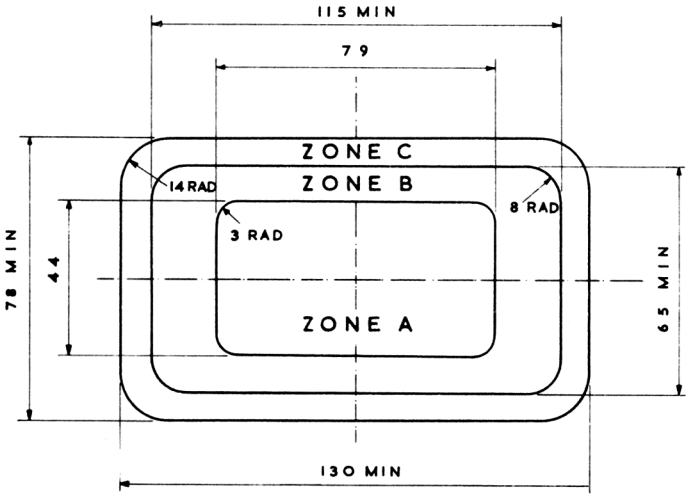
BLEMISH INSPECTION DIAGRAM

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

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.

31/3/69

SPECIFICATION MOS/CV6229, ISSUE 1, DATED 1.8.68

Amendment No 2

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

JAB
29/5/72

ELECTRONIC VALVE SPECIFICATION
SPECIFICATION MINTECH/CV 6229
ISSUE 1 dated August 1968

Amendment No 3

Page 1(a) Specification Authority

Delete: Ministry of Technology

Insert: Ministry of Defence

(b) Specification Title

Delete: MinTech/CV 6229

Insert: MOD/CV 6229

Pages 4 and 5 - Tests (u) and (bb), under Test Conditions:-

Delete: Raster I_b = 50 µa

Insert: RASTER at cut off, pulsed for 6 µs at 150 µs period, unsynchronised.

I_K = 9.0 µA mean (225 µA peak)

October 1975

SLR 23 FOR RRE