

ADMIRALTY SIGNAL AND RADAR ESTABLISHMENTVALVE ELECTRONIC**CV2431.**

Specification AD/CV 2431
Issue No. 1 dated 17. 10. 57.
To be read in conjunction with K1006 and
B.S.448.

SECURITY

Specification
Unclassified

Valve
Unclassified

TYPE OF VALVE: Cathode Ray Tube
TYPE OF DEFLECTION: Electrostatic,
symmetrical.
TYPE OF FOCUS: Electrostatic.
BULB: Glass, internally coated with
conductive coating.
SCREEN DIAMETER: 2 $\frac{3}{4}$ inches (approx.)
SCREEN: See Note A
PROTOTYPE: DG7 - 32

MARKING

See K1001/4

BASE

See B.S.448/B12A

RATINGS

(All limiting values are absolute)

Heater Voltage	(V)	6.3
Heater Current	(A)	0.3
Max. Final Anode (a3) voltage.	(V)	800
Min. Final Anode (a3) voltage.	(V)	400
Max. Second Anode (a2) voltage.	(V)	200
Max. First Anode (a1) voltage.	(V)	800
Max. Negative Grid Voltage.	(V)	160
Max. Grid Resistance.	(M Ω)	0.5
Min. x-plates sensitivity	(mm/V)	110/ Va3
Min. y-plates sensitivity	(mm/V)	175/ Va3
Max. Peak Voltage between x-plates	(V)	750
Max. Peak Voltage between y-plates	(V)	450
Max. Resistance between deflecting plates.	(M Ω)	5
Max. Screen Dissipation	mW/cm ²)	3

CONNECTIONSPinElectrode

1	h
2	g
3	k
4	a2
5	NC
6	D3 (y ¹ plate)
7	D4 (y ² plate)
8	a1, a3 and conductive coatings.
9	D1 (x1 plate)
10	D2 (x2 plate)
11	NC
12	h

DIMENSIONS

See drawing on page 4.

TYPICAL WORKING CONDITIONS

Third and First Anode Voltage	(V)	500
Second Anode Voltage	(V)	0 to 120
Negative Grid Voltage	(V)	50 to 100
Beam Current	(μ A)	0 to 50

MOUNTING POSITION

Any

NOTES

- The screen gives a green fluorescence and a green afterglow of medium persistence, between 10 and 100 milliseconds. A transparent conductive coating, which is connected to a3, is present between the glass and the phosphor. This makes possible application of the tube with a3 at high potential with respect to earth without the raster being distorted if the faceplate is touched.
- When the tube is viewed from the screen end, and is positioned so that pin 9 is uppermost, a positive voltage on D1 (pin 9) will deflect the spot to the right and a positive voltage on D4 (pin 7) will deflect the spot upwards.
- In no circumstances shall the grid be allowed to become positive with respect to the cathode.

CATHODE RAY TUBE, ELECTROSTATIC FOCUS
AND DEFLECTION
DG7 - 32

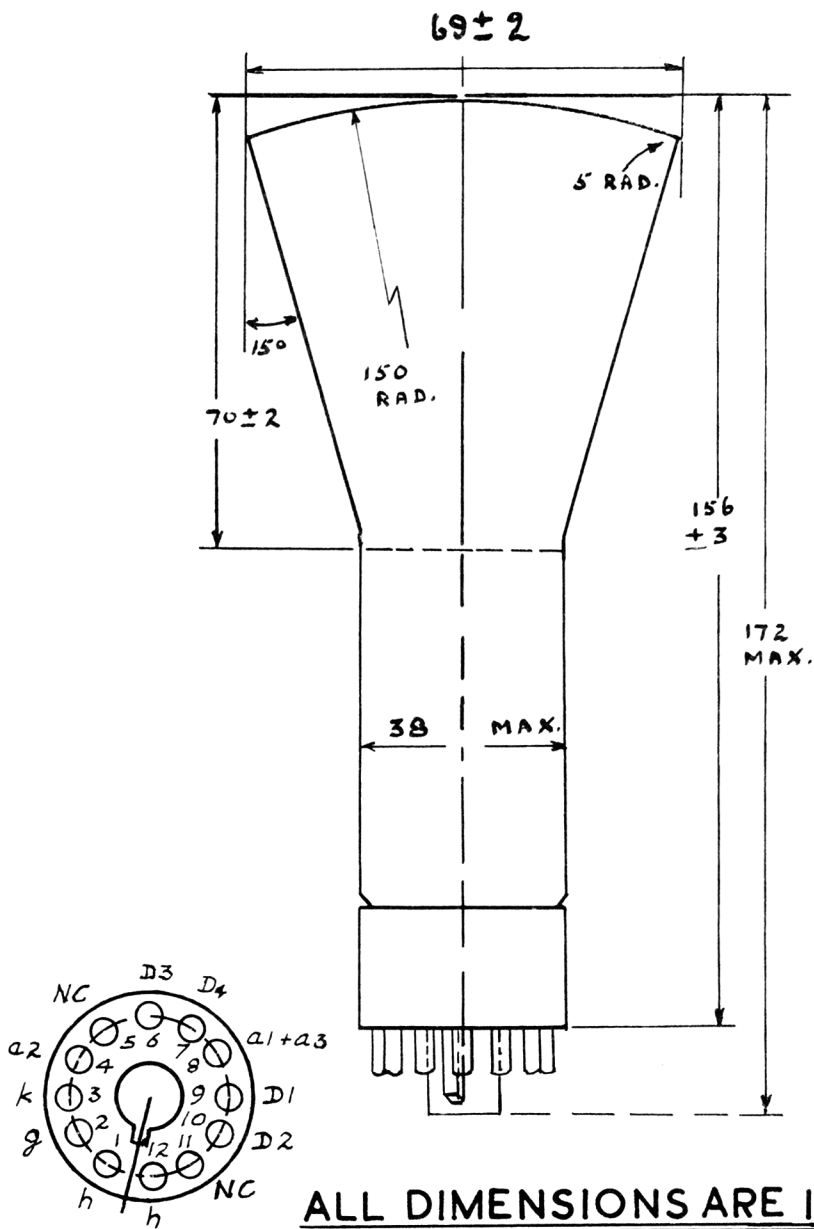
Ratings;	Ef V	Ecl Vdc	Eb1 Vdc	Eb2 Vdc	Eb3 Vdc	Rg Meg
Absolute Maximum:	6.3 \pm 10%	0	800	200	800	0.5
Minimum:	-	-160	400	-	400	
Test Conditions:	6.3	Adjust	500	Focus	500	
Fluorescent Colour:	Green (See Note A)		Persistence:		See Note A	

For miscellaneous requirements see paragraph 3.3 Inspection Instructions for Electron Tubes.

<u>Ref;</u>	<u>Test</u>	<u>Conditions</u>	<u>Min.</u>	<u>Max.</u>
3.1.	Qualification Approval.	Required for JAN. Marking		
4.9.2.1.	Dimensions.	Per Drawing		
4.5	Holding Period.	t = 28 days		
4.9.18.1.2.	Carton Drop.			
4.6.1.	Preheating.			
4.10.8.	Heater Current.		If: 270	330 mA d.c.
4.12.3.1.	Alignment, Base.	1D2; Pin No. 6		
4.12.3.7.	Angle between traces.		88.5	91.5 Degrees
4.12.9.	Grid cut-off Voltage.		Ecl: -100	-50 Vdc
4.12.13.	Grid Insulation.	Ecl = -50 Vdc	Icl: -	10 μ A d.c.
4.12.13.1.	Heater-Cathode Leakage.		Ecl: -	-1 Vdc
.....	Light Output and Focussing Voltage.	See Note 1	Eb2 0	120 Vdc
.....	Line Width.	Beam Current } = 0.5 μ A dc } Beam Current } = 10 μ A dc } See Note 2	Width: -	0.7 mm
			Width: -	1.1 mm
4.12.11.	Deflection Factor. 1D2		DF: 84.9 ¹⁰⁶	116 Vdc/In
4.12.11.	Deflection Factor. 3D4		DF: 59	73 Vdc/In
4.12.7.2.	Spot Position.	See Note 3		7.0 mm
.....	Useful Scan Area.		Dia: 61	- mm
.....	Trapezoidal Distortion.	Angle 1 (See Note 4)	87.5	92.5 Degrees
		Angle 2 (See Note 4)	175	185 Degrees
4.10.14	Capacitances :	D1 to all except D2	C: -	5 pF
		D2 to all except D1	C: -	5 pF
		D3 to all except D4	C: -	5 pF
		D4 to all except D3	C: -	5 pF
		(D1 and D2) to (D3 and D4)	C: -	1.5 0.5 pF
		Grid to Cathode	C: -	10 pF
4.9.11.	Pressure.	45 lbs/sq.in. absolute	-	-

/Notes

- Note 1 Adjust E_{c1} to give a light output of 0.007 candela from a focused raster of area about 40 mm by 40 mm. It is required that E_{c1} shall not be more positive than -1 volt and that the focusing value of E_{b2} shall be within the specified limits.
- Note 2 The beam current is the current recorded by a microammeter in series with the deflector plate D1 when this plate is 450 volts positive with respect to the other three deflector plates and these are connected to A3. The trace on the screen shall be a circle 50 mm in diameter, and the trace frequency shall be 50 traces per second. It is required that the width of the trace shall nowhere exceed the specified limits when I_{b3} has the specified values.
- Note 3 The test conditions shall be as in 4.12.7.2. except that the deflecting electrodes shall be connected to the third anode A3 and not to the second anode as specified in 4.12.7.2.
- Note 4 Using a raster size of at least 40 mm x 40 mm.
Angle 1 is the angle between adjacent sides.
Angle 2 is the angle between opposite sides.



ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION AD/CV2431

ISSUE 1 DATED 17.10.57

AMENDMENT NO. 1

PAGE 2. 4.12.11. Deflection Factor 1D2
Under column headings:- Min. Max.
Delete:- 91 116 Vdc/In
Substitute:- 84 106 " "

4.10.14 At lines 5 and 6, (D1 and D2) to (D3 and D4)
Under column heading:- Max.
Delete:- 0.5 pF
Substitute:- 1.5 pF max.

May, 1960
N.16902/D

Admiralty Surface Weapon
Establishment

MS
8/6