VALVE ELECTRONIC

CV2301

GENERAL POST OFFICE: E-IN-C (S)

Specification: GPO/CV 2301 Issue 1.	SECURITY	
Dated: April, 1954.	Specification	Valve
To be read in conjunction with K 1001	UNCLASSIFIED	UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE - Cathode Ray Tube

TYPE OF DEFLECTION - Electrostatic, suitable for symmetric or asymmetric deflection.

BULB - Internally coated with conductive coating.

SCREEN - TY7

PROTOTYPE - E1412/C/9

MARKING

See K 1001/4

BASE

B12D

RATING			Note
Heater Voltage	(V)	4	
Heater Current	(A)	1	
Max. Final Anode Voltage	(kV)	5	
"X" plate Sensitivity	(mm/V)	357/Va3	
"Y" plate Sensitivity	(mm/V)	780/Va3	
TYPICAL OPERATING CONDITIONS			
Final Anode Voltage	(kV)	3.0	
Second Anode Voltage	(V)	450	
First Anode Voltage	(kV)	2.0	

CONNECTIONS

Pin	Electrode
1	G
2	C
3	H
4	H
5	A1
6	A2
7	Int. Coating (note D)
8	Y_2
9	X_2
10	A_3
11	X_1
12	Y_1

DIMENSIONS

See Drawing on Page 4

NOTES

A. The tube shall be adequately free from microphony.

B. When viewing the screen with the tube positioned such that the base spigot is uppermost, a positive voltage applied to the terminal X_1 shall deflect the spot to the left and a positive voltage applied to the terminal Y_1 shall deflect the spot upwards.

C. The internal conductive coating shall be of such dimensions that it functions effectively but does not obscure the required useful screen area.

D. The tube will normally be operated with A_3 and conductive coating tied, and if a manufacturer so desires, these electrodes may be strapped internally, with the connection omitted from contact marked - "Internal conductive coating".

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TESTS

To be performed in addition to those applicable in K 1001

	Test Conditions					Test		Limits Min.	Limits Max.	No. Tested	Note
	Deflection Voltages shall be applied asymmetrically in all cases.										
a	See K 1001/5A.13.					CAPACITANCES (pF)					
						1. Each X or Y plate to all other electrodes.		-	25	5%	
						2. Grid to all other electrodes.		-	25	(10)	
						3. One X to one Y plate.			6		
b	Cathode 80V positive to heater					Ih-c	(μA)	-	100	100%	
	Vh	Va3	Va2	Va1	Vg						
c	4	0	0	0	0	Ih	(A)	0.8	1.3	100%	
d	4	3000	Adjust for optimum focus	2000	Adjust to cut-off	Vg	(V)	-40	-80	100%	
e	4	3000	ditto	2000	Adjust	(1) Vg	(V)	-1	-	100%	
	Adjust Vg to give a light output of 0.01 candelas on a closed raster.					(2) Change in value of Vg from test (d)	(V)	-	25	100%	
f	4	3000	ditto	2000	ditto						
	DEFLECTION - With a sine-wave time base of 10 Kc/s nom. and line length of 70 mm. in the X and Y directions successively, the line width to be measured at the centre of the trace.					(1) Line width	(mm)	-	0.8	100%	
	GRID - The grid will be pulsed positively from cut-off with amplitude equal to the value obtained in test e.(2), the nominal values of pulse duration and recurrence being 100 μ secs. and 100 c/s respectively.					(2) Va2	(V)	400	600	100%	
g	4	3000	ditto	2000	-80	GRID INSULATION					
	Recommended method - See K 1001/5A 3.2 Resistor = 10 megohms.					(1) Leakage current	(μA)	-	5	100%	
						(2) Increase in voltmeter reading.		-	100%	100%	

TESTS (Continued)

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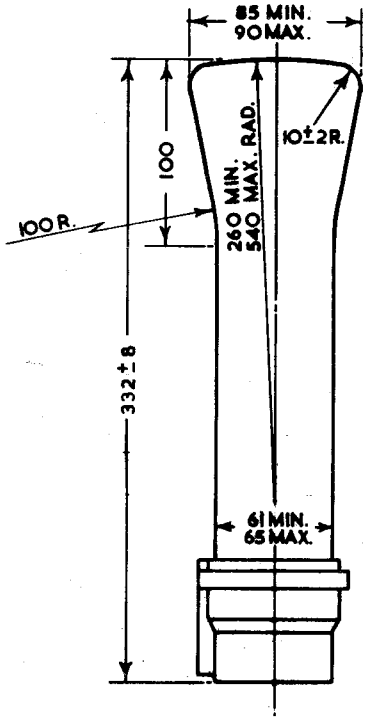
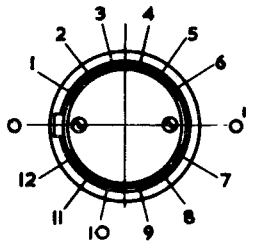
Test Conditions						Test	Limits Min.	Limits Max.	No. Tested	Note
h	Vh	Va3	Va2	Va1	Vg					
	4	3000	Adjust for optimum focus	2000	Any convenient value	DEFLECTION SENSITIVITIES				
						(1) X-plate (mm/V)	300/Va3	415/Va3	10%	
						(2) Y-plate (mm/V)	660/Va3	900/Va3	(10)	
j	4	3000	Adjust for optimum focus	2000	Any convenient value	Deviation of spot from centre of screen. (mm)	-	4	100%	
k	4	3000	ditto	2000	ditto	USEFUL SCREEN AREA				
	Deflections to cover stated circle, centred on centre of the screen.					Diameter (mm)	70	-	100%	
l	4	3000	Adjusted for optimum focus	2000	Any convenient value	TRAPEZOIDAL DISTORTIONS				
						(1) Angles between adjacent sides.	85°	95°	100%	
	A screen area of at least 70mm x 45mm to be scanned.					(2) Angles between opposite sides.	175°	185°	100%	
m	4	3000	ditto	2000	ditto	(1) Orientation of X axis of deflection relative to 0.0' on drawing.	80°	100°	100%	
						(2) Angles between X and Y axes of deflection.	85°	95°	100%	
n	To be performed in Test Set No. 331.					Afterglow (secs)	5	-	100%	



NOTES. 1. THE INTERNAL CONDUCTIVE COATING SHALL BE OF SUCH DIMENSIONS THAT IT FUNCTIONS EFFECTIVELY BUT DOES NOT OBSCURE THE REQUIRED USEFUL SCREEN AREA.

2. WHEN VIEWING THE SCREEN WITH THE TUBE POSITIONED SUCH THAT THE BASE SPIGOT IS UPPERMOST, A POSITIVE VOLTAGE APPLIED TO THE TERMINAL X_1 SHALL DEFLECT THE SPOT TO THE LEFT AND A POSITIVE VOLTAGE APPLIED TO THE TERMINAL Y_1 SHALL DEFLECT THE SPOT UPWARDS.

ALL DIMENSIONS IN MILLIMETRES



VIEW OF UNDERSIDE OF BASE