
Please note the following AMENDMENT to CV. 2191.

Test Conditions

Test Clause "M" - Orientation of deflection axes. (1)

Read "X axis" for "Y axis".

Castlewood House,
Room 503,
1st September, 1955

E.C. De Val
T.V.C. Office for P.O.E.D.

N.6700

SPECIFICATION CV.2191. ISSUE 1. dated January 1955

AMENDMENT NO.1

Page 3. Test "m"

Orientation of deflection axes

Item 1 should read "Orientation of X-axis
of deflection....."

(This may already have been altered by hand on some copies)

February 1957

T.V.C. Office

N51166

VALVE ELECTRONIC

CV2191

GENERAL POST OFFICE E-IN-C (S)

Specification: GPO/CV 2191/Issue 1.	SECURITY	
Dated: January 1955.	<u>Specification</u>	<u>Valve</u>
To be read in conjunction with K 1001	Unclassified	Unclassified

→ indicates a change

<u>TYPE OF VALVE:</u> Cathode Ray Tube with post-deflection accelerator <u>TYPE OF DEFLECTION:</u> Electrostatic, Symmetrical. <u>TYPE OF FOCUS:</u> Electrostatic <u>BULB:</u> Glass internally coated with conductive coating <u>SCREEN:</u> GGN. <u>PROTOTYPE:</u> DG 13-2		<u>MARKING</u> See K 1001																																	
		<u>BASE</u> B14A with 12 pins.																																	
		<u>SIDE CONTACT</u> CT 7																																	
<u>RATING</u>		Note	<u>CONNEXIONS</u>																																
Heater voltage	(V)	6.3	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Pin</u></th> <th style="text-align: left;"><u>Electrode</u></th> </tr> </thead> <tbody> <tr><td>Side contact</td><td>A4</td></tr> <tr><td>1</td><td>H</td></tr> <tr><td>2</td><td>C</td></tr> <tr><td>3</td><td>Grid</td></tr> <tr><td>4</td><td>Internal connexion</td></tr> <tr><td>5</td><td>A2</td></tr> <tr><td>6</td><td>No pin</td></tr> <tr><td>7</td><td>Y1</td></tr> <tr><td>8</td><td>Y2</td></tr> <tr><td>9</td><td>A1, A3</td></tr> <tr><td>10</td><td>X2</td></tr> <tr><td>11</td><td>X1</td></tr> <tr><td>12</td><td>Internal connexion</td></tr> <tr><td>13</td><td>No pin</td></tr> <tr><td>14</td><td>H</td></tr> </tbody> </table>	<u>Pin</u>	<u>Electrode</u>	Side contact	A4	1	H	2	C	3	Grid	4	Internal connexion	5	A2	6	No pin	7	Y1	8	Y2	9	A1, A3	10	X2	11	X1	12	Internal connexion	13	No pin	14	H
<u>Pin</u>	<u>Electrode</u>																																		
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Heater current	(A)	0.3																																	
Max. post deflecting voltage	(kV)	5.0																																	
Max. A1, A3 voltage	(kV)	2.5																																	
Max. A2 voltage	(kV)	1.0																																	
Max. A1, A3 dissipation	(W)	4.0																																	
Max. voltage between X plates	(V)	450																																	
Max. voltage between Y plates	(V)	450																																	
Max. screen dissipation	(mW/cm ²)	3.0																																	
Max. resistance between deflecting plates & A3	(MΩ)	5.0																																	
Max. grid resistance	(MΩ)	1.5																																	
<u>TYPICAL OPERATING CONDITIONS</u>			<u>DIMENSIONS</u> See drawing on page 4																																
	<u>Without Acceleration</u>	<u>With Acceleration</u>																																	
Va4	2.0	4.0 (kV)																																	
Va1, Va3	2.0	2.0 (kV)																																	
X plate sensitivity	0.40	0.30 (mm/V)																																	
Y plate sensitivity	0.45	0.35 (mm/V)																																	

TESTS

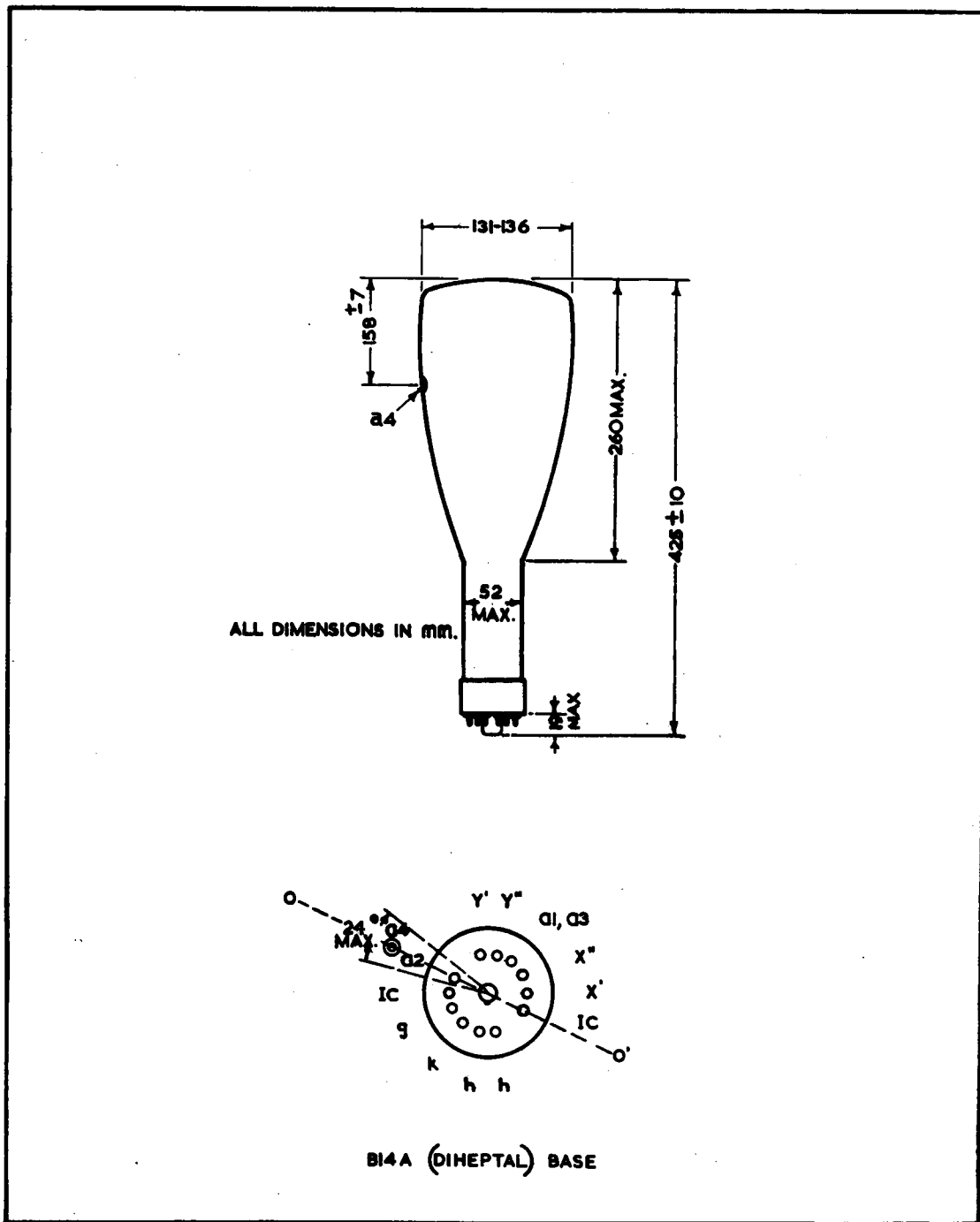
To be performed in addition to those applicable in K1001

Test Conditions		Test	Limits		No. Tested
			Min.	Max.	
Deflection voltages shall be applied symmetrically in all cases.					
a	See K1001/5A.13	<u>CAPACITANCES</u> (pF) 1. Each X plate to all other electrodes except other X plate which shall be earthed. 2. Each Y plate to all other electrodes except other Y plate which shall be earthed. 3. Grid to all other electrodes 4. Both X plates to both Y plates	-	5.5	5% (5)
			-	6.5	5% (5)
			-	8.0	5% (5)
			-	0.25	5% (5)
b	$V_h = 6.3V$	I_h (A)	0.275	0.325	100%
c	Cathode 100V positive to heater	Heater-cathode current (μA)	-	100	100%
For all the following tests $V_{a1}=V_{a3}=V_{a4}=2.0KV$ & $V_h=6.3V$.					
d	No deflection voltages applied. V_{a2} adjusted for optimum focus. Adjust V_g for cut off.	$-V_g$ (V) Value to be noted.	47	96	100%
e	As in test (d) spot just visible	Deviation of spot from centre of screen. (mm)	-	8	100%
f	1. Circular trace at 50 c/s diameter 50 mm. V_{a2} adjusted for optimum focus. V_g adjusted to give $I_{a4}=0.5\mu A$.	1. Line width (mm)	-	0.5	5% (5)
	2. Repeat with $I_{a4}=10\mu A$ & measure focus volts V_{a2}	2. V_{a2} (V)	400	750	100%
	3. Note max & min values of V_{a2} at which focus occurs on different points on the circle. Their difference = ΔV_{a2} .	3. <u>Astigmatism</u> ΔV_{a2} (V)	-	40	100%

TESTS (Continued)

Test Conditions	Test	Limits		No.
		Min.	Max.	Tested
g With a raster size 100X100 mms, $V_g = 0$, V_{a2} as in test (d)	Total current $I_{a1} + I_{a3} + I_{a4}$ (μA)	1450	-	100%
h Set raster to 100x100 mms, adjust V_g to give $I_{a4} = 10\mu A$ & V_{a2} for optimum focus. Increase V_{a4} to 4KV.	<u>Post deflection accelerator.</u> Raster size in both X & Y directions (mm)	71	87	100%
j Recommended method - See K1001/5A 3.2 $V_g = -100V$ Resistor = 5 megohms.	<u>Grid insulation</u> 1. Leakage current (μA) 2. Increase in voltmeter reading	-	20	100%
k	<u>Deflection sensitivities</u> 1. X-plate (mm/V) 2. Y-plate (mm/V)	740/ V_{a3} 840/ V_{a3}	860/ V_{a3} 960/ V_{a3}	5% (5) 5% (5)
l Deflections to cover stated circle centred on centre of the screen	<u>Useful screen area</u> Diameter (mm)	124	-	100%
m	<u>Orientation of deflection axes</u> 1. Orientation of X-axis of deflection relative to OO' on drawing. 2. Angle between X & Y axes of deflection.	-	15° 88° 92°	100% 100%
n With $V_h = 6.3v$ $V_{a1} = V_{a3} = 2KV$ V_{a2} adjusted for optimum focus, & V_g adjusted to give $I_{a1} + I_{a3}$ of $100\mu A$. Raster size 100 x 100 mms. Overload V_{a4} to 5.5 KV.	There shall be no breakdown	-	-	100%
p Conditions as in test (n) but with $V_{a4} = 4KV$.	<u>Stray emission</u> No stray rays shall be detected	-	-	100%

CV 2191



CV 2191/1/4