VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

CV6095

Specification AD/CV 6095 Issue 1 Dated 14.11.61. To be read in conjunction with K1001	SECURITY Specification: Unclassified Valve: Unclassified

TYPE OF VALVE: Cathode-ray Tube
TYPE OF DEFLECTION: Electrostatic
TYPE OF FOCUS: Electrostatic
BULB: Glass
SCREEN: GG5-6
PROTOTYPE: 3AFP31, DH7-91

MARKING

See K1001/4
Add:- 3AFP31 or DH7-91 and Serial No.

BASE

See BS.448 B9G.

RATING

(All limiting values are absolute)

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.3 ~~0.55~~	
Max. 1st and 3rd Anode Voltage	(kV)	1.5	
Min. 1st and 3rd Anode Voltage	(V)	700	
Max. 2nd Anode Voltage	(V)	500	
Max. Negative Grid Voltage	(V)	200	
Min. Negative Grid Voltage	(V)	1.0	
Typical Operating Conditions			
1st and 3rd Anode Voltage	(kV)	1.0	
2nd Anode Voltage	(V)	210 to 320	
Negative Grid Voltage for Visual Cut-off.	(V)	28 to 65	
Focus Electrode Current	(-/uA)	50	A
x plate sensitivity	(mm/V)	510 / V_{a3}	
y plate sensitivity	(mm/V)	867.5 / V_{a3}	

CONNECTIONS

PIN	ELECTRODE	
1	Heater, Cathode	h, k.
2	Deflection plate	y1
3	Deflection plate	y2
4	First Anode + Third Anode	$a_1 + a_3$
5	Deflection Plate	x_1
6	Deflection Plate	x_2
7	Second Anode	a_2
8	Grid	g
9	Heater	h

DIMENSIONS

See drawing on Page 5.

MOUNTING POSITION

Any

Notes

A. With V_{a2} set for focus and V_g = -1.0V.

B. If $V_{a1} + V_{a3}$ is altered, the grid cut-off voltage, the focus voltage and the sensitivity will change in the same ratio.

C. The Joint Services Catalogue No. is 5960-99-037-2537.

TESTS

To be performed in addition to those applicable in K1001.
Tests to be performed in the specified order unless otherwise agreed with the Inspecting Authority.

Test conditions - unless otherwise stated:-

V_h (V)	$V_{a1} + V_{a3}$ (kV)	V_{a2} (V)	V_g (V)
6.3	1.0	Adjust to focus	Adjust

	Test	Test Conditions	AQL	Insp. Level	Symbol	Limits Min.	Limits Max.	Unit	
a	Capacitance	See K1001/5.A.13.	6.5	IB	Cg - all	~~5.8~~ 6.7	~~7.4~~ 7.7	pF	Amdt 1
					Ck - all 2.1	~~2.5~~	~~3.5~~ 3.1	pF	
					Cx_1 - x_2	1.0	2.5	pF	
					Cy_1 - y	1.7	2.7	pF	
					Cx_1 - all (x_2 earthed)	4.4	7.2	pF	
					Cx_2 - all (x_1 earthed)	4.4	7.2	pF	
					Cy_1 - all (y_2 earthed)	2.9	4.1	pF	
					Cy_2 - all (y_1 earthed)	~~2.9~~ 3.3	~~4.1~~ 4.5	pF	Amdt 1
					$Cx_1 + x_2$ to $y_1 + y_2$	-	0.5	pF	
					Cg + k, h to $x_1 + x_2$	-	1.5	pF	
					Cg + k, h to $y_1 + y_2$	-	1.5	pF	
b	Heater Current	No voltages except V_h		100%	I_h	~~0.5~~ 0.28	~~0.6~~ 0.32	A	Amdt 1
c	Cold Insulation	No voltages. Apply 300 volts between x_1, x_2, y_1, y_2 pins and a3.		100%		20	-	Meg-ohms	
d	(i) Useful Screen Area	Light Intensity = 0.5 ft. Lamberts approx. Note 1.		100%	Diam.	55	-	mm	
	(ii) Blemishes (a) Within a 40 mm diam. from centre of face-plate.	Number allowed from 0.25 to 0.6 mm diam. with a min. separation of 30 mm between blemishes.		100%			2		
	(b) Within a 71 mm dia. from centre of face plate.	Number allowed from 0.25 mm to 0.85 mm 0.75 mm to 1.1 mm. with a min. separation of 40 mm between blemishes.					3 1		

TESTS (Contd.)

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	Test	Test Conditions	AQL	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
e	(i) Electrical Leakage	$V_{a1} + V_{a3}$ = 1.8kV V_g = Cut-off. Period of test = 20 seconds.		100%		There must be no persistent flashover and no stray light visible on the screen when the neck is tapped during the period of this test.		
	(ii) Max. Rating Performance	$V_{a1} + V_{a3}$ = 1.8kV V_g = -1V. Rastor = covering the whole screen		100%		There must be no persistent flashover when the neck is tapped and no gas cross should be visible during the period of this test.		
f	Grid Insulation	$V_{a1} + V_{a3}$ = 1.8kV V_g = -250V Raster = whole screen.		100%	$-I_g$	-	25	µA
g	Grid Cut-off Voltage	V_g = adjust to cut-off See K1001/5.A.10		100%	$-V_g$	28	65	V
h	Deviation of Spot from Centre of Screen	Connect x and y plates to a_3		100%		-	6.0	mm
j	Deflection Sensitivities (i) x plate		6.5	IB		$\frac{410}{V_{a3}}$	$\frac{610}{V_{a3}}$	mm/V
	(ii) y plate					$\frac{685}{V_{a3}}$	$\frac{1050}{V_{a3}}$	mm/V
k	Raster Distortion	V_g = as in "l" below. Note 2. Adjust raster to fall within frame formed by 41.4 x 41.4 mm and 38.6 x 38.6 mm squares. Reject if such adjustment is impossible.		100%				
l	Light Intensity Grid/Cathode Voltage	V_g = Adjust. See K1001/5.A.8. Note 3.		100%	$-V_g$	1	-	V
m	Line Shift	V_g = Adjust from Cut-off to 0.8 ft. Lamberts. Note 4.		100%		-	3	mm

TESTS (Contd.)

	Test	Test Conditions	AQL	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
n	(i) Line Width	V_{a2} = Adjust to best focus on 10 mm diam. circle with 10V drive. Increase circle diam. to 50 mm. Measure line width without further alteration of V_{a2} from original condition. Note 5.		100%		-	1	mm
	(ii) V_{a2} (for focus)	Set up as (i) above and note V_{a2}.		100%	V_{a2}	210	320	V
p	Focus Current	V_g = -1V V_{a2} = Adjust to focus using any convenient raster.		100%		-	70	μA
q	Angle between x and y axes of deflection	V_g = Adjust for low light intensity.		100%		88	92	Degrees

NOTES

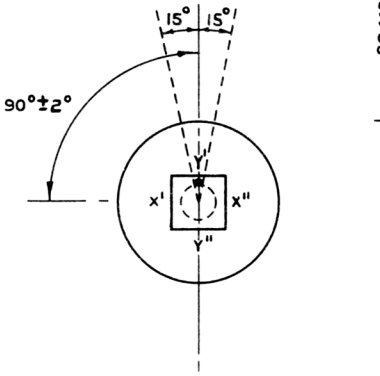
1. The screen shall be substantially free from blemishes and must be of uniform light intensity over a circular area of 55.0 mm diam. centred on the centre of the screen. Beyond this area, neck and plate cut-off can be accepted.

2. Apply any convenient raster.

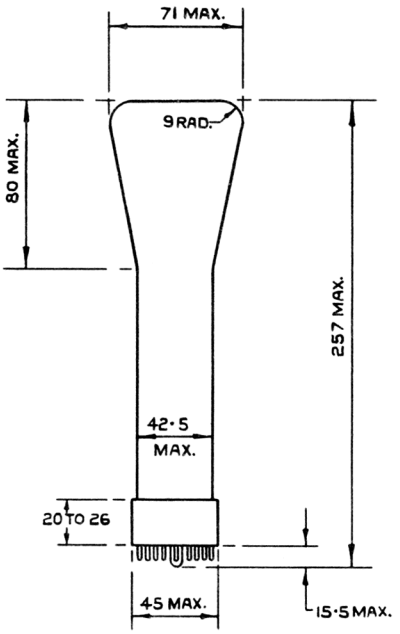
3. Apply linear symmetric scans on x and y plates. Adjust to give a focused pattern of approximately 100 lines, 55 mm square. A light intensity of 0.8 ft. Lamberts with a photo-cell placed centrally over the raster is to be used.

4. Apply any convenient raster with x_2 and y_2 earthed. Measure line wander in x and y direction. Repeat with x_1 and y_1 plates earthed. A raster 55 mm x 55 mm is to be used.

5. With x and y scans applied symmetrically the line width shall be measured where the x and y axes cross the circle.



ORIENTATION OF AXES OF DEFLECTION
AS VIEWED FROM SCREEN END



ALL DIMENSIONS IN mm

ELECTRONIC VALVE SPECIFICATIONS
SPECIFICATION AD/CV.6095 ISSUE 1., DATED 14.11.61
AMENDMENT NO.1

(i) Page 1, RATING - HEATER CURRENT

Delete "0.55" and substitute "0.3"

(ii) Page 2 Test Clause (a), Capacitance

Against the stated Capacitance amend the figures quoted in the columns headed "Limits", "Min" and "Max." as follows:-

Cg-all Delete "5.8" and "7.4" and substitute "6.1" and "7.7" respectively.

Ck-all Delete "2.5" and "3.5" and substitute "2.1" and "3.1" respectively.

Cy2-all (y_1 earthed) Delete "2.9" and 4.1" and substitute "3.3" and "4.5" respectively.

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(iii) Page 2 Test Clause (b) Heater Current

In the columns headed "Limits" "Min." and "Max." delete "0.5" and "0.6" and substitute "0.28" and "0.32" respectively.

T.V.C. for A.S.W.E.

November, 1964

AAS
12/1/65