MINISTRY OF SUPPLY - DLRD/RRE

VALVE ELECTRONIC **CV3946**

Specification MOS/CV3946
Issue 1 Dated 12th May, 1959
To be read in conjunction with K1006

SECURITY	
Specification	Valve
UNCLASSIFIED	UNCLASSIFIED

Indicates a change ←

TYPE OF VALVE - Cathode Ray Tube
DEFLECTION - Electrostatic
FOCUS - Electrostatic
CATHODE - Indirectly Heated
PROTOTYPE - 3WP1
SCREEN - GG5

MARKING

See K1001/4
Add 3WP1

BASE

BS448/B12A

RATINGS AND CHARACTERISTICS

All limiting values are absolute

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	~~0.3~~ 0.6	
Max Anode 1 + 3 Voltage	(KV)	2.75	
Min Anode 1 + 3 Voltage	(KV)	1.0	
Max Negative Grid Voltage	(V)	200	
Max Heater-cathode Voltage	(V)	±180	
Max Altitude	(ft)	30,000	

CAPACITANCE (pF)

		min	max
Cathode /All	Ck/R	-	5.7
Grid 1/All	Cg1/R	-	8.7
X1/X2	Cx1/x2(R)	-	3.3
Y1/Y2	Cy1/y2(R)	-	2.2
X1/All except X2	Cx1/R(x2)	-	7.2
X2/All except X1	Cx2/R(x1)	-	7.2
Y1/All except Y2	Cy1/R(y2)	-	4.8
Y2/All except Y1	Cy2/R(y1)	-	4.8

CONNECTIONS

Pin	Electrode	
1	Heater	h
2	Grid	g
3	Cathode	k
4	Anode 1	a1
5	Internally Connected	IC
6	X Plate 1	X1
7	X Plate 2	X2
8	Anode 1 + 3	a1 + a3
9	Y Plate 2	Y2
10	Y Plate 1	Y1
11	Internally Connected	IC
12	Heater	h

DIMENSIONS

See drawing on page 3.

NOTES

MIL-E-1/267B
22 October 1957
SUPERSEDING
MIL-E-1/267A
20 November 1953

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INDIVIDUAL MILITARY SPECIFICATION SHEET

ELECTRON TUBE, CATHODE RAY, ELECTROSTATIC DEFLECTION AND FOCUS

JAN-3WP1

This specification sheet forms a part of the latest issue of Military Specification MIL-E-1.

Ratings:	Ef	Ecl	ed	Ebl	Eb2	Rg	Zd	Ehk	Alt.
Absolute	V	Vdc	vdc	Vdc	Vdc	Meg	Meg	Vdc	ft.
Maximum	6.3±10%	0	550	1100	2750	1.5	1.0	±180	30,000
Minimum	---	-200	---	---	1000	---	---	---	

Test Cond.: 6.3 Adjust Focus 1500

Fluorescent Color: Per phosphor **Persistence: Per phosphor

For miscellaneous requirements, see Par. 3.3, Inspection Instructions for Electron Tubes.

Ref.	Test	Conditions		Min.	Max.
3.1	Qualification Approval:	Required for JAN Marking			
4.9.2.1	Dimensions:				
4.6.1	Preheating:				
4.5	Holding Period:				
4.9.18.1.2	Container Drop:	(i) Package Group 4; Carton Size P			
4.10.8	*Heater Current:		If:	540	660 mA
4.12.1.1	*Anode No. 1 Current:	Ecl=0	Ibl:	-15	10 uAdc
4.12.1.1	*Cathode Current:	Light=7 ft.L.	Ik:	---	1000 uAdc
4.12.1.2	Voltage Breakdown:				
4.12.1.3	Voltage Breakdown:				
4.12.2.1	† Gas "Cross":	Light=~~75~~ 7.0 ft.L.			
4.9.12.1	**Low-pressure Voltage Breakdown:	Note 4			
4.12.3.1	*Base Alinement:	+1D2, Pin No. 3			
4.12.3.7	*Angle Between Traces:			89	91 Degrees
4.12.3.4	**Alinement, Neck and Bulb:		Diam.:	---	1.63 Inches
4.12.3.5	*Alinement, Base and Neck:				
4.12.4.1	**Cathode Illumination:				
4.12.4.2	*Stray Emission:	Eb2=2750Vdc			
4.12.5.1	Blemishes:				
4.12.5.2	† Light Output:		Light:	7	ft.L.
4.12.5.3	*Modulation:	Light=7 ft.L.	ΔEc:	---	50 Vdc

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Ref.	Test	Conditions		Min.	Max.
4.12.6.1	*Line Width "A":	Light=7 ft.L	Width:	---	.65 mm
4.12.6.1	*Line Width "B":	Light=7 ft.L.	Width:	---	.75 mm
4.12.7.2	Spot Position:			---	10 mm
4.12.7.3	Spot Displacement:		Displ.:	---	7 mm
4.12.9	Grid Cutoff Voltage:		Eco:	-45	-75 Vdc
4.12.10.2	*Focusing Voltage:		Ebl:	247	465 Vdc
4.12.11	*Deflection Factor:	1D2	DF:	62	76 Vdc/in.
4.12.11	*Deflection Factor:	3D4	DF:	43	52 Vdc/in.
4.12.12	**Deflection Factor Uniformity:			---	2%
4.12.13.1	*Heater-cathode Leakage:				
4.12.13.2	Grid No. 1 Leakage:				
4.12.13.5	Anode No. 2 Leakage:				
4.10.14	**Capacitances:	g1 to all	C:	---	8.7 uuf
		k to all	C:	---	5.7 uuf
		D1 to D2	C:	---	3.3 uuf
		D3 to D4	C:	---	2.0 uuf
		D1 to all except D2	C:	---	7.2 uuf
		D2 to all except D1	C:	---	7.2 uuf
		D3 to all except D4	C:	---	4.8 uuf
		D4 to all except D3	C:	---	4.8 uuf
4.9.11	**Pressure:				
4.9.19.8	**Vibration:		Width:	---	1 mm
4.11.1.2	Life Test:	Group D; Light=7 ft.L Eb2=2750Vdc	t:	500	--- hrs
4.11.4	Life Test End Point:	Light=5½ ft.L.			
	Line Width "A"		Width:	---	.65 mm
	Line Width "B"		Width:	---	.75 mm
	Modulation		Δ Ec:	---	50 Vdc
4.9.5	Torque:				
- - -	Useful Scan:	Focused Trace; Note 2			
		1D2 Scan		2.50	--- in.
		3D4 Scan		2.25	--- in.
- - -	Pattern Distortion:	Note 3			

Note 1: The construction of this tube shall be of the "zero Ibl" type and must be approved by a Service Laboratory prior to shipment of tubes. The following information and materials are to be forwarded with the four samples when application for qualification approval is made:
(1) The gun drawing with significant dimensions
(2) A sample of the gun to be used in manufacture of the tubes

Note 2: 1D2 Scan ± 1.25 in. minimum from tube face center. 3D4 Scan ±1.125 in. minimum from tube face center.

Note 3: With a raster pattern the size of which is adjusted so that the widest points of the pattern just touch the sides of a square, 2.050 inches on a side, no point on these pattern sides will lie within an inscribed square, 1.950 inches on a side.

Note 4: The test is made with maximum voltage applied to the base pins and/or deflection electrodes only and pressure of 30,000 feet (225 mmHg). Connections should be made in a manner that does not degrade the tube's electrical voltage breakdown characteristics. Satisfactory operation is the absence of arc-over and corona.

Note 5: Reference specification shall be of the issue in effect on date of invitation for bid.

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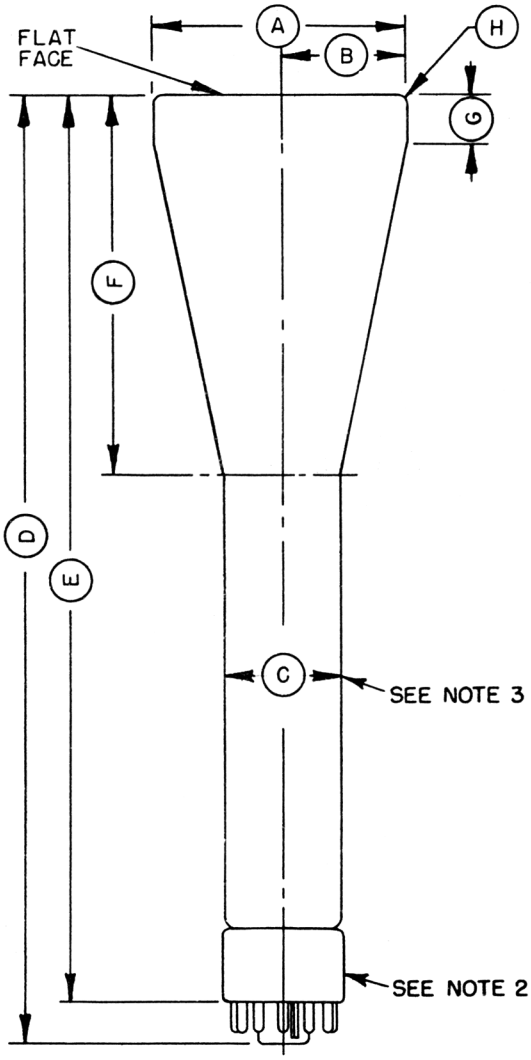

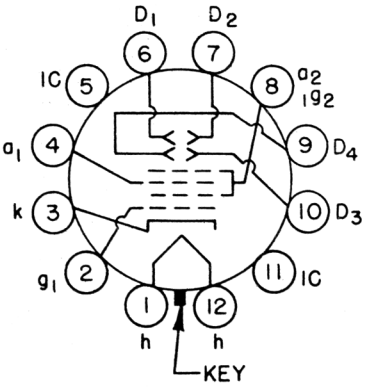

REF	DIMENSION
A	$3 \pm \frac{1}{16}$
B	NOTE 1
C	$1\frac{3}{8} \pm \frac{1}{16}$
D	$11\frac{1}{2} \pm \frac{1}{8}$
E	10.97
F	$4\frac{9}{16} \pm \frac{1}{4}$
G	$\frac{9}{16}$
H	$\frac{1}{16}$ R

Note 1: The minimum useful screen radius shall not be less than 1-3/8 inches.
Note 2; The base shall be a small shell duodecal 12- pin (B12-43).
Note 3: The bulb shall be a J24R type.
Note 4: All dimensions are in inches.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOS/CV3946

ISSUE 1 DATED 12th MAY 1959

AMENDMENT No. 1

Page A Under heading RATINGS AND CHARACTERISTICS

Amend: Heater current (A) 0.3
to read Heater current (A) 0.6

Page 1 Against Ref: 4.12.2.1 under Column heading "Conditions"

Amend: Light = 75 ft.L
to read Light = 7.0 ft.L

R.R.E. Malvern

February, 1960
N.16341D