VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

CV2498

Specification AD/CV2498 Issue No. 1 dated 24.3.59 To be read in conjunction with K.1001	SECURITY Specification: Unclassified Valve: Unclassified

TYPE OF VALVE:- Cathode Ray Tube

TYPE OF DEFLECTION:- Electrostatic, symmetrical or asymmetrical

TYPE OF FOCUS:- Electrostatic

BULB:- Glass internally coated with conductive coating

SCREEN:- BY8

PROTOTYPE:- DP16-22

MARKING

See K.1001/4

BASE

B14A

See B.S.448 : 1953

RATING

Heater Voltage	(V)	6.3
Heater Current	(A)	0.3
Max. Va1	(kV)	2.5
Max. Va2	(kV)	1.1
Max. Va3	(kV)	6.0
Sensitivity, x plates	(mm/V)	925/Va3
Sensitivity, y plates	(mm/V)	1000/Va3

TYPICAL OPERATING CONDITIONS

Va1	(kV)	1.8
Va2	(kV)	0.65
Va3	(kV)	5.0

CONNECTIONS

Pin	Electrode
1	h
2	k
3	g
4	a2
5	No connection
6	Internal coating, m
7	y1
8	y2
9	a3
10	x2
11	x1
12	No connection
13	a1
14	h

DIMENSIONS

See drawing on page 5.

NOTES

A. For optimum focus quality, the potential between the internal conductive coating and a3 must not exceed 10 volts.

TESTS

To be performed in addition to those applicable in K.1001

Clause	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested
a	See K.1001/5A.13	Capacitances (pF)			2%
		1. Each x plate to all other electrodes.	-	20	
		2. Each y plate to all other electrodes.	-	16	
		3. Grid to all other electrodes.	-	10	
		4. Each x plate to each y plate.	-	1.5	
		5. Cathode to all other electrodes.	-	10	
FOR ALL TESTS GIVEN BELOW, Vh = 6.3V					
b		Ih (A)	0.28	0.66	100%
c	Cathode 100 volts positive to heater	Heater - Cathode Current (μA)	-	100	100%
FOR ALL TESTS GIVEN BELOW, Va1 = 1.8 kV; Va3 = 5.0 kV; Vm = 5.0 kV, except in test 'q'. Asymmetrical x and y deflection voltages.					
d	With a focused raster of size 100 mm x 30 mm adjust Vg for a screen brightness of 10 foot-lamberts when measured through a Wratten 15 colour filter.	1. - Vg (V)	1	-	100%
		2. Ik (μA)		200	100%
		Note value of -Vg for use in tests (f) and (g).			
e	As in clause (d) Excitation time = 60 seconds.	Persistence Time to decay to 0.05 foot-lamberts (Secs.)	10	30	5%
f	With an elliptical scan of nominal dimensions 100 mm x 30 mm, and a scan frequency of 50 scans/second, adjust Va2 for overall optimum focus and set -Vg at value noted in test (d).	1. Line width (mm)		1.0	100%
		2. Va2 for focus (V)	600	700	100%

TESTS (Contd.)

CV2498

Clause	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested
g	Va2 as in (f) Adjust Vg for cut-off. See K.1001/5A.10.	1. -Vg for cut-off (V)	25	70	100%
		2. Increase in value of -Vg from value noted in test (d)(V)	-	30	100%
		3. Over the range of -Vg from the cut-off value to the value noted in test (d) the beam current shall increase continuously.			100%
h	1. Vg = -80 or 2. As in K.1001/5A.3.2; with Resistor = 5 megohms.	Grid Insulation 1. Leakage Current (μA)	-	16	100%
		2. Increase in voltmeter reading.	-	100%	
j		Deflection Sensitivities			10%
		1. x plates (mm/V)	$\frac{850}{Va3}$	$\frac{1000}{Va3}$	
		2. y plates (mm/V)	$\frac{900}{Va3}$	$\frac{1100}{Va3}$	
k	See K.1001/5A.11.1	Deviation of spot from centre of screen. (mm)	-	7.5	100%
l		Orientation of Deflection Axes			
		1. Orientation of x axis of deflection relative to line OO' on drawing.	-2°	+2°	100%
		2. Angle between x and y axes of deflection.	88°	92°	100%

CV2498

TESTS (Contd.)

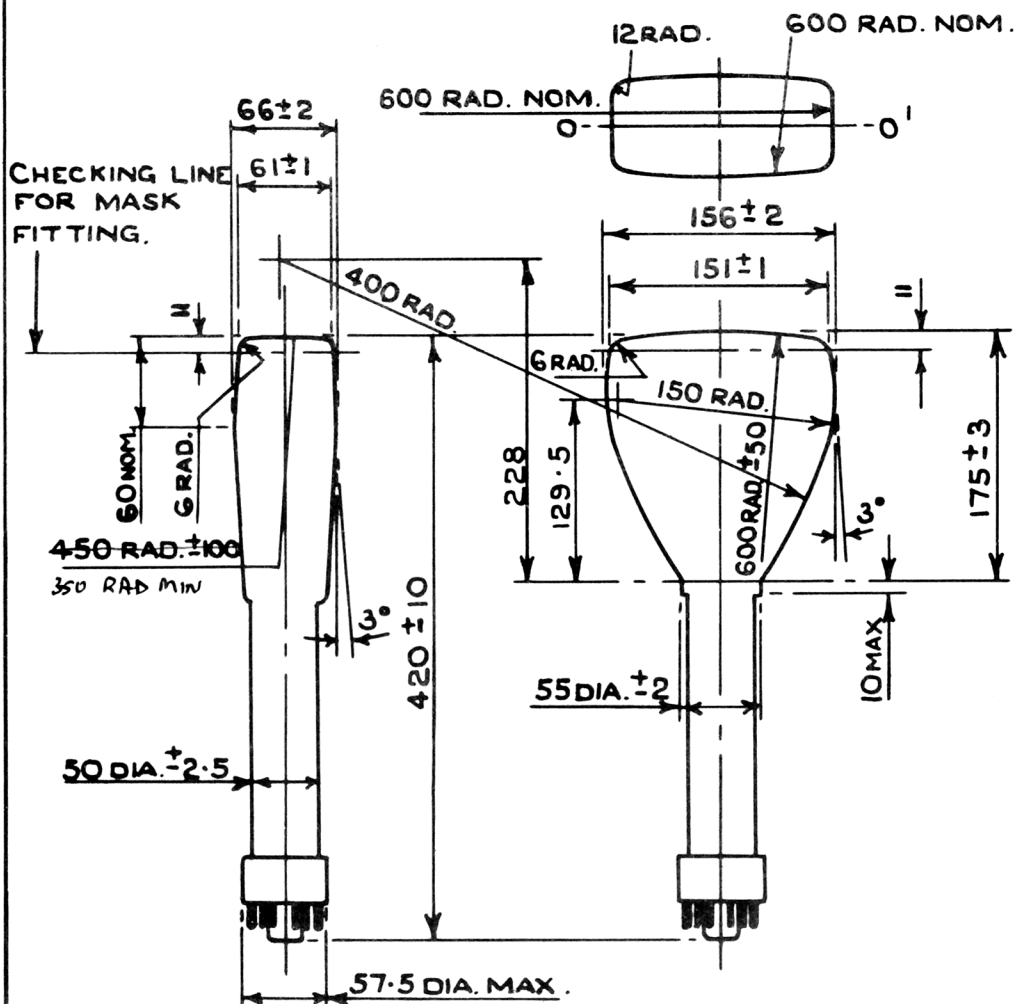
Clause	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested
m	A screen area of at least 100 mm x 30 mm to be scanned.	Trapezoidal Distortions			10%
		1. Angle between adjacent sides.	87°	93°	
		2. Angle between opposite sides.	177°	183°	
n	Screen to be scanned with an optimum focused raster of convenient light intensity.	Useful Screen Area			100%
		x side of raster (mm)	125		
		y side of raster (mm)	35		
o	Useful screen area to be scanned with a defocused raster of convenient light intensity.	Blemishes (See Note 1)			100%
		0.25 to 0.6 mm dia; (No.)		10	
		0.6 to 1.0 mm dia; (No.)		5	
		greater than 1.0 mm dia; (No.)		0	
p	See K.1001/11.5.	Vibration			T.A.
q	With conditions as in clause 'f' above, but with the internal conductive coating, m, first at 10 volts and then at -10 volts relative to a3.	Line Width (mm)		1.0	T.A.

NOTE

1. If two or more blemishes, including bubbles and 'dead' spots, are separated by a distance not greater than the maximum dimension of the largest blemish in a group, then the group of blemishes shall be considered as one blemish of dimension equal to the maximum overall dimension of the group.

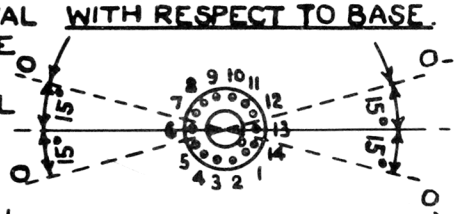
CV2498

ALL DIMENSIONS IN MILLIMETERS.



LOOKING AT THE SCREEN WITH THE OO' LINE HORIZONTAL AND PINS 9 & 10 OF THE BASE UPPER-MOST, A POSITIVE VOLTAGE APPLIED TO TERMINAL X1 SHALL DEFLECT THE SPOT TO THE LEFT & A POSITIVE VOLTAGE APPLIED TO THE TERMINAL Y1 SHALL DEFLECT THE SPOT UPWARDS.

LIMITING POSITIONS OF ORIENTATION OF OO' WITH RESPECT TO BASE.



ELECTRONIC VALVE SPECIFICATION

SPECIFICATION AD/CV2498, ISSUE 1 DATED 24.3. 59

AMENDMENT NO. 1

Page 5 Amend radius of screen curvature on the "Y" axis (short axis) to read 350 RAD. MIN. instead of 450 RAD. ± 100.

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

June, 1967

JAMS 6/6.8