MINISTRY OF SUPPLY

CATHODE RAY TUBE

CV1397 (ACR21)

Specification MOS/CV1397/Issue 1. Dated 28.1.46. To be read in conjunction with K1003.	SECURITY Specification Restricted	C.R.T. Restricted

→ Indicates a change

TYPE OF DEFLECTION:- Electrostatic symmetrical deflection.

BULB:- Internally coated with conductive coating.

SCREEN:- Afterglow BYL.

MARKING

See K1001/4.

RATING			Note
Heater voltage	(V)	4.0	
Heater current	(A)	1.0	
Max. final anode voltage	(kV)	6.0	
Max. first anode voltage	(kV)	2.0	
Desirable spot size	(mm)	1.0	
X plate sensitivity	(mm/V)	$\frac{720}{V_{A3}}$	
Y plate sensitivity	(mm/V)	$\frac{880}{V_{A3}}$	
Max. beam current	(μA)	50	
TYPICAL OPERATING CONDITIONS			
Final anode voltage	(kV)	5.0	
Second anode voltage	(V)	870	
First anode voltage	(kV)	2.0	

BASE
12 contact key

DIMENSIONS AND CONNECTIONS

See Drawing on Page 4.

NOTE

A:- The focussing system shall be of the three electrode type. The construction shall be such that there is no perceptible change of brightness with adjustment of focussing voltage.

B:- The tube shall be adequately free from microphony.

TESTS

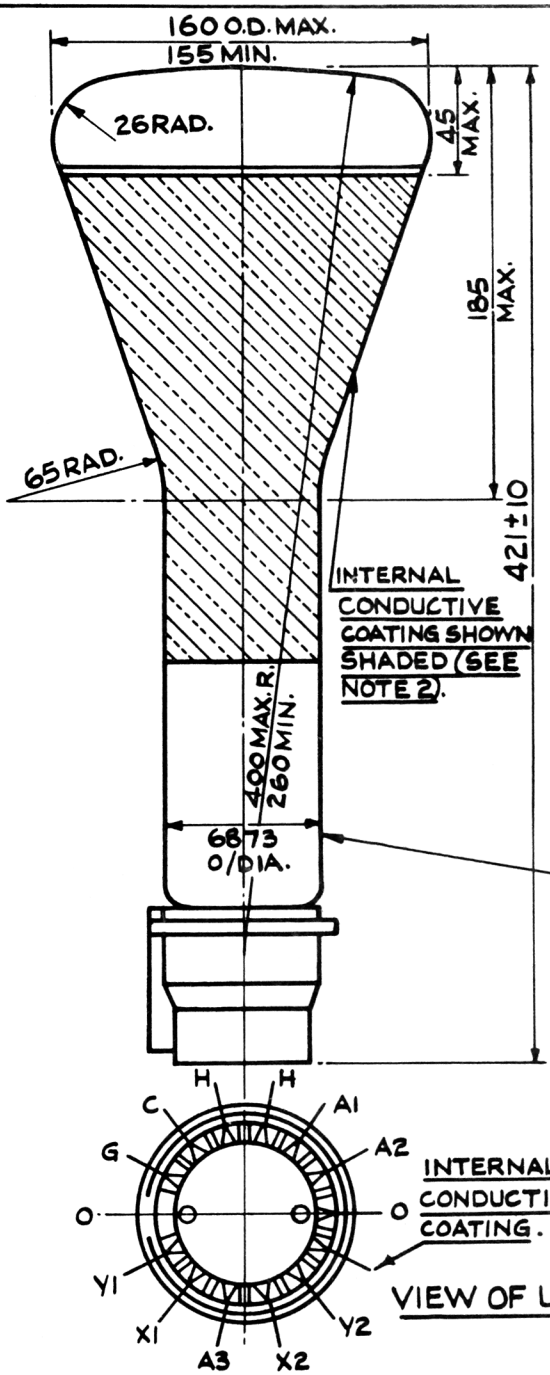
To be performed in addition to those applicable in K1003.

Clause	Test Conditions V_h	V_a kV	V_{a2}	V_{a1} kV	V_g	Test	Limits Min.	Limits Max.	No. Tested.
a						INTER ELECTRODE CAPACITANCES (pf)			
						1. Each X or Y plate to all other electrodes.	-	25	5%(10)
						2. Grid to all other electrodes.	-	25	5%(10)
						3. One X to one Y plate.	-	5	5%(10)
b	4.0	0	0	0	0	I_h (A)	0.7	1.3	100%
c	4.0	5.0	Adjusted	2.0	Adjusted	1. The line width shall not be greater than that of a standard tube.			
						2. V_{a2} (V)	625	1125	100%
						3. V_g	To be at least 5v -ve to cathode		100%
	Adjust V_{a2} for optimum focus and V_g to give a spot brilliance equal to that of a standard tube on a line of effective length 130 mm. to 650 mms. in the X and Y directions successively.								
d	4.0	5.0	As in (c)	2.0	Adjusted to give cut-off I_{BEAM} 0.1 µA	1. V_g (V)	-	-80	100%
						2. Increase in -ve V_g compared with the value noted in (c)3 (V)	-	40	100%
e	4.0	5.0	As in (c)	2.0		GRID INSULATION			
	1. V_g at -80V. 2. See clause 5.4.2 of K1003. Resistor 6.7 Megohm					1. Leakage current (µA)		12	100%
						2. Increase in voltmeter reading	-	100%	100%
f	4.0	5.0	As in (c)	2.0	Any convenient value	DEFLECTION SENSITIVITIES			
						1. X plate (mm/V)	$\frac{650}{V_{a3}}$	$\frac{790}{V_{a3}}$	10%(10)
						2. Y plate (mm/V)	$\frac{790}{V_{a3}}$	$\frac{970}{V_{a3}}$	10%(10)

CV1397

g	4.0	5.0	As in (c)	2.0	Any convenient value	Deviation of spot from centre of screen (mm)	-	10	100%
h	4.0	5.0	As in (c)	2.0	Any convenient value Deflections to cover stated circle centred on centre of screen	USEFUL SCREEN AREA Diameter (mm)	130	-	100%
j	4.0	5.0	As in (c)	2.0	Any convenient value Angles measured relative to axis O-O' shown on drawing	ORIENTATION OF AXES OF DEFLECTION 1. X axis 2. Y axis	80° -10°	100° +10°	100% 100%
k	4.0	5.0	-	2.0	Any convenient value Deflection voltages to give a raster covering a circular area of diameter 130 mm. The spot shall be defocussed such that with the number of lines used, separate lines shall not be discernible in the raster	The screen shall not be worse for graininess and non-uniformity than a standard tube, or an approved pattern.			100%
l	4.0	5.0	As in (c)	2.0	Any concenient value	The afterglow characteristic shall be satisfactory when examined by an approved method.			Type approval
m	4.0	5.0	As in (c)	2.0	As in (c) Deflections to cover a raster of area 130mm x 130mm	LIFE TEST Life (hours)	500	-	1%

CV1397



VIEW OF UNDERSIDE OF BASE.

NOTE:

1 WHEN VIEWING THE SCREEN WITH THE TUBE POSITIONED SUCH THAT THE BASE SPIGOT IS UPPERMOST, A POSITIVE VOLTAGE APPLIED TO THE TERMINAL X1 SHALL DEFLECT THE SPOT TO THE LEFT AND A POSITIVE VOLTAGE APPLIED TO THE TERMINAL Y1 SHALL DEFLECT THE SPOT UPWARDS.

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

THE NECK DIA. MAY BE REDUCED TO A MINIMUM OF 58 MM. PROVIDED THAT RUBBER RINGS OR OTHER APPROVED PACKING IS SUPPLIED WITH THE TUBE TO BRING THE OVERALL DIA. WITHIN THE STATED TOLERANCES.

ALL DIMENSIONS IN MILLIMETRES.