MINISTRY OF TECHNOLOGY - DLRD/RRE

Valve Electronic **CV6193**

Specification Mintech/CV6193

Issue 1 Dated August 1967

To be read in conjunction with K1001,B81409 & BS448.

SECURITY	
Specification	Valve
Unclassified	Unclassified

Type of Valve: Cathode Ray Tube, Rectangular Face.
Screen Area: 180mm x 130mm nom.
Type of Gun: Tetrode.
Deflection: Magnetic
Focus: Electrostatic
Bulb: Glass with external conductive coat
Screen: WW5 (Aliminium backed). ing
Prototype: M21-15W (31D15T4)

MARKING
See K1001/4

BASE
B8H, with Sparkguard

SIDE CONTACT
CT8

RATINGS AND CHARACTERISTICS

(Absolute non-simultaneous and not for Inspectorate)

			NOTES
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.3	
Max Anode 2 and 4 Voltage	(kV)	16	A
Min Anode 2 and 4 Voltage	(kV)	8	
Max Anode 3 Voltage-Positive	(V)	700	
-Negative	(V)	700	
Max Anode 1 Voltage	(V)	500	
Min Negative Grid Voltage	(V)	1	
Max Negative Grid Voltage	(V)	200	
Max Heater/cathode Voltage	(V)	200	B

Typical Operating Conditions

Anode 2 and 4 Voltage	(kV)	14
Anode 1 Voltage	(V)	400
Anode 3 Voltage range for focus	(V)	0-400
Max. Grid Voltage for Cut-off	(V)	-72

CONNECTIONS

Pin		Electrode
1	-	Heater h
2	-	Grid g
3	-	Anode 1 a1
4	-	Anode 3 a3
6	-	Grid g
7	-	Cathode k
8	-	Heater h
Side Contact		Anode 2 & 4 a2,a4

WEIGHT
1.36 kg approx.

DIMENSIONS
See Drawing on Page 4.

NOTES

A. Anode 2 and 4 are internally connected and will be referred tc as Anode 4.

B. With cathode positive to heater.

C. NATO Stock No. 5960-99-037-4995.

To be performed in addition to those tests specified in K.1001.

Test conditions unless otherwise stated for individual test.

1. Vh(V)	Vg(V)	Va_1(V)	Va_3(V)	Va(kv)
6.3	adjust	400	0	12

2. A synchronised 625 line T.V. raster may be used when required.

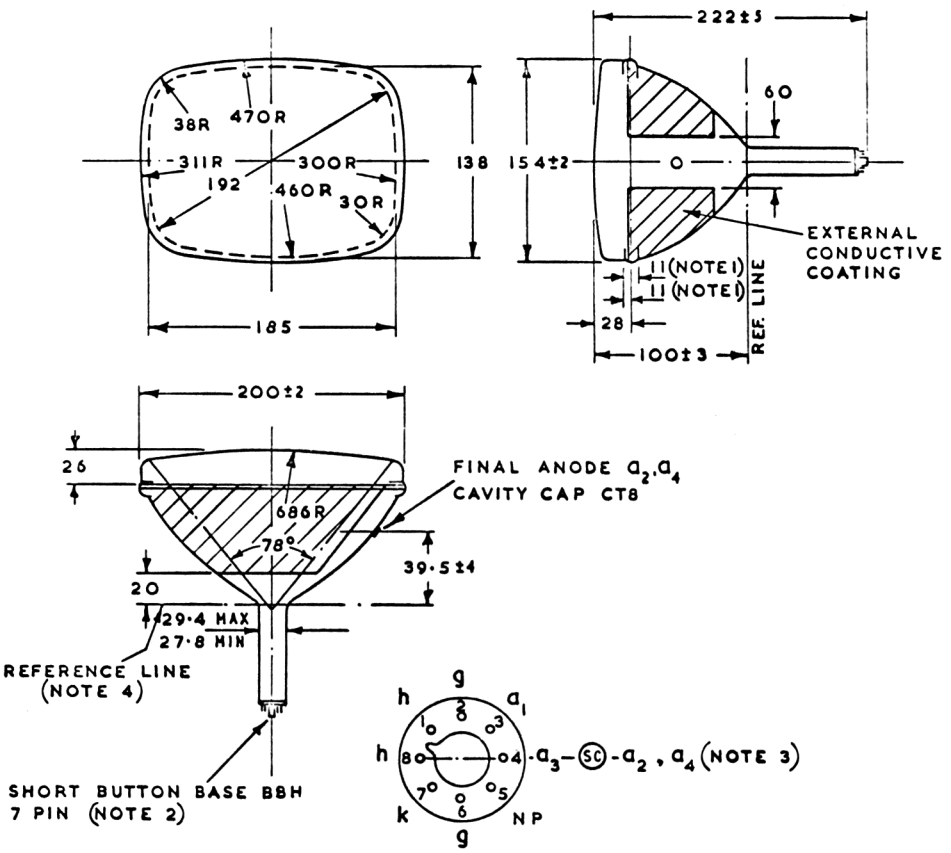
K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp. Level	Symbol	Limits Min	Limits Max	Units
3.1	(a) General Inspn. - Dimensions	No voltages. See drawing on Page 4	100%				
3.2.2.	(b) Loose particles	No voltages	100%				
4.1.1.	(c) Insulation		100%				
4.1.2.	(d) Grid leakage current.	Vh = 7.0V Va4 = 22kV Vg = -100V	100%	Ig.	-5	+5	µA
4.1.3	(e) Heater Cathode leakage current.	Vh = 7.0V Heater 250v positive and negative cathode	100%	Ihk	-	25	µA
	(f) Heater Current	No voltages except Vh	5%	Ih	.27	.33	A
4.2.3.	(g) Stray Emission	Va4 = 22 kV Va3 = 0 Va1 = 400 V Vg = cut off No deflecting fields	100%	No spurious image.			
	and Flashover	As above but with focussed raster. Tube to be viewed in darkened conditions. Tap screen 4 times with wooden pencil.		Reject for continous flashover.			
4.3	(h) Negative Grid Cut-off Voltage	Adjust Vg for just visible raster.	100%	Vg	30	72	V
6.3	(j) Useful Screen area	Adjust Vg for Ia4=100µA Defocussed raster to overscan screen.	100%		185 x 138		mm.

CV6193

TESTS (Cont'd.)

K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp Level	Symbol	Limits Min.	Limits Max.	Units
5.7	(k) Line Width and Focus Volts	Vg adjusted for Ia4 =50μA Raster with line scan width of 180mm. Adjust V for optimum overall focus. Expand frame amplitude to 2mm clearance between lines. Measure line width at i) centre of tube face ii) one corner Without readjustment of voltages rotate scan coils through 90° and repeat line measurements.	100%	Va3	0	400 .4 .5	V mm mm
6.4.2.	(l) Deviation of Spot from Geometric centre.	No deflecting fields adjust Vg for convenient value.	100%			6	mm
5.1.1.	(m) Screen Efficiency	Focussed raster 10x10cm Vg adjusted for Ia4 = 75μA. Measure light output.	100%		6		cd
3.5	(o) Screen blemishes	Va4 = 12kV Va3 = -3kV Va1 = 400V Adjust Vg for Ia4=50uA Defocussed raster over useful screen area.	100%	Blemishes shall be determined from details on Page 5.			
4.3	(p) Gas Test Measured as ratio $\frac{Ia4}{IK}$	Va4 = -25V Va3 = 400V Va1 = 400V Adjust Vg forIIk=500μA	100%			$1x10^{-4}$	
	(q) Cathode Quality measured as ratio $K = \frac{Ia2}{Vg(\text{cut off})^3}$	Va4 = 12kV Va3 = 0 Va1 = 400V Raster over whole screen. Negative Grid Cut off voltage as in test 5.A.4.3.	100%	K	2		$\frac{\mu A}{V}$
4.6	(r) Capacitances	Grid - all Cathode - all a4 - external coating	Q.A.		400	7 3	pf pf pf
3.9.1. 3.9.2. 3.9.3.	(s) Heater modulation Cathode Illumination. Effects of Magnetisation.		Q.A. Q.A. Q.A.				
7.2	(t) Resistance to external Pressure		Q.A.				

OUTLINE DRAWING
THIRD ANGLE PROJECTION



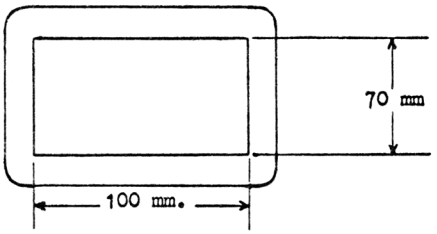
NOTES:-

1. DURING THE FACE SEALING OPERATION THE GLASS IN THIS AREA (TOTAL 22M.M.) MAY BE DISTURBED. AS THE SHAPE OF THE CONTOUR WITHIN THIS AREA MAY BE EITHER CONVEX OR CONCAVE THE BULB SHOULD NOT BE GRIPPED WITHIN THIS REGION UNLESS SPECIAL PRECAUTIONS ARE TAKEN (SUCH AS THE USE OF RESILIENT PACKING MATERIAL).
2. THE SOCKET FOR THE B8H BUTTON BASE SHOULD NOT BE RIGIDLY MOUNTED, IT SHOULD HAVE FLEXIBLE LEADS AND BE ALLOWED TO MOVE FREELY. THE DESIGN OF THE SOCKET SHOULD BE SUCH THAT THE WIRING CANNOT IMPRESS LATERAL STRAINS THROUGH THE SOCKET CONTACTS ON THE BASE.
3. ANODE CAP IN LINE WITH PIN 4 ±30°.
4. DETERMINED BY REFERENCE GAUGE SPECIFIED ON PAGE 8.
5. TUBE BASE TO BE FITTED WITH SPARK GUARD.

ALL DIMENSIONS IN MILLIMETRES
CV6193/1/4

SCREEN INSPECTION

The useful screen area shall be divided into two areas as shown.



Zone A is the central rectangle 100 x 70 mm. Zone B is the remainder of the useful screen area.

Limits of Measurable Blemishes

Zone A

	Opaque spots	Bubbles
Blemish size	.25 - .5	.30 - .5
Max. No. Permitted	1	1

Opaque spots below .25 mm. and bubbles below .30 mm. to be ignored unless they form an objectionable cluster.

Total number of blemishes not to exceed 1.

Zone B

	Bubbles or Opaque spots
Blemish size	.30 - .50
Max. No. Permitted	4

Blemishes below .30 to be ignored unless they form an objectionable cluster.

Zone A & B

Total number of blemishes not to exceed 4.

Minimum separation of blemishes 35 mm.

Measurable Blemishes in useful screen area

A measurable blemish is defined as a bubble, opaque spot or inner surface irregularity which has clearly defined edges.

The distance between two blemishes will be measured from the nearest edges.

Blemishes separated by a distance not greater than the size of the large blemish will be treated as one blemish.

Measurement of Blemishes

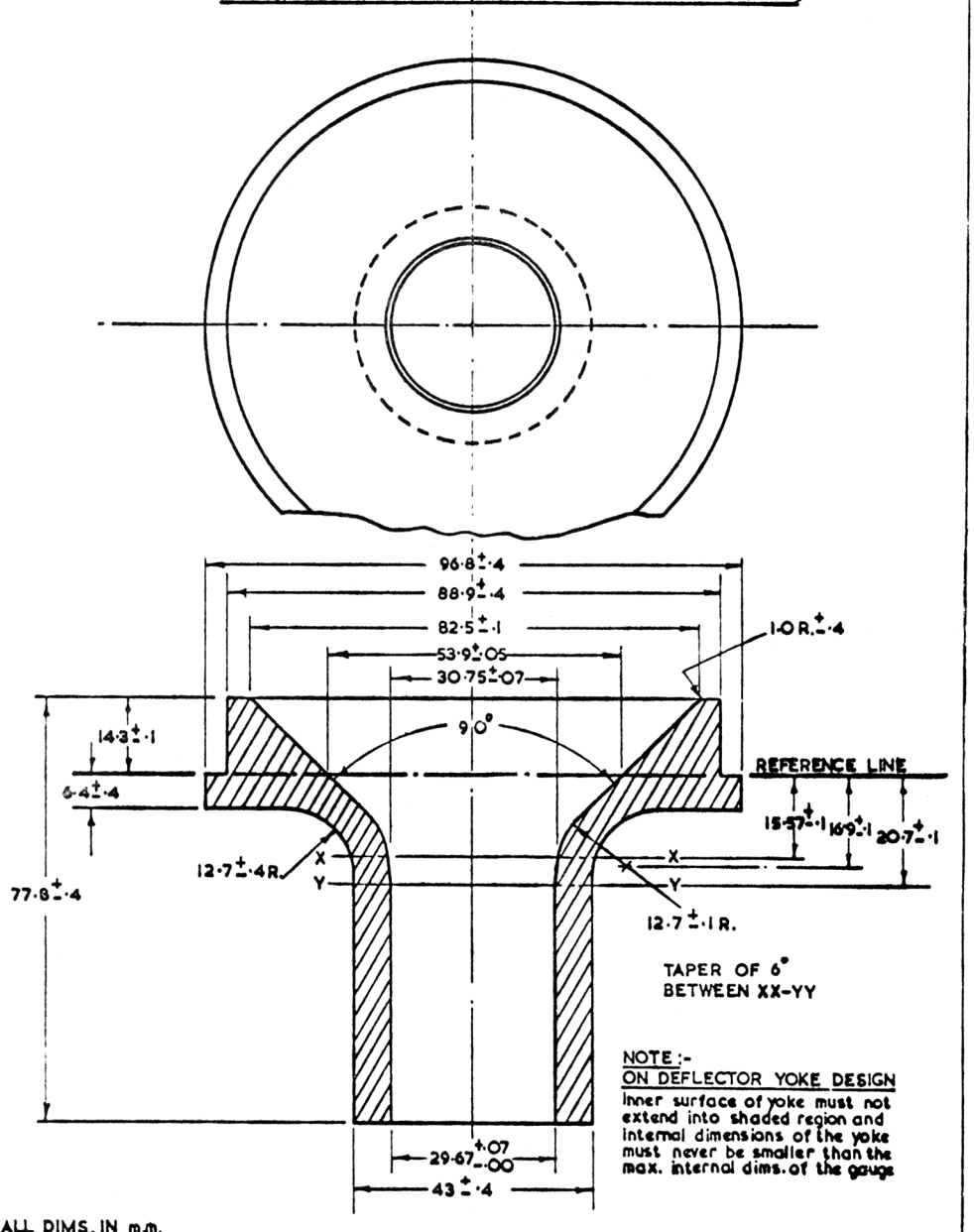
The size of an oval blemish is determined by $\frac{\text{length + width}}{2}$

Scratches - in screen area

Visible scratches not acceptable.

FIG 2
REFERENCE LINE GAUGE

FOR CATHODE RAY TUBES HAVING A NOMINAL NECK DIAMETER OF 28·5mm.
DEFLECTION ANGLE (PICTURE DIAGONAL 90°)



NOTE:-
ON DEFLECTOR YOKE DESIGN
Inner surface of yoke must not extend into shaded region and internal dimensions of the yoke must never be smaller than the max. internal dims. of the gauge

ALL DIMS. IN m.m.