MINISTRY OF TECHNOLOGY - DLRD/RRE.

VALVE ELECTRONIC **CV6198**

Specification Mintech./CV6198

Issue No. 1, Dated August 1967

To be read in conjunction with K1001, BS1409 & BS448

SECURITY	
Specification	Valve
Unclassified	Unclassified

← indicates a change

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 coating
SCREEN: - 008 - Aluminium backed
PROTOTYPE: - V3190

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)	11.5	
Heater Current	(A)	0.15	
Max. Anode 2 and 4 Voltage	(kV)	18	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	
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)	0to400
Max. Grid Voltage for Cut-off	(V)	72

CONNECTIONS

Pin		
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

1.36kg. approx.

DIMENSIONS

See Drawing on Page 6.

NOTES

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

B. With cathode positive to heater.

C. NATO Stock No. 5960 - 99 - 037 - 5337

TESTS

To be performed in addition to those tests specified in K1001

Test conditions unless otherwise stated for individual test.

1. Vh(V) 11.5 Vg(V) adjust Va1(V) 400 Va3(V) 0 Va4(kV) 14

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

3. Use deflection coil assembly N.S.N. Stock No. 5950-99-956-9209 or approved equivalent.

K1001 Ref.5A	TEST	TEST CONDITIONS	Insp. Level	Symbol	Limits Min	Limits Max	Units
3.1	(a) General Inspection - Dimensions	No voltages. See drawing on Page 6	100%				
3.2.2	(b) Loose Particles	No voltages	100%				
4.6	(c) Capacitances	Grid - all Cathode - all a4 - external coating	5%		- - 400	7 3	pf pf pf
	(d) Heater Current	No voltages except Vh	5%	Ih	135	165	mA
4.1.3	(e) Heater Cathode Leakage Current	Heater 250V positive and negative to cathode	100%	Ihk	-	25	µA
4.2.3 and 4.2.1	(f) Stray Emission and Flashover	Va4 = 22kV Va3 = 0 V Va1 = 400V Vg = Cut-off No deflecting fields As above but with focused raster. Tube to be viewed in darkened conditions with the screen horizontal and uppermost. Using an approved forked rubber covered wooden hammer, tap the tube neck for 15 secs. at a minimum rate of 4 taps per second.	100%		No spurious images		

Cont'd on page 3.

/Tube

TESTS (cont'd)

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K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
4.2.1	Flashover (cont'd)	Tube to be free from sparking and visible breakdown after first 5 secs. and for 15 secs. after tapping has ceased.					
4.3	(g) Negative Grid Cut-off voltage. Vg1.	Adjust Vg for raster just visible.	100%	Vg1	30	72	V
					Record Vg1		
4.4	Negative Grid Cut-off voltage. Vg2.	Ia4 = 50 µA. Defocussed raster to cover screen.	100%	Vg2	Record Vg2		V
	Grid Drive Vg1 - Vg2.		100%		10	30	V
5.7	(h) Line Width and Focus Volts	Vg adjusted for Ia4 = 5µA. Raster with line scan width of 180 mm. Adjust Va3 for optimum overall focus. Expand frame amplitude to 2 mm. clearance between lines. Measure line width at:-	100%	Va3	0	400	V
		(i) centre of tube face			-	0.3	mm
		(ii) one corner			-	0.40	mm
		Without any re-adjustments rotate scan coils through 90° and repeat line measurements.					
6.4.2.	(j) Deviation of Spot from Geometric Centre	No deflecting fields Adjust Vg for convenient value	100%		-	6	mm
5.1.1.	(k) Screen Efficiency	Va3 = 0. Adjust raster to 10 x 10cm. Adjust Vg for light intensity of 0.15 candela viewed through No. 22 Wratten filter. Measure Ia4.	100%	Ia4	-	5	µA
6.3.	(l) Useful Screen Area.	Adjust Vg for Ia4 = 25 µA. Defocussed raster to cover screen.	100%		185 x 138	-	mm

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TESTS (cont'd)

K1001 Ref. 5A	TEST	TEST CONDITIONS	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
5.5.	(m) Persistance measured as a decay time to (i) 80% (ii) 15%	Va3 = 0. Linear raster 15 x 15 cm. Vg adjusted to give screen luminance of 2 ft. - lamberts viewed through No.22 Wratton Filter. Excitation time = 120 secs. approx.	5%		80	400 10	mS Secs.
3.5	(n) Screen Blemishes	Va4 = 12 kV Va3 = 3 kV Va1 = 400 V Adjust Vg for Ia4 = 25 µA. Defocussed raster over useful screen area.	100%		Blemishes shall be determined from details on Page 7.		
4.3	(o) Gas Test measured as ratio $\frac{Ia4}{Ik}$	Va4 = -25V Va3 = 400V Va1 = 400V Adjust Vg for Ik = 500 µA.	100%		-	1×10^{-4}	
	(p) Cathode Quality measured as $K = \frac{Ia2}{Vg \text{ (cut off) } 3/2}$	Va4 = 14kV Va3 = 0 Va1 = 400V Raster over whole screen. Negative Grid cut off voltage as in 5.A.4.3.	100%	K	2	-	$\frac{\mu A}{V}$
3.7	(q) Holding Period 7 days Repeat tests (o) and (p)		100%				
8	(r) Life Life end point Repeat tests (o) and (p)	Adjust Vg for Ia4 = 5 µA. Raster size 180 x 130 mm.	Note 1		500	-	hours
7.2	(s) Resistance to External Pressure		QA				
3.9.1. 3.9.2. 3.9.3.	(t) Heater Modulation Cathode Illumination Effects of Magnetisation		QA QA QA				

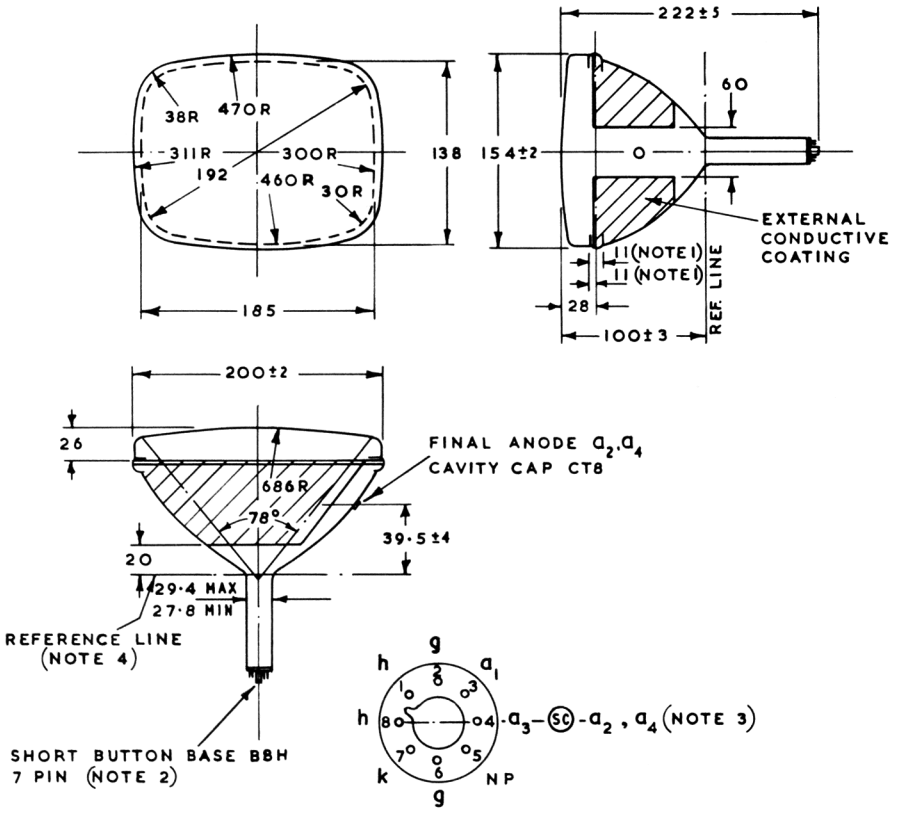
TESTS (Cont'd)

NOTES

1. The scale of life testing shall be related to the production. For production orders of less than 51, at least one valve shall be life tested. For orders of greater than 50, the production shall be divided into batches of 50 and at least one valve from each shall be life tested. The batch corresponding to the valve undergoing test shall not be released until the life test has completed 80% of the required life. At the option of the manufacturer and at his expense any number of additional valves may be life tested, in which case the average of the lives of these valves shall exceed 80% of the required life before the batch can be released. Life test is considered satisfactory when an accumulated total of 500 hours per sample is reached.

OUTLINE DRAWING

THIRD ANGLE PROJECTION



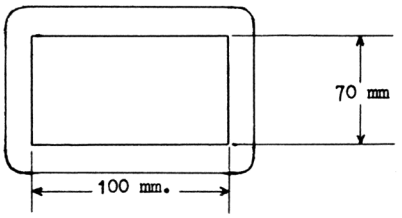
NOTES:-

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. THE TUBE BASE TO BE FITTED WITH SPARK GUARD.

ALL DIMENSIONS IN MILLIMETRES

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

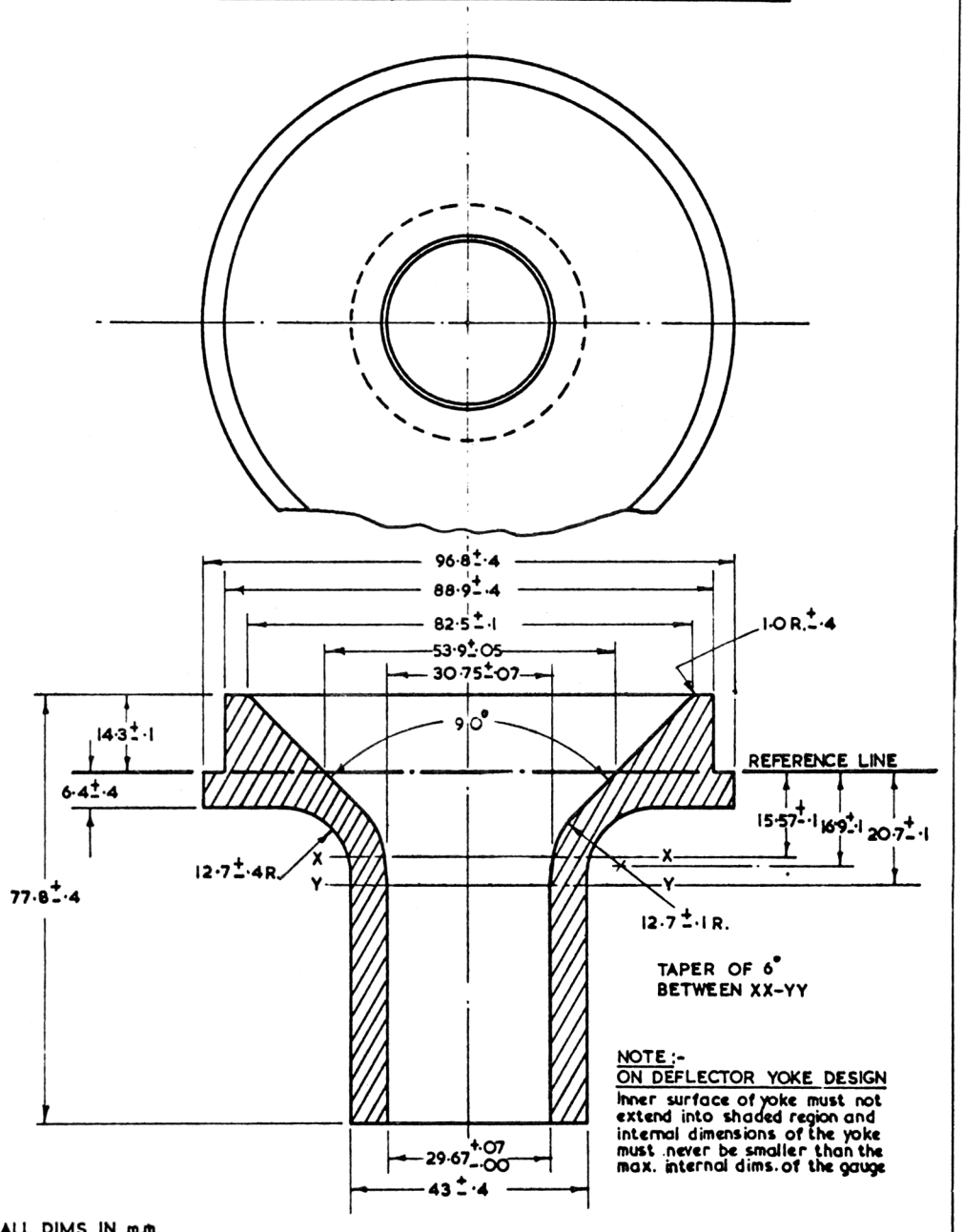
The size of an oval blemish is determined by $\frac{\text{length + width}}{2}$

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.