MINISTRY OF AVIATION - DLRD/RRE

VALVE ELECTRONIC **CV6109**

Specification MOA/CV6109	SECURITY	
	Specification	Valve
Issue 1 dated 18th June, 1962	Unclassified	Unclassified
To be read in conjunction with K1001, BS448 and BS1409		

⟶ indicates a change

TYPE OF VALVE - Cathode Ray Tube 'A' Scan
DEFLECTION - Electrostatic Symmetrical or Asymmetrical
FOCUS - Electrostatic
BULB - Glass Internalconductive coating
SCREEN - BY8
PROTOTYPE - 1646G,

MARKING

See K1001/5

BASE

B12F

CONNECTIONS

1.	Grid	g
2.	Cathode	k
3.	Heater	h
4.	Heater	h
5.	Anode 2	a2
6.	Internal Coating	m
7.	Anode 1	a1
8.	Deflection Plate	y1
9.	Deflection Plate	y2
10.	Anode 3	a3
11.	Deflection Plate	x2
12.	Deflection Plate	x1

RATING AND CHARACTERISTICS

All limiting values are absolute

			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.6	A
Max. Anode 1 voltage	(kV)	2.5	
Max. Anode 2 Voltage	(kV)	2.0	
Max. Anode 3 Voltage	(kV)	6.0	
Max. Negative Grid Voltage	(V)	200	B
Max. Heater-cathode Voltage	(V)	100	

TYPICAL OPERATING CONDITIONS

Anode 1 Voltage	(kV)	1.4
Anode 2 Voltage	(V)	830
Anode 3 Voltage	(kV)	3.75
Sensitivity x plates	(mm/V)	$\frac{1000}{Va/3}$
Sensitivity y plates	(mm/V)	$\frac{1270}{Va3}$

DIMENSIONS

See drawing on Page 5

NOTES

A. Alternatively, 0.3A

B. The grid must never become positive with respect to the cathode

C. Joint Service Catalogue No. 5960-99-037-2996

TESTS

To be performed in addition to those applicable in K1001

TEST CONDITIONS

Va1 (kV)	Vh (V)	-Vg(V)	Va3(kV)	Va2
1.4	6.3	adjust	3.75	Optimum Focus

The x and y deflection voltages shall be asymmetrical

K1001 Ref.	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
5A.1	General Inspection	No Voltages See drawing on Page 5		100%				
5A.2	Loose Particles	No Voltages		100%				
5A3.1	Insulation			100%				
5A3.2	Grid Insulation Increase in Voltmeter reading	Rg = 5M		100%			100	%
5A3.3	Heater-cathode Leakage current	Vhk = ± 100v		100%	I_{hk}		50	µA
	Heater Current	Note 3		100%	I_h	0.54	0.66	A
5A.10	Negative Grid cut off Voltage (V1)	No deflection		100%	V_g	20	50	V
5A.8	Negative Grid Voltage (V2) and Cathode Current	Raster scan of convenient size. Adjust V_g for light intensity of .015 candela through C_2 filter. The beam current shall increase over the grid voltage range V_1 to V_2.		100% 100%	V_g I_k	RECORD	150	V µA
	Grid drive (V_1-V_2)			100%	V_g		20	V
5A.12	Useful screen area	y direction x direction		100%		35 125		mm mm
5A.17	Persistence measured as decay time to 1% brightness	With a raster of convenient size and a luminence of 2 foot lamberts when viewed through a C2 filter or equivalent.		100%		8		Secs.
5A.7	Focus, line width at centre of trace	With Vg adjusted to the value given in 5A.10 above, the grid is pulsed with a square waveform, p.r.f. 100 p.p.s. duration 100 µSecs and amplitude equal to the value V1 minus V2 as above		100%		-	0.8	mm

TESTS (Contd.)

CV6109

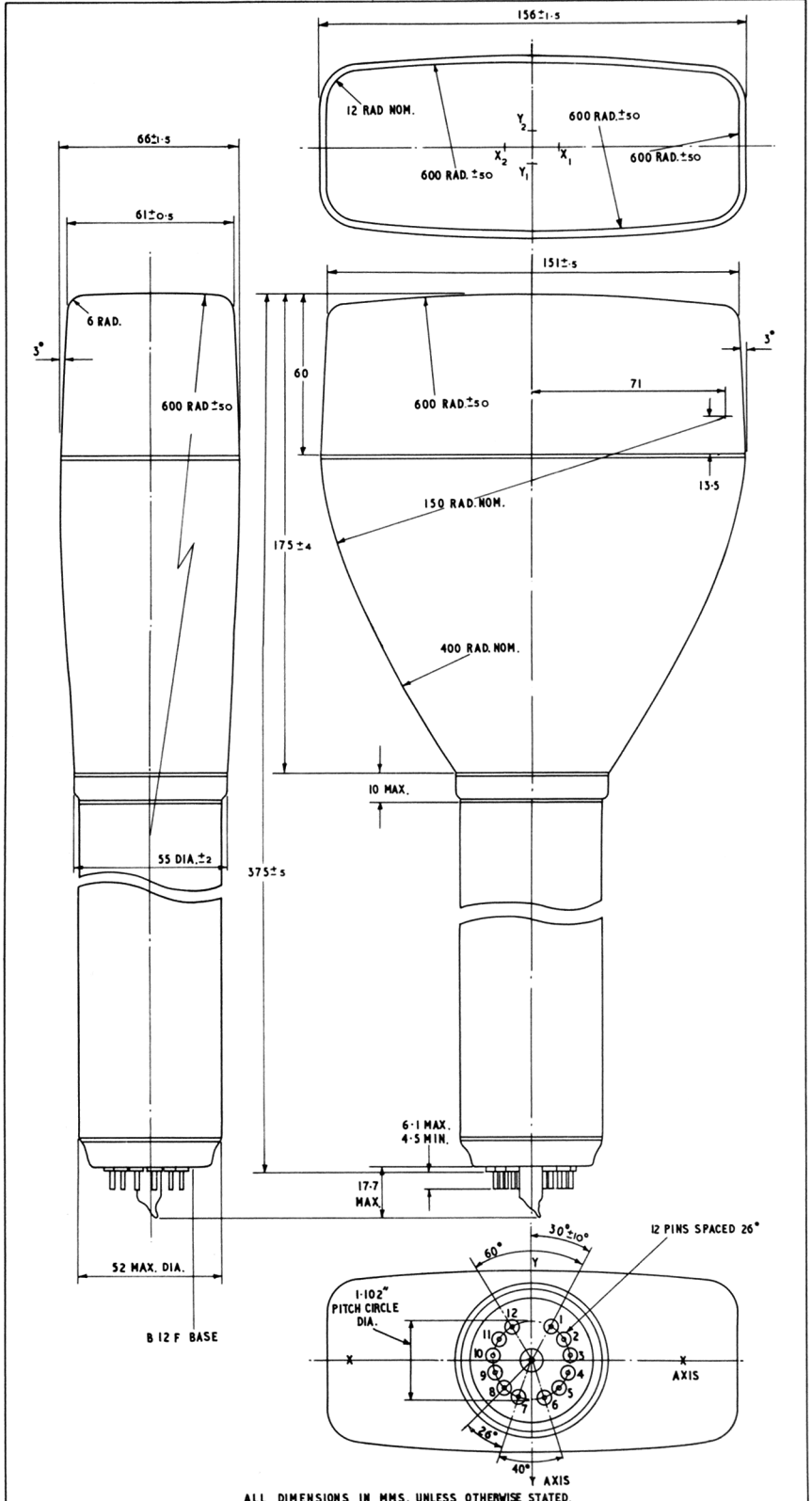
K1001 Ref.	TEST	TEST CONDITIONS	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units
	Anode 2 Voltage	Optimum Focus, other conditions as above		100%		750	900	V
5A.11 .1	Spot Position and displacement			100%		-	7.5	mm
	Deflection Sensitivity x plates		6.5	IB	S_x	$\frac{900}{Va3}$	$\frac{1100}{Va3}$	mm/V
	y plates				S_y	$\frac{1100}{Va3}$	$\frac{1430}{Va3}$	mm/V
	Orientation of Deflection Axis	x axis relative to XX[1] axis on drawing page 5		100%		-2°	+2°	
		Angle between x and y deflection axes		100%		88°	92°	
	Orientation of Base axis to axis YY[1]	No Voltages		100%			+10°	
	Trapezoidal Distortions	Minimum area of scan 100 mm x 30 mm	6.5	IB				
	1) Angle between adjacent sides					87°	93°	
	2) Angle between opposite sides					177°	183°	
	Screen Blemishes Stones, Bubbles and Screen defects	Defocussed raster to cover useful screen area. Vg adjusted for convenient light intensity Note 1						
	Max. size of any blemish					-	1	mm
	No. of blemishes between 0.25-0.6 mm					-	10	
	No. of blemishes between 0.6-1.0 mm					-	5	
11.5	Vibration			QA				
5A.13	Capacitance	No Voltages	6.5	IC				
	Each x plate-all				Cx-all		10	pF
	Each y plate-all				Cy-all		10	pF
	Grid-all				Cg-all		9	pF
	Each x plate				Cx-y		3.5	pF
	Each y plate				Ck-all		7	pF
	Cathode - all							
5A.21	Resistance to External Pressure	No Voltages						
	LIFE	To be specified		Note 2				

NOTES

1. If two blemishes 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 dimensions equal to the maximum overall dimensions of the group.

2. One tube per lot shall be tested, further conditions to be determined.

3. Limits of 0.27A to 0.33A apply as alternative.



ALL DIMENSIONS IN MMS. UNLESS OTHERWISE STATED.