

ELECTRONIC VALVE SPECIFICATION

SPECIFICATION CV.4055

ISSUE 2 - DATED 23rd NOVEMBER, 1956

AMENDMENT No: 2

GROUP F

Intermittent Life Test Point (1000 hrs.)

Electrode Insulation

Delete all reference to Heater Current Test

Add at the end of this Group the following:-

K1001 Ref.	Test	Test Conditions	AQL %	INSP. LEVEL	SYMBOL	LIMITS					
						MIN	LAL	BOGEY	UAL	MAX	UNITS
	ELECTRODE	Va, all = -300V	6.5	-	R	30	-	-	-	-	MΩ
	INSULATION	Vg1, all = -100V			R	30	-	-	-	-	MΩ
		Vg2, all = -300V			R	30	-	-	-	-	MΩ

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AMENDMENT NO. 1

PAGE 1.

BASE

AMEND "See B.S. 448: B9A/2.1."

to read "See B.S. 448: B9A/1.1."

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T.V.C. Office

N.87621R

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T.V.C.



NOTES (cont'd)

D. Measured at  $V_a = V_{g2} = 250V$ ,  $V_{g1} = -4.5V$ ,  $V_{g3} = 0$ .

E. Measured in a fully screened socket, no external shield.

TESTS

To be performed in addition to those applicable in K1001 and in the specified order unless otherwise agreed with the Inspecting Authority

Test Conditions - unless otherwise specified

$V_h$	$V_a$	$V_{g1}$	$V_{g2}$	$V_{g3}$
(V)	(V)	(V)	(V)	(V)
6.3	250	-4.5	250	0

K1001	Test	Test Conditions	AQL %	Insp. level	Sym-bol	Limits						Units
						Min.	LAL	Bogey	U/L	Max.	ALD	
→ 7.1	Glass Strain	No voltages	6.5	I								
	<u>GROUP A</u>											
	Insulation	$V_a$ , all = -300V $V_{g1}$ , all = -100V $V_{g2}$ , all = -300V		100%	R	100				-		M
	Reverse Grid Current	$R_{g1} = 100K$ Max		100%	I <sub>g1</sub>	-				1.0		uA
	<u>GROUP B</u>	Combined AQL	1.0	II								
	Heater Current		0.65	II	I <sub>h</sub>	0.69	-	0.75	-	0.81		A
	Heater-cathode Leakage Current	$V_{hk} = \pm 100V$ $V_{hk} = -100V$ Cathode positive	0.65	II	I <sub>hk</sub> V2 I <sub>hk</sub>	-	-	-	-	10		uA
	Anode Current		0.65	II	I <sub>a</sub> V2 I <sub>a</sub>	30	-	-	-	50		mA
	Mutual Conductance		0.65	II	g <sub>m</sub> V2 g <sub>m</sub>	9.0	36.3	40	43.7	13.5	8.2	mA/V
						-	10.26	11.0	11.74	-	1.65	mA/V
	<u>GROUP C</u>	Combined AQL	0.5	I								
	Screen Grid Current		2.5	I	I <sub>g2</sub> V1 I <sub>g2</sub>	-	-	-	-	7.5		mA
	Anode Current	$V_{g1} = -25V$	2.5	I	I <sub>a</sub>	-	-	6.0	6.72	-		mA
	Change in mutual conductance	$V_h = 5.7V$	2.5	1	$\Delta g_m$	-	-	-	-	10		%
	Reverse Grid Current	$V_h = 6.9V$ , $V_a = 300V$ $V_{g2} = 250V$ , $I_a = 40mA$ $R_{g1} = 100K$ Max Note 1	2.5	I	I <sub>g1</sub>	-	-	-	-	2.5		uA
11.1	Vibration Noise Output Voltage	$V_a(b) = 250V$ RL = 2K Rk = 1.5K Ck = 1000 uF	2.5	I	V <sub>a</sub> AC	-	-	-	-	75		mV rms

NOI	Test	Test Conditions	AQL %	Insp. level	Sym- bol	Limits						Units
						Min.	LAL	Bogey	UAL	Max.	ALD	
	<u>GROUP D</u>											
	Base Strain Capacitance	No voltages Measured on a 1 Mc/s bridge with the valve mounted in a fully screened socket No shield	6.5 6.5	IA IC	C in C out Ca, g1	10.0 4.0 -		12.5 5.0 0.145		15.0 6.0 0.18		pF pF pF
	g3 continuity	Vg3 = 250V Note 2	6.5	IA								
	Inner amplification Factor		6.5	IA	ug1, g2	20	-	26	-	32		
	Peak emission	Vg1 = Vg2 = Va = 70V pulsed half sine wave. tp = 10 usec max prf = 50 pps	6.5	IA	Ikpk	1.5	-	-	-	-	-	A
	<u>GROUP E</u>											
11.2	Resonance Search (1)	Va(b) = 250V; RL = 2K; frequency range: 25 to 500 c/s		IC								
	Vibration Noise Output Voltage	Note 3	2.5		Va AC	-	-	-	-	record		mV rms
	Resonant Frequency		2.5		f	200	-	-	-	-		Hz
11.3	Fatigue	Vh = 6.9V switched 1 min on, 3 mins off Va = Vg2 = 0; Min. pk accel = 5g; Duration = 30, 30, 30 hrs. f = 170 c/s		IA								
	<u>Post Fatigue Tests</u>	Combined AQL.	6.5									
	Heater-cathode Leakage Current	Vhk = 2100V	2.5		Ihk	-	-	-	-	20		uA
	Reverse Grid Current	Rg1 = 100K Max.	2.5		Ig1	-	-	-	-	1.5		uA
	Mutual Conductance		2.5		gm	7.6	-	-	-	-		mA/V
11.1	Vibration Noise Output Voltage	Note 3	2.5		Va AC	-	-	-	-	100		mV rms
11.4	Shock	No voltages Hammer angle = 30°		IA								
	<u>Post Shock Tests</u>	Combined AQL.	6.5									
	Heater-cathode Leakage current	Vhk = 2100V	2.5		Ihk	-	-	-	-	20		uA
	Reverse Grid Current	Rg1 = 100K Max	2.5		Ig1	-	-	-	-	1.5		uA
	Mutual Conductance		2.5		gm	7.6	-	-	-	-		mA/V
11.1	Vibration Noise Output Voltage	Note 3	2.5		Va AC	-	-	-	-	100		mV rms

K100	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits						Units
						Min.	LAL	Bogey	UAL	Max.	ALD	
	<u>GROUP F</u>											
AW5	Life	Va = 250V Vg2 = 250V Rk = 100 Rg1 = 100K Norm										
AVI/ 5.1	<u>Stability Life Test</u> Change in Mutual Conductance		1.0	I	$\Delta g_m$	-	-	-	-	5	-	%
AVI/ 5.3	Intermittent Life Test <u>Life Test End-point</u> (500 hours)	Combined AQL	6.5	IA								
AVI/ 5.6	Inoperatives <del>Heater Current</del> Heater-cathode Leakage Current Reverse Grid Current Mutual Conductance Average change in mutual conductance Insulation		2.5 <del>2.5</del> 2.5 2.5 2.5 4.0		<del>ih</del> Ihk Ig1 gm $\Delta g_m$ R	<del>0.69</del> - - 8.0 - 50 50 50	-	-	-	-	0.81 15 1.5 - 15 - - -	<del>A</del> uA uA mA/V % M M M
	<u>Life Test End-point</u> (1000 hrs)	Combined AQL	10.0	IA								
AVI/ 5.6	Inoperatives Heater Current Heater-cathode Leakage Current Reverse Grid Current Mutual Conductance		4.0 4.0 4.0 4.0 4.0		Ih Ihk Ig1 gm	0.69 - - 7.6	-	-	-	0.81 20 1.5 -	-	A uA uA mA/V
	<i>see Page Opposite</i>											
	<u>GROUP G</u>											
AIX/ 2.5	Electrical re-test after 28-day holding period			100%								
AVI/ 5.6	Inoperatives Reverse Grid Current	Rg1 = 100K Max.	0.5 0.5		Ig1	-	-	-	-	1.0		uA
<u>NOTES</u>												
1. Preheat for 5 minutes under test conditions. During the test, Ig1 shall not be rising nor out of limit after 10 minutes.												
2. During this test Ig2 shall rise when g3 is connected to g2.												
3. The test conditions for Vibration Noise specified in Group C shall apply.												