ADMIRALTY SIGNAL AND RADAR ESTABLISHMENT

VALVE ELECTRONIC

CV4066.

Specification AD/CV4066 Issue No. 2 dated 21st March, 1957. To be read in conjunction with K1001 and BS1409	SECURITY Specification: Unclassified Valve: Unclassified

→ Indicates a change

TYPE OF VALVE: Reliable Sub-miniature Gas-filled Voltage Reference Tube with flexible leads. CATHODE: Cold ENVELOPE: Glass, unmetallised PROTOTYPE: VX8190C	MARKINGS See K1001/4 BASE Button. Flying Leads 3 in line across a diameter. See drawing on page 5.

RATINGS
(all limiting values are absolute)

		Notes
Max. Striking Voltage (V)	125	A
Nominal Stabilised Voltage (V)	86	
Recommended Operating Current (mA)	2.0	
Max. Cathode Current (mA)	3.5	
Min. Cathode Current (mA)	0.5	
Max. Incremental Resistance (ohms)	1,000	
Max. Acceleration (continuous operation) (g)	2.5	
Shock (short duration) (g)	750	
Ambient Temperature Range (C°)	-55 to +90	
→ Life Expectancy (Min.) (Hours)	10,000	

CONNECTIONS

Lead	Electrode	
1	Cathode	k
2	Omitted	
3	Anode	a
4	Omitted	
5	Cathode	k

DIMENSIONS
See drawing on page 5

Dimension (mm)	Min.	Max.
A. (Seated height)		35
B. (Diameter)		10.2
C. (Length of lead)	38	-

MOUNTING POSITION
Any

NOTES

A. Measured either in total darkness or in normal ambient light.

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TESTS

To be performed in addition to those applicable in K1001

Test Conditions - Unless otherwise specified

$V_a(b)$ V	R.lim. (ohms)	I_a (mA)
(Note 1)	30K Ω	2.0 (Note 2)

A D.C. voltage not exceeding 100 volts shall be applied between Anode and Cathode and shall be increased steadily at a rate not exceeding 25 volts/second until the valve strikes. The ripple content of the supply shall not exceed 0.25%.

After the valve has struck, the supply voltage shall be further increased until the anode current is 2.0 mA. It shall be maintained constant for 3 minutes before any characteristic other than striking voltage is measured.

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
→ 7.1	Glass Strain	No voltages	6.5	I					
	GROUP A								
	Striking voltage			100%	V_s	-	125	V	4
	Maintaining voltage (1)	I_a = 2.0 mA		100%	V_m	84	88	V	
	Regulation	I_a change from 1.9 to 2.1 mA		100%	ΔV_m		0.2	V	
	Voltage jumps	Vary I_a from 1.2 to 3.5 mA		100%			25	mV p/p	5, 6
	Oscillation	Vary I_a from 1.2 to 3.5 mA		100%			15	mV p/p	5
	Microphony			100%			25	mV p/p	7
	GROUP B								
	Temperature Co-efficient (1)	Temperature varied from -55°C to +25°C		T.A.			-6	mV/C°	3
	Temperature Co-efficient (2)	Temperature varied from +25°C to +90°C		T.A.			-3	mV/C°	3

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K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
	Low pressure Voltage breakdown.	Pressure equivalent to 60,000ft. Increase the voltage applied to the valve until the current flows.		T.A.		-	125	V	2
	GROUP C	Combined AQL	6.5						
	Striking Voltage (Dark strike)		2.5	I	V_s	-	125	V	1
	Leakage current.	V_a = 50V D.C., R_a = 1 megohm.	2.5	I	I_a	-	15	µA	
	Maintaining Voltage (2)	I_a = 3.5mA	2.5	I	V_m		89	V	
	Regulation. (2)	I_a change from 0.5mA to 3.5mA.	2.5	I	ΔV_m		3	V	
	GROUP D								
5.12	Lead fragility	No voltages	6.5	IA					
	GROUP E								
11.2	Resonance search (1)	R_a = 27,000 ohms. Acceleration 2g. Frequency varied between 25 and 500 c.p.s.		IC					
	Vibration Noise Output		2.5		Va(A.C.)	-	5.0	mV r.m.s.	
	Resonance search (2)	R_a = 27,000 ohms. Acceleration 2g. Frequency varied between 500 and 2,500 c/s.		IC					
	Vibration Noise Output		2.5		Va(A.C.)	-	15.0	mV r.m.s.	
11.3	Fatigue test.	No voltages. Acceleration 5g. Frequency 170±5 c.p.s. Duration 30x30x 39 hours		IA					
	POST FATIGUE TESTS								
	Change in Maintaining Voltage	Combined AQL	4.0						
			2.5		ΔV_m		±0.8	V	8
	Microphony		2.5				50	mV p/p	7
11.4	Shock test.	No voltages Acceleration(750g) Hammer angle 48°		IA					
	POST SHOCK TESTS								
	Change in Maintaining Voltage	Combined AQL	4.0						
			2.5		ΔV_m		±0.8	V	8
	Microphony		2.5				50	mV p/p.	7

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits Min.	Limits Max.	Units	Notes
	GROUP F	Combined AQL	6.5						
A VI/5	Life test	Ia = 2.0 mA		IC					9
	End Point 1,000 hours								
	Tests to be performed during and at END of LIFE								10
	Striking Voltage (1)		2.5		V_s		125	V	4
	Change in maintaining voltage	0-300 hours	2.5		ΔVm		± 0.4	V	
	Change in maintaining voltage	0-1,000 hours	2.5		ΔVm		± 0.8	V	
	Regulation	Ia change from 1.9 to 2.1mA	2.5		ΔVm		+0.20 -0.0	V	
	GROUP G								
A IX 2.5	Re test after holding period (28 days)								
	Inoperatives		0.5	100%					
	Striking voltages		0.5	100%	V_s		125	V	4
	Maintaining voltage		0.5	100%	Vm	84	88	V	

NOTES

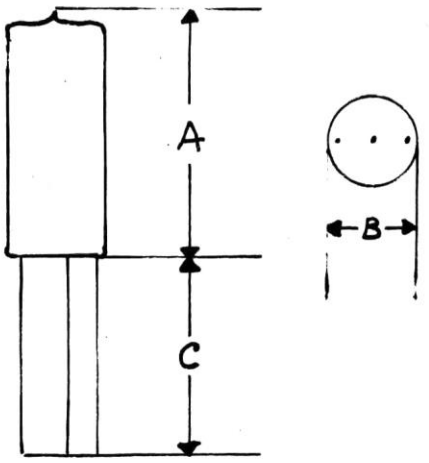
1. This test is to be conducted in total darkness after the valves have been held in darkness for 24 hours.
2. There shall be no evidence of discharge between the leads for anode voltages up to the striking voltage of the valve.
3. The tube voltage drop shall be measured in 10°C steps over the temperature range specified.
4. This test is to be conducted in normal ambient room lighting, 5 to 50 foot candles.
5. A calibrated amplifier detector with C.R.T. indicator, having a substantially linear response over the range 50 to 5,000 c.p.s. is to be connected between the anode and cathode. The anode current is to be varied over the specified range and back at least three times.
6. The jump voltages must be within the specified limits.
7. The valve shall be tapped and the noise shall not exceed the specified limit.

NOTES contd.

8. Before the test is performed the tube must be run for 3 minutes with Ia adjusted to 2.0 mA.

9. Valves used for this test are acceptable for delivery.

10. Readings are to be made at 0 hours, 300 (+48,-24) hours and 1,000 (+48, -24) hours.



Leads:-

0.45 mm tinned flexible wire.

2.44 mm centre to centre.