

ADMIRALTY SIGNAL AND RADAR ESTABLISHMENT

Specification AD/CV4054 Issue No. 1 dated 9.11.55. To be read in conjunction with K1001 and B.S.1409		<u>SECURITY</u> <u>Specification</u> <u>Valve</u> Unclassified Unclassified	
<u>TYPE OF VALVE:</u> Reliable Gas-filled Voltage Reference Tube, with flexible leads.		<u>MARKING</u> See K1001/4	
<u>CATHODE:</u> Cold <u>ENVELOPE:</u> Glass <u>PROTOTYPE:</u> VX8142		<u>BASE</u> B7G/F	
<u>RATINGS</u>		<u>CONNECTIONS</u>	
Note			
Max. Striking Voltage (V) 115 Nominal Stabilised Voltage (V) 85 Recommended Operating Current (mA) 6 Max. Cathode Current (mA) 10 Min. Cathode Current (mA) 1 Max. Incremental Resistance (Ohm) 450 Max. Acceleration (continuous operation) (g) 2.5 Shock (short duration) (g) 500 Ambient Temperature Range (°C) -55 to +90	B	Lead Electrode 1 Anode a 2 Cathode k 3 Internally Connected 4 Cathode k 5 Anode a 6 Internally Connected 7 Cathode k	
Life Expectancy (Min) (Hours) 10000 Max. percentage variation of burning voltage - During first 300 hours of life % 0.3 During subsequent 1000 hours % 0.2 Typical percentage drift of burning voltage per 1000 hours after 1300 hours. % 0.1 Max. Temperature Coefficient between -55°C and +25°C (mV/°C) -10 Max. Temperature Coefficient between +25°C and +90°C (mV/°C) -5	C	<u>DIMENSIONS</u> See K1001/A1/D11 Dimension (mm) Min. Max. A (Seated Height) - 47 B (Diameter) 16 19 D (Length of leads) 38 -	
		<u>MOUNTING POSITION</u> Any	
<u>NOTES</u>			
A. All limiting values are absolute. B. Measured at an anode current of 6 mA. C. After the initial warming up period of 3 minutes.			

TESTS

To be performed in addition to those applicable in K1001.

Tests are to be performed in the specified order unless otherwise agreed with the Inspecting Authority.

Test Conditions - Unless otherwise specified

Va (b)
(V)
(Note 1)

R Lim
(ohms)
5K

Ia
(mA)
6.0 (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 6.0 mA. It shall be maintained constant for 3 minutes before any characteristic, other than striking voltage, is measured.

K1001	Test	Test Condition	AQL %	Insp. Level	Symbol	Limits		Units	Notes
						Min.	Max.		
44.1 7.1	Vibration Glass Strain	No voltages No voltages	6.5	100% I					1
	<u>GROUP A</u>								
	Striking voltage			100%	Va	-	115	V	2
	Maintaining Voltage			100%	Vb	83	87	V	
	Regulation (1)	δ Va for change of Ia from 5.8 to 6.2 mA		100%			0.18	V	
	Voltage jumps	Ia varied from 1.0 to 10.0 mA Ra = 500 ohms		100%			100	mV p/p	3
	Oscillation	Ia varied from 1.0 to 10.0 mA Ra = 500 ohms		100%			5	mV p/p	
	Vibration Noise	Ra = 500 ohms		100%			15	mV p/p	5
	Leakage Current	Supply voltage = 55V D.C. Ra = 1 megohm		100%			5	μA D.C.	

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TESTS (CONT'D)

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K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units	Notes
						Min.	Max.		
	<u>GROUP B</u>								
	Temperature Coefficient (1)	Temperature varied from -55°C to +25°C		TA			-10	mV/°C	4
	Temperature Coefficient (2)	Temperature varied from +25°C to +90°C		TA			-5	mV/°C	4
	Striking Voltage	Measure at Temperature = -50°C		TA			115	V	2
	Regulation	δ Va for change of Ia from 1.0 to 10.0 mA Temperature = +90°C		TA			4	V	
5.12	<u>GROUP C</u> Lead fragility	No voltages	6.5	IA					
	Regulation (2)	δ Va for change of Ia from 1.0 to 10.0 mA	2.5	I			4.0	V	
11.2	Resonance Search (1)	Ra = 27k Frequency = 25 to 500 c/s.		IA					
	Vibration Noise Output		2.5		Va (AC)		2	mV RMS	
	Resonance Search (2)	Ra = 27K Frequency = 500 to 2500 c/s		IA					
	Vibration Noise Output		2.5		Va (AC)		8	mV RMS	

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TESTS (CONT'D)

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units	Notes
						Min.	Max.		
11.3	Fatigue Test	Ia = 0 Duration 3 x 23 hrs. Acceleration = 5 g. Frequency = 170 c/s.		IA					
	<u>Post Fatigue Test</u>								
	Anode Voltage Change		2.5		Va		±0.7	V	
	Vibration Noise		2.5				30	mV P/P	
11.4	Shock Test	Ia = 0 Acceleration = 500 g.		IA					
	<u>Post Shock Test</u>								
	Anode Voltage Change		2.5	IA	Va		±0.7	V	
	Vibration Noise		2.5				30	mV P/P	
AVI/5	<u>GROUP D</u> Life Test								
	<u>End Point</u> <u>1000 hours</u>								
	Inoperatives Striking voltage.		2.5	IA					
	Change of maintaining voltage during life.		2.5		Vs		116	V	
	Regulation		2.5				0.4	V	
			2.5				0.19	V	

TESTS (CONT'D)

K1001	Test	Test Conditions	AQL %	Insp. Level	Symbol	Limits		Units	Notes
						Min.	Max.		
A IX/25	<u>GROUP E</u>								
	Electrical Re-test after 28 days holding period.			100%					
	Inoperatives Striking Voltage.		0.5						
	Maintaining Voltage.		0.5	100%			116	V	
	Regulation (1)		0.5	100%		82	88	V	
		§ Va for change of Ia from 5.8 to 6.2 mA	0.5	100%			0.19	V	

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NOTES

1. This test shall be performed only once and by the valve manufacturing department in order to remove catastrophic failures.
2. Test to be conducted in normal ambient room lighting (5-50-ft. candles).
3. A calibrated amplifier detector with C.R.T. indicator having a substantially linear response over the range 50-5000 c/s is to be connected between the anode and cathode. The anode current is to be varied slowly from 1.0-10.0 mA and back to 1.0 mA at least three times.
4. The tube voltage drop shall be measured at 10°C steps over the temperature range specified.
5. The valve shall be tapped and the noise shall not exceed the limit specified.