

Specification MQA/CV8978 Issue 1, 28th April, 1965 To be read in conjunction with K1001 B.S.448 and B.S.1409	<table border="1"> <tr> <th colspan="2">SECURITY</th></tr> <tr> <th>Specification</th><th>Valve</th></tr> <tr> <td>Unclassified</td><td>Unclassified</td></tr> </table>	SECURITY		Specification	Valve	Unclassified	Unclassified
SECURITY							
Specification	Valve						
Unclassified	Unclassified						

Indicates change

TYPE OF VALVE - Pulse modulator tetrode.				<u>MARKING</u>			
CATHODE - Indirectly heated				See K1001/4			
ENVELOPE - Glass				<u>BASE</u>			
PROTOTYPE - CV4082. R.V.T.S. 0045				B.S.448/B8-Q/1.1			
<u>RATINGS AND CHARACTERISTICS</u>				<u>CONNECTIONS</u>			
(Absolute, non-simultaneous, and not for inspection purposes)							
				<u>Note</u>			
Heater voltage		(V)	6.3	Pin		Electrode	
Heater current		(A)	1.32				
Max. Anode voltage (DC)		(KV)	2.0	1		Int.Conn. IC	
Max. Anode voltage (Pulse)		(KV)	4.5	2		Heater h	
Max. screen voltage (DC)		(V)	800	3		Int.Conn. IC	
Max. anode dissipation		(W)	15	4		Screen Grid g2	
Max. screen dissipation		(W)	3.5	5		Control Grid g1	
Max. cathode current (Pulse)		(A)	10.0	6		Int.Conn. IC	
Max. cathode current (DC)		(mA)	120	7		Heater h	
Max. anode current (Pulse)		(A)	7.5	8		Cathode and base shell ks	
Max. peak heater cathode voltage		(V)	± 150	T.C.		Anode a	
Max. grid 1 cathode voltage		(V)	± 200				
Max. grid 1 dissipation		(W)	0.5	<u>DIMENSIONS</u>			
Max. bulb temperature		(C)	240	See K1001/A1/D1			
Inner amplification factor		μ(g1-g2)	7.5				
Max. shock (short duration)		(g)	500				
Max. accn. (continuous)		(g)	2.5				
<u>CAPACITANCES (pF) (Note B)</u>							
Ca, g1 (nom)		pF	0.75	Dimension (mm)			
C in (nom)		pF	14.0	Min.			
C out (nom)		pF	8.5	Max.			
				B Diameter - 34			
				A Overall Length - 100			
				L Seated Length - 85			
				<u>TOP CAP</u>			
				B.S.448/CT1			
				<u>MOUNTING POSITION</u>			
				Any			

NOTES

- A. The temperature over the top of 15 mm of the bulb to be not greater than 150C.
- B. Measured on 1 Mc/s bridge in fully screened holder. No shield. All IC connections left floating.
- C. NATO Stock No. 5960-99-037-4255

TESTS

- AA. To be performed in addition to those tests applicable in K1001 and in the specified order unless otherwise agreed with the Inspecting Authority.
- BB. This valve must have a structure identical with that of the CV4082.
- CC. K1001, section 17, shall apply to this valve. The sampling inspection tests which are performed on CV4082 valves may be used to qualify the CV8978 valves for acceptance, at the discretion of the manufacturer.

TEST CONDITIONS - unless otherwise stated :

Vh(V) Va(V) Vg2(V) Ia(mA)
6.3 150 150 50

K1001	TEST	TEST CONDITIONS	AQL %	Insp. Level	Sym-bol	LIMITS			Units
						Min.	Bogey	Max.	
5.2	<u>GROUP A</u>								
5.2	Insulation	Vg1 - all = -100V Vg2 - all = -300V Va - all = -300V Rg1 = 500k max.		100% 100% 100% 100%	R R R Ig1	100 100 100 -	- - - -	- - - 2.5	M M M μA
	Negative grid Current								
	Pulse voltage test	Va = 3.5kV Vg2 = 600V Vg1 = -160V Note 5		100%					
	<u>GROUP B</u>	Overall AQL	2.5						
	Heater current		0.65	II	Ih	1.17	-	1.47	A
	Heater cathode	Vhk = ± 100V	0.65	II	Ihk	-	-	40	μA
	Leakage current								
	Negative grid Voltage		0.65	II	Vg1	10.5	-	16.5	V
	Screen current		0.65	II	Ig2	-	-	9.0	mA
	Mutual Conductance		0.65	II	gm	6.0	-	10.0	mA/V
	<u>GROUP C</u>	Overall AQL	6.5						
	Amplification Factor		2.5	I	μg1-g2	6.0	-	10.0	
	Anode current	Vg1 = -75V Vg2 = 400V Va = 1500V	2.5	I	Ia	-	-	2.75	mA
	Vibration noise	Note 4	2.5	I	VaAC	-	-	75	mV
	Emission	A+g2+g1 strapped Va pk = 250V Note 2	2.5	I	Ikp	7.5	-	-	A

K1001	TEST	TEST CONDITIONS	AQL %	Insp. Level	Sym-bol	LIMITS			Units
						Min.	Bogey	Max.	
	<u>GROUP D</u> Capacitance	Measured on 1 Mc/s bridge with valve in fully screened holder No shield Note 1	6.5	IC	Cag 1 C in C out	0.55 12.5 7.0	0.75 14.0 8.5	0.95 15.5 10.0	pF pF pF
11.3	<u>GROUP E</u> Fatigue	Vh = 6.9V Note 3		IA					
	<u>Post Fatigue Tests</u>	Combined AQL	6.5						
	Heater-Cathode Leakage Current	Vhk = $\pm$ 100V	2.5		Ihk	-	-	100	μ A
	Negative Grid Current	Rg1 = 500k max	2.5		Ig1	-	-	3	μ A
	Mutual Conductance		2.5		gm	6.0	-	10	mA/V
	Vibration Noise	Note 4	2.5		Va AC	-	-	120	mVrms
	Peak Anode Current	As in Group A	2.5		Ia pk	1.5	-	-	A
11.4	Shock	No voltages Hammer angle = 30°		IA					
	<u>Post Shock Tests</u>	Combined AQL	6.5						
	Heater-cathode Leakage current	Vhk = $\pm$ 100V	2.5		Ihk	-	-	100	μ A
	Negative grid Current	Rg1 = 500k max	2.5		Ig1	-	-	3	μ A
	Mutual Conductance		2.5		gm	6.0	-	10	mA/V
	Vibration noise	Note 4	2.5		VaAC	-	-	120	mVrms
AVI/5	<u>GROUP F</u> Life	Va = 500V Vg2 = 500V Ia = 30 mA Vg1, adjust							
	<u>Life Test end point (500 hrs)</u>								
	Inoperatives		2.5						
	Heater current		6.5		Ih	1.17	-	1.47	
	Heater-cathode Leakage Current	Vhk = $\pm$ 100V	6.5		Ihk	-	-	60	μ A
	Reverse Grid Current	Rg1 = 500k max	6.5		Ig1	-	-	3	μ A
	Mutual Conductance		6.5		gm	5.5	-	10	mA/V

K1001	TEST	TEST CONDITIONS	AQL %	Insp. Level	Sym-bol	LIMITS			Units
						Min.	Bogey	Max	
	<u>GROUP F</u> (Cont) Emission Test	A+g2+g1 strapped Vapk = 250V Note 2	6.5		IkpK	6.0	-	-	A
	Electrode Insulation	See Group A	6.5		R	50	-	-	M
A IX /2.5	<u>GROUP G</u> Electrical retest after 28-day holding period								
A VI /5.6	Inoperatives		0.5	100%					
	Reverse grid current	Rg1 = 500K max.	0.5	100%	Ig1	-	-	2.5	μA

NOTES

1. Capacity connections.

	HP	LP	E
C ag 1	TC	5	2. 4. 7. 8. C.
C in	5	2. 4. 7. 8.	TC. C.
C out	TC	2. 4. 7. 8.	5. C.

2. Tp 2 μsecs p.r.f. 50 c/s.
3. Valves to be vibrated in each of the three required planes for not less than 30 hrs. and not less than 100 hrs. total. Heater switched 1 min. on 3 mins. off. No other voltages applied. Min. peak acceleration = 5g. Frequency = 170 c/s.
4. Va (b) = 250V Rk = 270 ohms
 Vg2 (b) = 250V Ck = 1000 μF
 RL = 2 Kohms Co = 0.1 μF
 Rg2 = 15 Kohms g = 2.5
5. Grid is to be driven with a 2 μS pulse at p.r.f. 1.0 kc/s so that it rises to + 50V ± 5% during pulses. RL to be 2200 ohm ± 5%. Load circuit should include some inductance, which together with circuit damping, should be chosen to produce a peak pulse E.H.T. overshoot equal to half the load pulse voltage. The E.H.T. storage capacitor fed from a high impedance source should be 0.05 μF. Tests to be of 2 minutes duration, and during the second minute the valve should be sensibly free from flashing, as shown by disturbance of the current waveform displayed on an oscilloscope.