MINISTRY OF ~~AVIATION~~ TECHNOLOGY - DLRD/RRE

VALVE ELECTRONIC

CV4123

Specification ~~MOA~~ Mintech/ CV4123

Issue 1 Dated 1st March 1965

To be read in conjunction with K1001, BB448 and BS1409

SECURITY	
Specification	Valve
Unclassified	Unclassified

indicates a change

TYPE OF VALVE: Reliable high vacuum half wave rectifier with special base
CATHODE: Directly heated
ENVELOPE: Glass
PROTOTYPE: VX3549

MARKING
See K1001/4

BASE
Special (See Drawing)

CONNECTIONS
Top cap: Anode
Base contacts: Filament

DIMENSIONS
(See Drawing)

MOUNTING POSITION
Any

RATINGS AND CHARACTERISTICS

(Absolute, non-simultaneous and not for Inspection purposes)

			Notes
Filament Voltage	(V)	1.4	
Filament Current	(mA)	200	
Max. P.I.V.	(kV)	20	A
Max. Peak Anode Current (Recurrent)	(mA)	5	A
Max. Mean Rectified Current	(mA)	0.5	A
Max. Shock (Short Duration)	(g)	500	
Max. Acceleration (Continuous)	(g)	2.5	

TYPICAL OPERATION

Two Valves as doublers

Operating frequency (nom)	kc/s	20	B
Output voltage (nom).	kV	16	
Mean Current	µA	200	
C_{res}	pF	300	

CAPACITANCE

C_{a-f} (nom).	pF	1.0

NOTES

A. Delayed Switching below 400 cycles.

B. Sinusoidal input.

C. NATO Stock Number. 5960-99-037-4626

TESTS

Test conditions - unless otherwise stated:-

V_f = 1.4V V_a = 200V

K1001	Test	Test Conditions	AQL %	Insp. level	Sym-bol	Limits						Units
						Min.	LAL	Bogey	UAL	Max.	ALD	
7.1	Glass Strain		6.5	I								
	GROUP 'A'											
11.1	Vibration	No Voltages Accel. = 5g F = 50 c/s Dur: 1 minute Note 1		100%								
	Filament Current	V_a = 0		100%	I_f	180		200		220		mA dc
	Anode Current (1)			100%	I_a	7.0		11.0		15.0		mA dc
	High Voltage Load	Notes 2 & 3		100%								
	Anode Current (2)	V_f = 1.0V		100%	I_a	5.0						mA dc
	Insertion withdrawal forces	See Outline Drawing Fig.1 Page 5		100%								
	GROUP 'C'		6.5	IA								
	Capacitance Dimensions	Note 4 See Outline Drwg.Fig.1			C_{a-f}					1.5		pF
	GROUP 'D'	Combined AQL	6.5	IA								
11.3	Fatigue	V_f = 1.4V switched 1 min. on 3 mins.off; V_a = 0 Min.pk.accel: = 5g F = 170 c/s Duration = 30+30+39hrs.										

K1001	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	LAL	Bogey	UAL	Max.	ALD	Units
	Post Fatigue Tests											
	Filament Current	V_a = 0	2.5		I_f	180				220		mA dc
	Anode Current (1)		2.5		I_a	6.0						mA dc
	High Voltage Load	Notes 2 & 3	2.5									
11.4	Shock	Combined AQL No Voltages Accel. = 50g Dur. = 11 ms	6.5	IA								
	Post Shock Tests											
	Filament Current	V_a = 0	2.5		I_f	180				220		mA dc
	Anode Current (1)		2.5		I_a	6.0						mA dc
	High Voltage Load	Notes 2 & 3	2.5									
	GROUP 'E'											
AVI/5	Life	Note 5										
AVI/ 5.1	Stability Life Test			I								
	Change in Anode Current (1)		1.0		I_a					10		%
AVI/ 5.3	Intermittent Life Test											
	Life Test End Point 1000 hrs.	Note 5 Combined AQL	6.5	IA								
AVI/ 5.6	Inoperatives		2.5									
	Filament Current		2.5		I_f	170				-		mA dc
	Anode Current (1)		2.5		I_a	1				-		mA dc

K1001	Test	Test Conditions	AQL %	Insp. Level	Sym-Bol	Limits						Units
						Min.	LAL	Bogey	UAL	Max.	ALD	
	GROUP 'F'											
AIX/ 2.5	Electrical Re-test after 28 days holding period			100%								
AVI/ 5.6	Inoperatives		0.5									

NOTES

1. Valves are to be mounted in a horizontal plane. This test is to be performed prior to any electrical tests.

2. Valves shall be operated in a half-wave rectifier circuit which complies with the following conditions:-

   P.I.V. 20 - 22 kV

   I_a (pk. recurrent) 5.0 mA (min.)

   I_a (mean dc) 200 µA (min.)

   F_{osc} in the range 1 kc/s to 100 kc/s

   A typical circuit operating at a frequency of approximately 20 kc/s is shown in Fig 3.

3. Each valve shall be run under the conditions set out in Note 2 for at least one minute. Valves shall be rejected for any signs of softness, persistent flashing or fluctuations in output voltage.

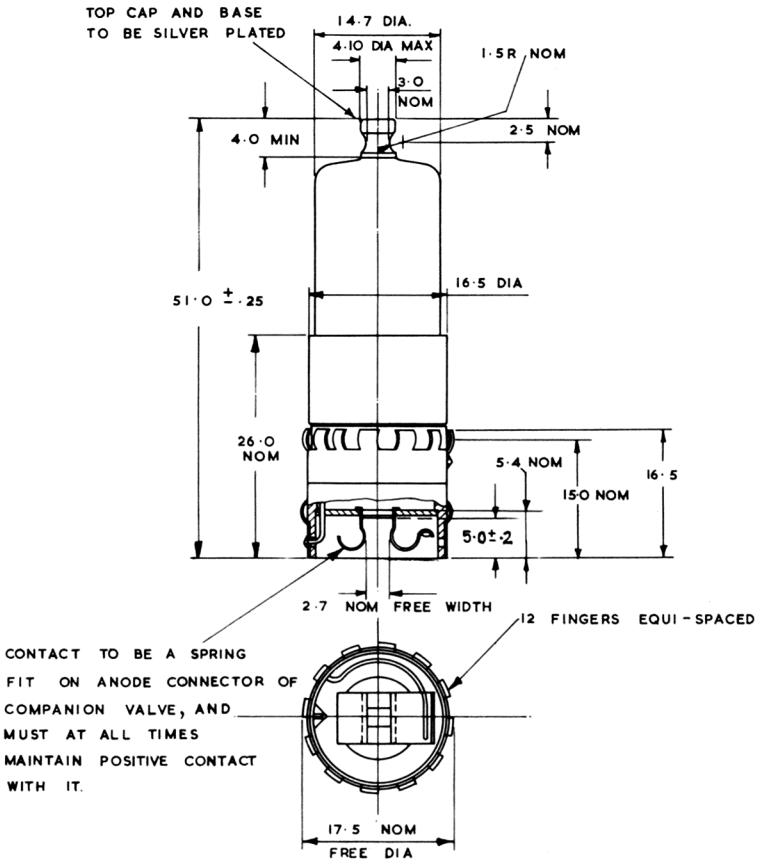
4. Measured with the valve cold in a suitable holder at a nominal frequency of 1 Mc/s.

5. Valves shall be run under the conditions set out in Note 2. except that P.I.V. to be 18 to 20kV and Ia values to be nominal.

Amdt 1

peak value

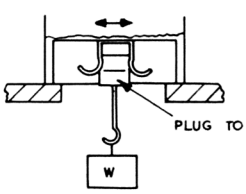
FIG. 1
E.H.T. RECTIFIER
THIRD ANGLE PROJECTION



1. ALL DIMENSIONS ARE MAXIMUM UNLESS OTHERWISE STATED.

2. EACH CONTACT RING MUST ACCEPT A STANDARD RING GAUGE ·6875" INT. DIA. BY 1" LONG. FORCE REQUIRED TO INSERT AND WITHDRAW TO BE 150 GMS. MIN. TO 550 GMS. MAX. MAXIMUM DIFFERENCE BETWEEN CONTACT RINGS SHALL NOT EXCEED 200 GMS. AND MAXIMUM WITHDRAWAL FORCE SHALL NOT EXCEED 1,000 GMS. PER VALVE.

3. THE ANODE CLIP SHALL BE TESTED IN THE FOLLOWING MANNER:—



THE CLIP MUST BE FREE TO SLIDE (IN THE DIRECTION OF THE ARROW ONLY) IN ITS BASE PLATE. FORCE W REQUIRED TO WITHDRAW THE PLUG FROM THE ANODE CLIP TO BE NOT LESS THAN 200 GMS. OR GREATER THAN 800 GMS.

PLUG TO VALVE TOP CAP NOMINAL DIMS.

4. WHEN THE COMPLETE VALVE IS INSERTED INTO PARALLEL SIDED TUBE OF 17·5 M.M. DIA. THE ANODE CAP TO BE CONCENTRIC WITHIN ±·5 M.M.

ALL DIMENSIONS IN MILLIMETRES

FIG 2

TYPICAL VALVE SOCKET ARRANGEMENT

THIRD ANGLE PROJECTION

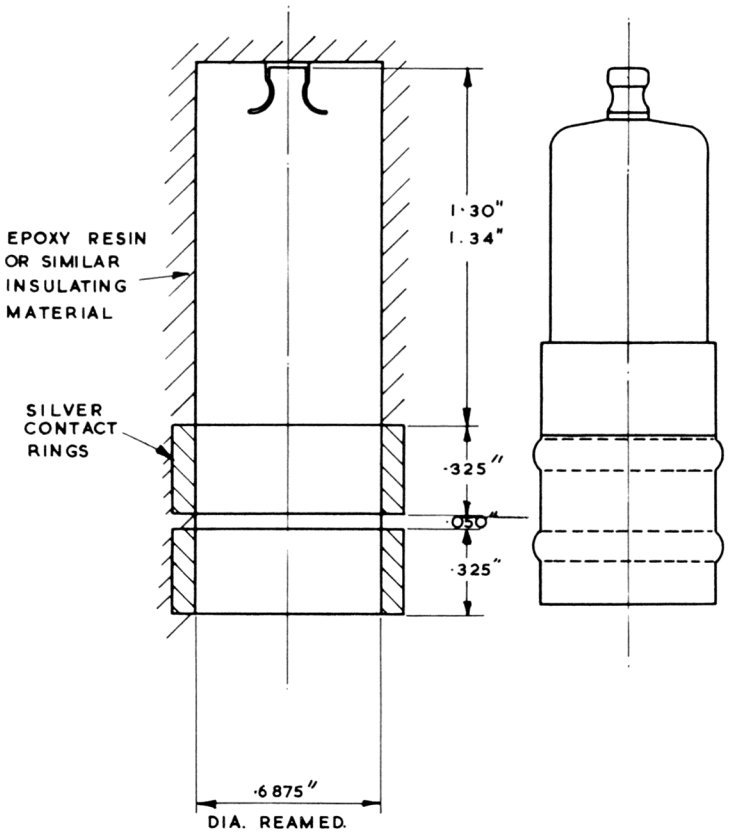
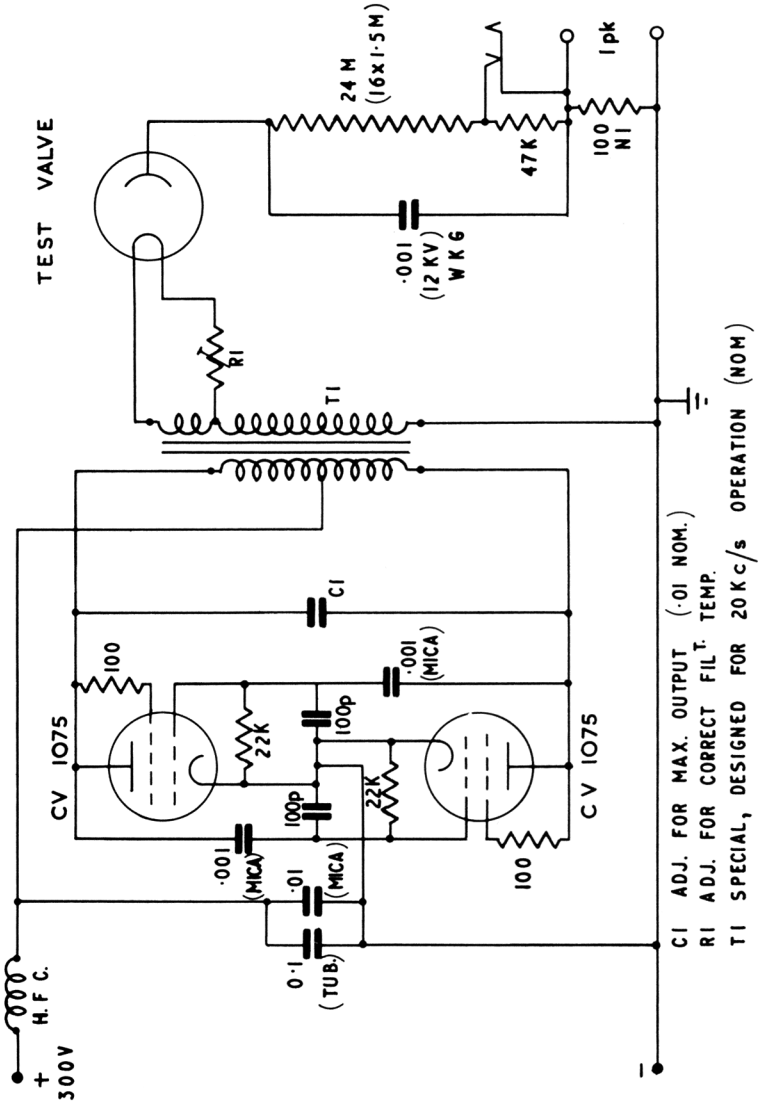


FIG 3

LOAD TEST CIRCUIT



ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOA/CV4123, ISSUE 1, DATED 1st MARCH 1965

AMENDMENT No. 1

1. Page 1

(i) Amend "Specification Authority", "Ministry of Aviation DLRD/RRE" to read "Ministry of Technology - DLRD/RRE".

(ii) Amend "Specification Title", "Specification MOA/CV4123 to read "Specification Mintech./CV4123.

2. Page 4. Note 5. Amend the last seven words to read ".... and I_a peak value to be nominal".

January 1968.
NM.531836(T)

T.V.C. for R.R.E.

28/7/68