Ministry of Supply - D.L.R.D./S.R.D.E.

VALVE ELECTRONIC **CV4092**

Specification MOS/CV4092 Issue 1, Dated 8.1.59. To be read in conjunction with K.1001, BS 448 and BS1409	SECURITY Specification: Unclassified Valve: Unclassified

→ Indicates a change

Type of Valve - Reliable Audio Output Beam Tetrode
Cathode - Directly Heated
Envelope - Glass. Unmetallised
Prototype - VX9184

MARKING

See K.1001/4. Except that the valve shall only be marked with the CV No. Factory and Date Code.

RATING
(All limiting values are absolute)

			NOTE
Filament Voltage	(V)	1.25	A
Filament Current	(mA)	20	
Max. Anode Voltage	(V)	100	
Max. Screen Voltage	(V)	100	
Max. Cathode Current	(mA)	5.5	
Max. Bulb Temperature	(°C)	100	
Max. Shock (Short Duration)	(g)	450	
Max. Acceleration (Continuous Operation)	(g)	5	

BASE

~~See App. I to CV 2237.~~
BS448/B5G/F

CONNECTIONS

PIN	ELECTRODE
1	a (red dot)
2	g_2
3	f (+), bp_2
4	g_1
5	f (-), bp_1

Typical Operating Conditions

Measured at $V_a = Vg_2 = 67.5V$
$Vg_1 = -6.5V$

Anode Current	(mA)	3.1
Screen Current	(mA)	0.95
Mutual Conductance	(mA/V)	0.65
Power Output (R_L = 20 k ohms V_{sig}=4.55V rms)	(mW)	65

DIMENSIONS

See B.S.448/B5G/F
Size Ref. No. 1
~~See App. I to CV2237~~

Dimensions (millimetres)	Min.	Max.
A. Overall Length	-	38.15
Diameter		
B. Minor	-	7.264
C. Major	-	9.804
Lead Length	38.1	

MOUNTING POSITION
ANY

NOTES

A. Do not use series filament circuits. Filament voltage must never exceed 1.55V.

TESTS

To be performed in addition to those applicable in K.1001. Tests shall be performed in the specified order unless otherwise agreed with the Inspecting Authority.

Test Conditions - unless otherwise specified

Vf(V)	Va(V)	Vg_2(V)	Vg_1(V)
1.25	67.5	67.5	-6.5

K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
7.1	Glass Strain	No voltages	6.5	I				
	GROUP A							
	Electrode Insulation	Vf = 0 Vg_1 - all = -100V		100%	R	100		MΩ
		Vg_2 - all = -100V		100%	R	100		MΩ
		Va - all = -100V		100%	R	100		MΩ
	Reverse Grid Current	Rg_1 = 500KΩ Max.		100%	Ig_1	-	0.8	μA
	GROUP B	Combined AQL	1.0	II				
	Filament Current		0.65	II	If	18	22	mA
	Anode Current		0.65	II	Ia	2.1	4.1	mA
	Screen Grid Current		0.65	II	Ig_2	0.35	1.1	mA
	Mutual Conductance		0.65	II	gm	0.475	0.825	mA/V
	Power Output (1)	R_L = 20KΩ V_{sig} = 4.55V rms	0.65	II	P_{out}	50		mW
	GROUP C	Combined AQL	6.5	I				
	Power Output (2)	As Power Output (1) but Vf = 1.0V	2.5	I	P_{out}	25		mW
	Power Output (3)	As Power Output (2) but take readings after 15 minutes	2.5	I	P_{out}	25		mW
	Microphony	Note 1 Va = Vg_2 = 30V Vg_1 = 0 Rg_1 = 4.7 MΩ Delay time 3.5 sec.	2.5	I	V		500	mVrms
	GROUP D							
5.12	Lead Fragility		6.5	IA				
	Filament Anode Short	Note 2		T.A.				
	Functional Test			T.A.	The valves shall operate satisfactorily in W.S. A.40 and A.41			

TESTS (Cont'd)

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K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
	GROUP E							
11.3	Fatigue	Acceleration 5g peak min. Time = 99 hours Note 3		IA				
	Post Fatigue Tests	Combined AQL	4.0					
	Microphony	As in Group C	2.5		V		500	mVrms
	Reverse Grid Current	As in Group A	2.5		Ig_1	-	1.0	µA
	Power Output (1)	As in Group B	2.5		P_{out}	40		mW
11.4	Shock	Hammer angle 30° No voltages		IA				
	Post Shock Tests	Combined AQL	4.0					
	Microphony	As in Group C	2.5		V		500	mVrms
	Reverse Grid Current	As in Group A	2.5		Ig_1	-	1.0	µA
	Power Output (1)	As in Group B	2.5		P_{out}	40		mW
	GROUP F							
A VI/5 A VI/ 5.1	Life Stability Life Test							
	Power Output (2)	As power output (1) but Vf = Ø 1.0V	1.0	I	P_{out}	25		mW
A VI/ 5.3	Intermittent Life Test							
	Life Test End Point (500 hrs.)	Combined AQL	6.5	IA				
A VI/ 5.6	Inoperatives		2.5					
	Power Output (1)	As in Group B	2.5		P_{out}	35		mW
	Reverse Grid Current	As in Group A	2.5		Ig_1	-	1.5	µA
	Electrode Insulation	Vg_1 - all = -100V Vg_2 - all = -100V Va - all = -100V Vf = 0	4.0		R R R	50 50 50		MΩ MΩ MΩ

TESTS (Cont'd)

K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym-bol	Limits Min.	Limits Max.	Units
	GROUP F (Cont'd)							
	Life Test End Point (1000 hrs.)	Combined AQL	10	IA				
A VI/ 5.6	Inoperatives		4.0					
	Power Output (1)	As in Group B	4.0		P_{out}	30		mW
	Reverse Grid Current	As in Group A	4.0		Ig_1	-	1.5	µA
	Electrode Insulation	Vf = 0 Vg_1 - all = -100V Vg_2 - all = -100V Va - all = -100V	6.5		 R R R	 30 30 30		 MΩ MΩ MΩ
	GROUP G							
A IX/ 2.4 & 2.5	Electrical Retest after 28 days holding period			100%				
A VI/ 5.6	Inoperatives		0.5					
	Mutual Conductance				gm	0.475	0.825	mA/V
	Reverse Grid Current	As in Group A	0.5		Ig_1	-	0.8	µA

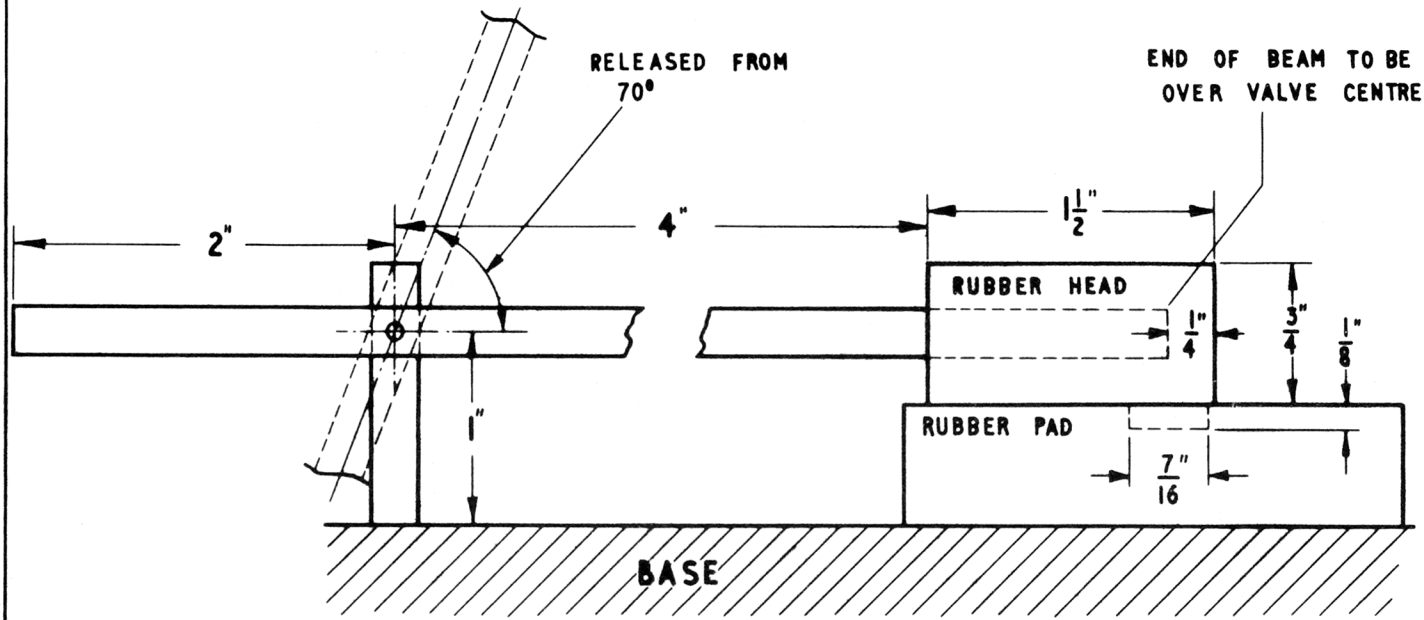
NOTES

1. The microphony output from the valve shall be measured 3.5 secs. after the hammer is released. Details of the hammer used are shown on page 5. The anode load consists of choke, G.P.O. Type L1440.

2. Raise V_f until filament opens. Test for filament to anode short only. After performance of the filament burn out test, if the short circuit shall pass in excess of five times the rated filament current without burning out the short circuit, the valve shall be deemed a failure. This test shall be performed by a Service Laboratory on three valves which shall be in addition to the required number for Type Approval samples. Manufacturers' data are not required for this test.

3. Filament voltage and H.T. voltage switched simultaneously 1min. on 3 mins. off throughout duration of test. Frequency = 170 cps. The valves to be vibrated in each of three mutually perpendicular planes in turn for periods of 30, 30 and 39 hours. One plane to include the longitudinal axis of the valve.

HAMMER FOR MICROPHONY TEST GEAR



NOTE

BEAM TO BE LEVEL WHEN RESTING ON PAD

MATERIAL – ¼" SQ. MILD STEEL BEAM WITH 1½" X ¾" DIA. RUBBER HEAD

⅝" X 2⅝" X 1½" RUBBER PAD

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CV4092/1/5

SPECIFICATION MOS/CV4092
ISSUE 1 DATED 8.1.59

AMENDMENT NO.1

Page 3 Group F Stability Life Test

In Column headed "Test Conditions"

Amend "As power output (1) but Vf = 0"
to read:-
"As power output (1) but Vf = 1.0V"

T.V.C. for S.R.D.E.

April 1959
N.54677D

9.7.59

ELECTRONIC VALVE SPECIFICATION

CV.4092 Issue 1 Dated 8.1.59

AMENDMENT NO. 2

Page 1 Base

Delete:- See Appendix I to CV.2237

Dimensions

Delete:- See Appendix I to CV.2237

28.2.62

Signals Radio Development Establishment.

DECEMBER 1961.

(7729)