VALVE ELECTRONIC **CV2237**

MINISTRY OF SUPPLY (S.R.D.E.)

→ Specification MOS/CV2237 incorporating MIL-E-1/20B Issue 4 Dated 1.5.57 To be read in conjunction with K1006	SECURITY Specification: Unclassified	Valve: Unclassified

→ Indicates a change

TYPE OF VALVE:- R.F. Pentode, Sharp Cut-off

CATHODE:- Directly Heated

ENVELOPE:- Glass, Metallised

PROTOTYPE:- 1AD4.

MARKING

See K1001/4 except that the valve shall only be marked with the CV No., factory and date code, and "1AD4".

RATING		Note
Filament Voltage (V)	1.25	
Filament Current (mA)	100	
Max. Anode Voltage (V)	100	A
Max. Screen Voltage (V)	100	A
Anode Current (mA)	3	B
Screen Current (mA)	0.9	B
Mutual Conductance (mA/V)	2.0	B
Max. Cathode Current (mA)	7.0	A

BASE ~~See App. I to CV2237~~

BS448/B5G/F
(In line - lead sub-miniature)

CONNECTIONS

Pin	Electrode
1	p, red dot
2	g2
3	-f, 1g3, Sd
4	g1
5	+f, 2g3 See Note C

CAPACITANCE (pF)	
C_{g1p} (max.)	0.01
C_{out} (nom.)	4.0
C_{in} (nom.)	4.0

DIMENSIONS ~~See App.I to CV2237~~

See BS448/B5G/F
Size reference No. 1

DIMENSIONS (Inches)	MIN.	MAX.
A. Overall length	-	1.502
Diameter		
B minor	-	0.286
C major	-	0.386
Lead length	1.5	-

MOUNTING POSITION

Any

NOTES

A. Absolute maximum or minimum values.
B. Measured at Va = Vg2 = 45 Vg1 = 0
C. Grid 3 comprises two separate deflector plates, one of which is connected to pin 3 and the other to pin 5.

ELECTRONIC VALVE SPECIFICATION

CV.2237 Issue 4 dated 1.5.57

AMENDMENT NO. 1

Page A Base

Delete:- See Appendix I to CV.2237

Dimensions

Delete:- See Appendix I to CV.2237

Remove and destroy Appendix I

27.2.62
GB.

December 1961

Signals Radio Development Establishment

(7725)

APPENDIX I TO CV2237

SECTION B5G/F - 1.1 B5G/F BASE

The millimetre dimensions are derived from the original inch dimensions except dim. 'A'.

Ref.	DIMENSIONS							Notes
	Inches			Degrees	Millimetres			
	Min.	Nom.	Max.	Nom.	Min.	Nom.	Max.	
A			.05				1.27	1
B	1.5				38.1			2
C		.048				1.22		3
D	.015	.016	.018		.385	.405	.455	4

NOTE 1. Wires to be tinned.

NOTE 2. Lead lengths are defined with respect to the plane of the base seat as determined with the valve positioned in a cavity of the B5G outline gauge.

NOTE 3. Lead spacing shall be checked by the appropriate lead spacing gauge specified in Section B5G/F/1.2.

NOTE 4. The specified lead dia. applies in the zone between .05 in. (1.27 mm) and .250 in. (6.35 mm) from the base seat. Between .250 in. (6.35 mm) and 1.5 in. (38.1 mm) a maximum of .021 in. (.53 mm) is held. Outside of these zones the lead dia. is not controlled.

NOTE 5. The lead nearest the reference mark shall be numbered as 1. The other leads shall be numbered progressively from Lead No. 1, but where a lead is omitted its position shall be included in the numbering of the other leads.

APPENDIX I TO CV2237

SECTION B5G/F - 1.2. B5G/F BASE LEAD SPACING GAUGE

NOTE. The gauge specified in Section B7E/F - 1.2 may be used as an alternative.

The millimetre dimensions are derived from the original inch dimensions.

Ref.	DIMENSIONS							Notes
	Inches			Degrees	Millimetres			
	Min.	Nom.	Max.	Nom.	Min.	Nom.	Max.	
A		.531				13.594		
B	.225				5.715			
C	.217		.219		5.512		5.562	
D	.026	.026	.0265		.662	.662	.672	
E	.0215	.0220	.0220		.548	.558	.558	
F		.187				4.75		
G	.120	.125	.130		3.05	3.175	3.3	

NOTE 1. All edges of the teeth should be chamfered or rounded within the limits .005 in. - .010 in. (.127 - .254 mm) rad.

NOTE 2. The width (Dimension D) of a single appropriate slot may be enlarged to a depth of .050 in. max. (1.27 mm) to provide clearance for a connecting lead to any external conducting coating.

NOTE 3. Gauging procedure. With valve held with its axis at right angles to face plane of teeth and the plane of the leads transverse to teeth the leads shall press into slots and some portion of base surface shall bottom against gauge when a force not exceeding twenty ounces is applied at right angles to the face plane of the gauge.

NOTE 4. The B7E/F gauge may be used as an alternative to the B5G/F gauge.

APPENDIX I TO CV2237

SECTION B5G/F - 2.1. B5G/F VALVE OUTLINE

The millimetre dimensions are derived from the original inch dimensions.

Size Ref. No.	Ref.	DIMENSIONS							Notes
		Inches			Degrees	Millimetres			
		Min.	Nom.	Max.	Nom.	Min.	Nom.	Max.	
1	A								1
	B								1
	C								1
	D	1.2		1.4		30.6		35.4	2
2	A								1
	B								1
	C								1
	D	0.97		1.17		24.8		29.6	2

NOTE 1. As defined by the valve outline gauge. As specified in Section B5G/F.2.2.

NOTE 2. Measured from base seat to bulb top line as determined by ring gauge of .210 in. ± .001 in. I/D (5.334 ± .025 mm).

NOTE 3. Min. length of leads 1.5 in. (38.1 mm).

NOTE 4. The dotted line indicates alternative seal shape.

NOTE 5. Reference mark (coloured dot).

APPENDIX I TO CV2237

SECTION B5G/F - 2.2 B5G/F VALVE OUTLINE GAUGE

The millimetre dimensions are derived from the original inch dimensions.

Size Ref. No.	Ref.	DIMENSIONS							Notes
		Inches			Degrees	Millimetres			
		Min.	Nom.	Max.	Nom.	Min.	Nom.	Max.	
1	A	1.5		1.502		38.1		38.15	
	B	.285		.286		7.240		7.264	
	C	.385		.386		9.780		9.804	
	D	.037		.038		.94		.964	
2	A	1.25		1.252		31.75		31.8	
	B	.285		.286		7.24		7.264	
	C	.385		.386		9.780		9.804	
	D	.037		.038		.94		.964	

NOTE 1. The valve shall fit in the gauge without undue force and the bulb shall lie completely within the enclosure as determined with the slider.

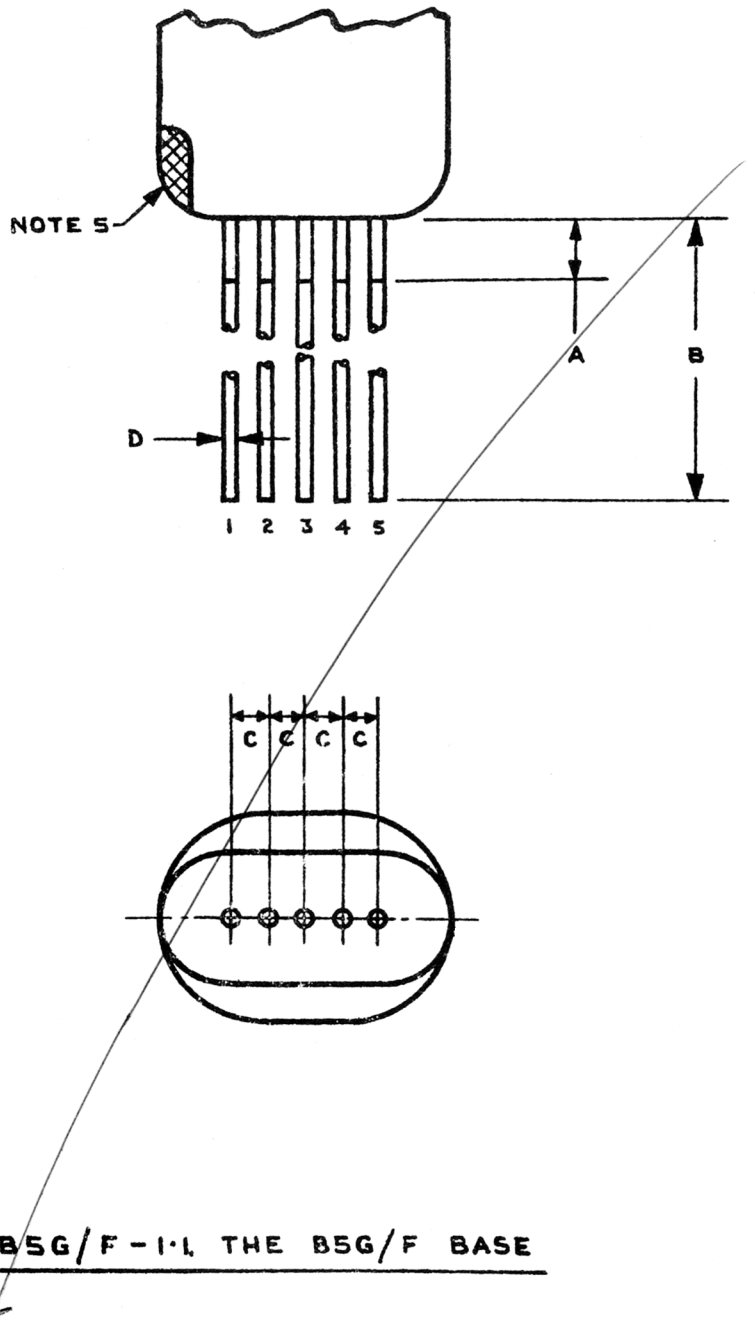

FIG B5G/F-1.1 THE B5G/F BASE

DRG Nº 4728/1
ISSUE 2

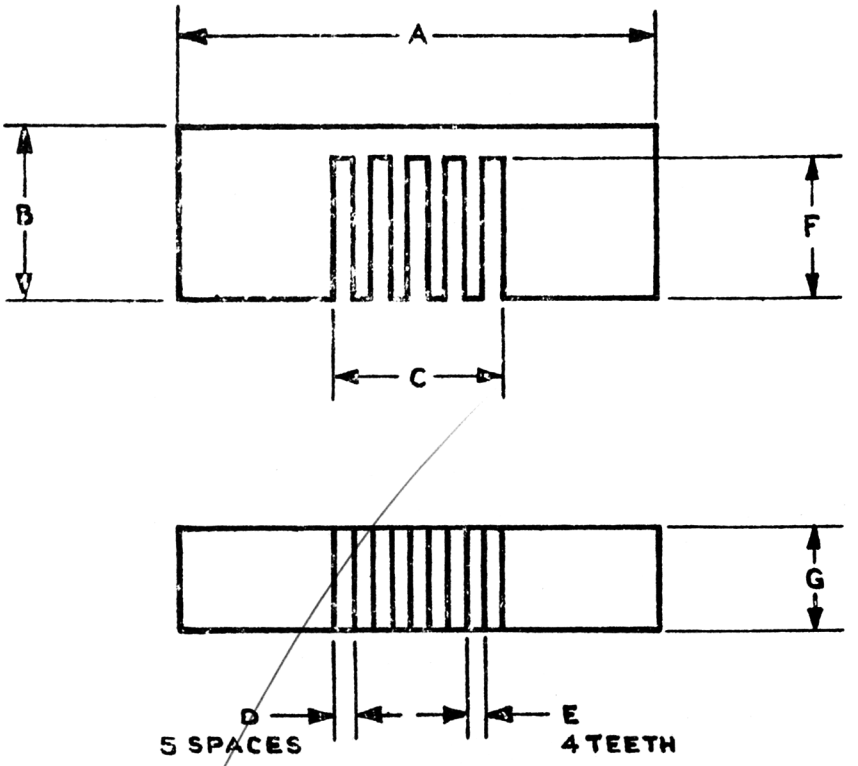

FIG B5G/F - 1·2. B5G/F BASE LEAD SPACING GAUGE

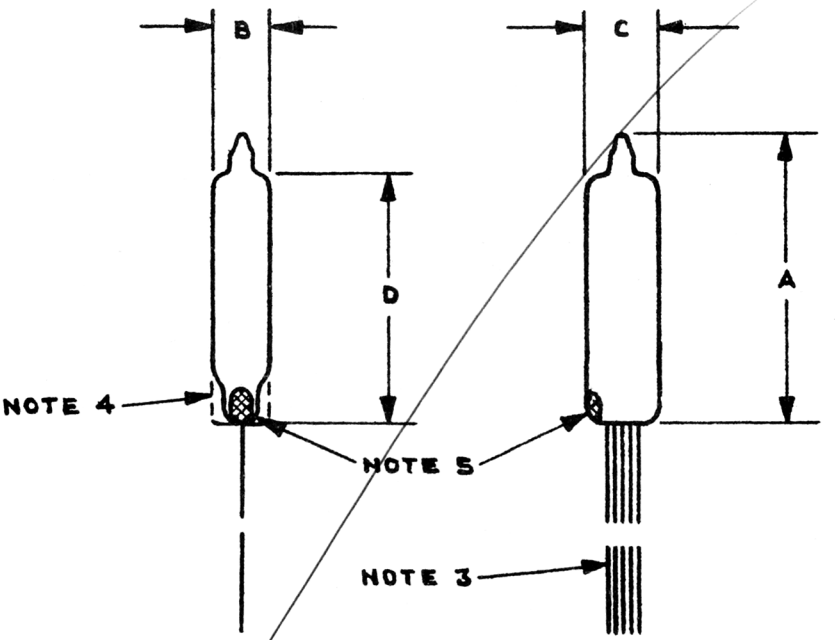

FIG B5G/F - 2·1. B5G/F VALVE OUTLINE

DRG Nº 4728/3
ISSUE2

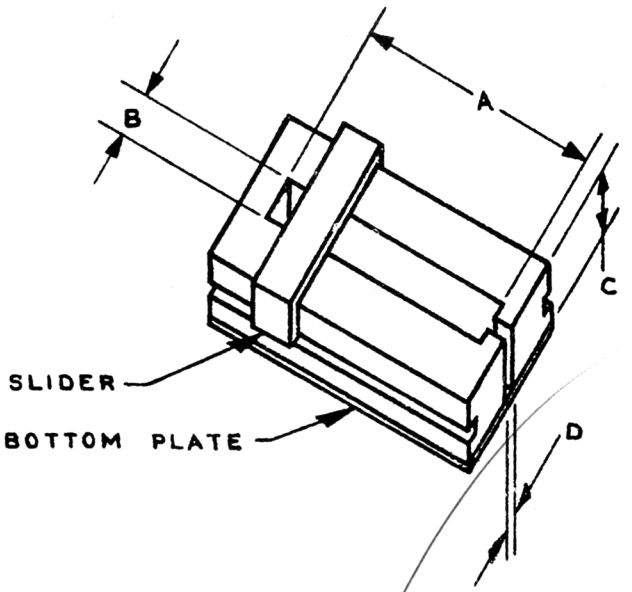

FIG B5G/F-2.2. B5G/F VALVE OUTLINE GAUGE

DRG Nº 4728/4

MIL-E-1/20B
26 December 1956
SUPERSEDING
MIL-E-1/20A
9 July 1953

CV2237

INDIVIDUAL MILITARY SPECIFICATION SHEET

ELECTRON TUBE, RECEIVING, RF SHARP CUTOFF PENTODE

JAN-1AD4

This specification sheet forms a part of the latest issue of Military Specification MIL-E-1.

Description: RF Sharp Cutoff Pentode

Ratings:	Ef	Ec1	Ec2	Eb	Rg1	Ik	Alt
	Vdc	Vdc	Vdc	Vdc	Meg	mAdc	ft
Absolute Maximum:	1.25±20%	—	100	100	—	7.0	10,000
Test Cond.:	1.25	0	45	45	2	---	---

*Height: Max. 1.50 in.
**Base: Flat press (0.016 in. tinned flexible leads.
Length: 1.50 in. min; Spacing: .050 in. c/c)

*Diameter: Major 0.385 in. max.
Minor 0.285 in. max.

Pin No.:	1	2	3	4	5
Element:	p	g2	-f	g1	+f
	Red Dot		1g3 sd		2g3 Note 1

**Cathode: Coated Filament
**Envelope: T-2x3 (8-8) with Metallic Shield Coating

For miscellaneous requirements, see Paragraph 3.3, Inspection Instructions for Electron Tubes.

Ref.	Test	Conditions		Min.	Max.	
3.1	Qualification Approval:	Required for JAN Marking				
4.9.16.1.1	Carton Drop:	(d) Package Group 1; Carton Size C				
4.9.5.3	#Subminiature Lead Fatigue:			3	---	arcs
4.9.19.1	*Vibration:	Rp=10,000	Ep:	—	200	mVac
---	**Filament Plate Short:	Note 2				
4.10.8	*Filament Current:		If:	88	112	mA
→ 4.10.6.1	† Grid Current:	Eb=Ec2=55Vdc; Ec1=-1.0Vdc	Ic1:	0	-0.5	uAdc
4.10.4.1	Plate Current:		Ib:	1.9	4.1	mAdc
4.10.4.3	*Screen Grid Current:		Ic2:	0.5	1.3	mAdc
4.10.9	† Transconductance(1):	Ef=1.0Vdc	Sm:	1200	2500	umhos
4.10.9	*Transconductance(2):		Sm:	1500	2500	umhos
4.10.9	#Transconductance(3):	Ef=1.0Vdc; Take reading after 15 minutes	Sm:	1200	2500	umhos
4.10.10	*Plate Resistance:		Rp:	0.2	—	Meg
4.10.3.1	RF Noise:	Esig=30mVac				
4.10.14	*Capacitance:		Cgp:	—	0.01	uuf
			Cin:	3.0	5.0	uuf
			Cout	3.0	5.0	uuf

CV2237

Ref.	Test	Conditions		Min.	Max.	
4.11	Life Test:	Ef=1.25V;Rgl=5.0Meg; Group A	t:	500	—	hrs
4.11.4	Life Test End Point:	Transconductance(2)	Sm:	1200	—	umhos

Note 1: Grid 3 is composed of two separate deflector plates, one of which is connected to pin 3 and the other to pin 5.

Note 2: Raise Ef until filament opens. Test for filament to plate 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 tube shall be deemed a failure.

This test shall be performed by a Service Laboratory on three tubes, which shall be in addition to the required number of qualification approval samples. Manufacturer's data are not required for this test.

Note 3: Referenced specification shall be of the issue in effect on the date of invitation for bid.