

MINISTRY OF SUPPLY (D.L.R.D./R.A.E.)
PROCUREMENT EXECUTIVE, MINISTRY OF DEFENCE

SPECIFICATION MS/CV.2453 MOD (PE) CV2453

ISSUE NO. 2 DATED 1.7.59

To be read in conjunction with K.1001, BS.448 and BS.1409.

SECURITY

SPECIFICATION

Unclassified

VALVE

Unclassified

TYPE OF VALVE - Low Noise R.F. Triode Amplifier.
CATHODE - Indirectly heated.
ENVELOPE - Glass.
PROTOTYPE - A2521. RETMA. 6CR4.

MARKING

K.1001/4.

RATINGS
(All limiting values are absolute)

NOTES

Heater Voltage	(V)	6.3	A, C.
Heater Current	(A)	0.37	
Max. Anode Voltage	(V)	250	
Max. Anode Dissipation	(W)	2.5	
Max. Cathode Current	(mA)	20.0	
Max. Heater Cathode Voltage	(V)	100	
Mutual Conductance	(mA/V)	15	

Typical Operating ConditionsClass A. U.H.F. Grounded Grid Amplifier

Va = 130V.

Vg = -1.0V approx.

Ia = 16mA.

Power Gain = 10 dbs }
Bandwidth = 50 Mc/s } Note D.

Noise Factor 900 Mc/s 11.5 db
800 Mc/s 10.9 db
700 Mc/s 10.2 db
600 Mc/s 9.4 db
500 Mc/s 8.4 db

BASE

BS.448/B9A.

CONNECTORS

Pin	Electrode
1	Grid g
2	Cathode k
3	Grid g
4	Grid g
5	Anode a
6	Grid g
7	Heater h
8	Heater h
9	Grid g

DIMENSIONS

See BS.448/B9A/2.1
Size Ref. No.2.

DIMENSIONS (mm)	MIN.	MAX.
"A" Seated Height	-	49
"C" Diam.	-	22.2
"D" Overall Length	-	56

CAPACITANCES (pF)

Cge (Nom.)	3.55	B
Cae (Nom.)	0.055	B
Cag (Nom.)	1.6	B

NOTES

- A. Measured at Va (b) 180V, RL 3.3 k Ω , Rk. 68 Ω .
B. Measured with a close fitting metal screen.
C. Measured in a mutual conductance bridge, max. frequency 1Kc/s, max. input signal to grid 100mV r.m.s.
D. Power Gain and Bandwidth may be adjusted by altering the coupling between the anode line and the output loop. Under these typical conditions the relationship between Power Gain and Bandwidth at 900 Mc/s is:-

<u>Power Gain</u>	6 dbs	<u>Bandwidth</u>	100 Mc/s
	8 dbs		70 Mc/s
	10 dbs		50 Mc/s
	12 dbs		37 Mc/s
	14 dbs		30 Mc/s
	16 dbs		25 Mc/s

TESTS

To be performed in addition to those applicable in K.1001 excluding Clause 5.2.

<u>TEST CONDITIONS:-</u> unless otherwise stated Vh (V) 6.3 Va(b) (V) 180 RL Ra (KΩ) 3.3 Rk (Ω) 68									
K.1001 Ref.	Test	Test Conditions	AQL %	Insp. Level	Sym- bol	Limits			Units
						Min.	Bogey	Max.	
	<u>Group A</u>								
	Anode Current			100%	Ia	12	16	20	mA
	Anode Current	Vg1 = -4.0V		100%	Ia	-	-	2.6	mA
	Mutual Conductance	Note 1		100%	gm	11.5	15.0	18.5	mA/V
	Reverse Grid Current	Vg = -1.0V Rg = 500 kΩ max.		100%	-Ig	-	-	1.2	μA
	<u>Group B</u>								
	Heater Current		0.65	II	Ih	0.33	0.37	0.41	A
	Heater Cathode Leakage Current	Vhk ± 90V	0.65	II	Ihk	-	-	20	μA
	<u>Group C</u>								
	Noise Factor	Freq. = 900 Mc/s Note 3.	6.5	I	NF	-	-	12.5	dB
7.2	<u>Group D</u>								
	Base Strain	No voltages	6.5	IC	-	-	-	-	
	Capacitances	Measured on a 1 Mc/s bridge with valve mounted in a fully shielded socket. Valve screened. See Note 2.	6.5	IC					
					Cin	3.6	4.5	5.4	pF
					Cak	-	-	0.08	pF
					Cout	1.4	1.8	2.2	pF
AIX/2.5	<u>Group E</u>								
	Electrical retest after 28 days holding period.			100%					
	Inoperatives Reverse Grid Current.	Rg 500KΩ max.	0.5 0.5		Ig	-	-	1.5	μA

NOTES.

1. MEASURED IN A MUTUAL CONDUCTANCE BRIDGE, MAXIMUM FREQUENCY 1Kcps; MAXIMUM INPUT SIGNAL TO GRID 100m.V.rms. OR ANY OTHER APPROVED METHOD.

Re and Rk to be by-passed by 64 μ F and 1000 μ F capacitors respectively.

2. CAPACITANCE CONNECTIONS AS FOLLOWS :-

CAPACITANCE	H.P.	L.P.	E.
C IN	1,3,4,6,9.C	2,7,8.	5. E
C AK	5	2,7,8.	1,3,4,6,9.C
C OUT	5	1,3,4,6,9.C	2,7,8. E

3. TO BE MEASURED IN AN APPROVED CIRCUIT: SEE FIGS.1 & 2 BELOW.

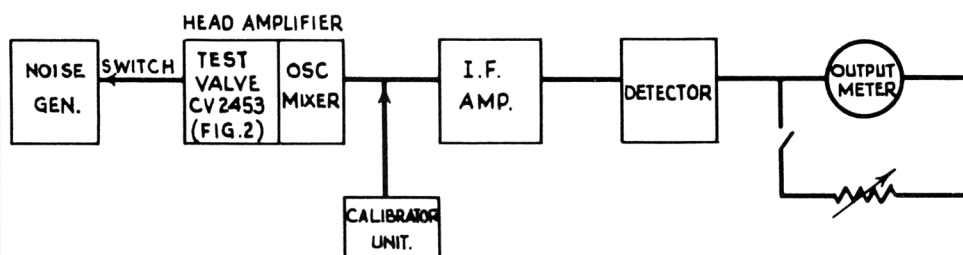


FIG.1. NOISE FACTOR SCHEMATIC DIAGRAM.

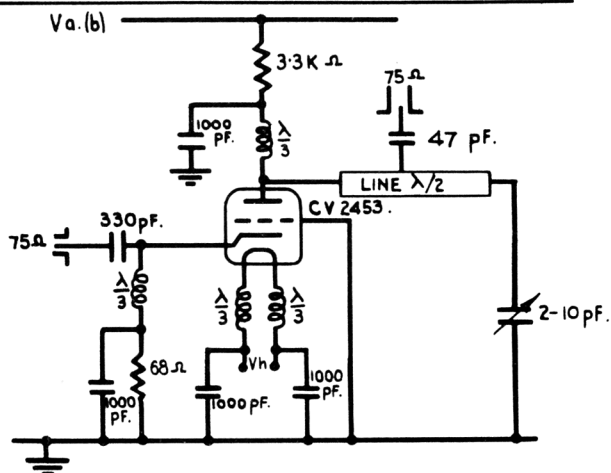


FIG.2. HEAD AMPLIFIER VALVE TEST CIRCUIT.

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOS/CV.2453

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AMENDMENT No. 1

Page 3 Note 2 Table

Cin. Transfer 'C' from column
 headed 'E' to column
 headed H.P.

Cout. Transfer 'C' from column
 headed 'E' to column
 headed L.P.

Royal Aircraft Establishment.

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N.12150.D

1115
26/6.

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Amendment No 2

1 Page 1

i SPECIFICATION AUTHORITY

Delete "Ministry of Supply (DLRD/RAE)"

Insert "PROCUREMENT EXECUTIVE, MINISTRY OF DEFENCE".

ii SPECIFICATION TITLE

Delete "SPECIFICATION MOS/CV2453".

Insert "SPECIFICATION MOD(PE)CV2453".

2 Page 2

TEST CONDITIONS (the general test conditions at top of page).

Amend the 3rd column heading "L" to read "R_a".

3 Page 3. Note 1

Add to existing Note 1 - "R_a and R_k to be by-passed by 64 uF and
1000 uF capacitors respectively".

JAA
24/72