

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION MOS/CV.2453

ISSUE No. 2 DATED 1.7.59.

AMENDMENT No. 1

Page 3 Note 2 Table

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

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

Royal Aircraft Establishment.

December, 1959.

N.12150.D.

SPECIFICATION MOS/CV2453, ISSUE 2, DATED 1.7.59

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<sub>a</sub>".

3 Page 3. Note 1

Add to existing Note 1 - "R<sub>a</sub> and R<sub>k</sub> to be by-passed by 64 uF and  
1000 uF capacitors respectively".

MINISTRY OF SUPPLY (D.L.R.D./P.A.S.)  
 PROCUREMENT EXEC. DIV. OF DEFENCE

SPECIFICATION <del>MS/CV.2453</del> MOD (P) CV2453	<u>SECURITY</u>	
ISSUE NO. 2 DATED 1.7.59	<u>SPECIFICATION</u>	<u>VALVE</u>
To be read in conjunction with K.1001, BS.448 and BS.1409.	Unclassified	Unclassified

TYPE OF VALVE - Low Noise R.F. Triode Amplifier. CATHODE - Indirectly heated. ENVELOPE - Glass. PROTOTYPE - A2521. RETMA. 6CR4.		<u>MARKING</u> K.1001/4.																					
<u>RATINGS</u> (All limiting values are absolute)		<u>BASE</u> BS.448/B9A.																					
Heater Voltage (V) 6.3 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		A, C.	<u>CONNECTORS</u>																				
<u>Typical Operating Conditions</u> Class A. U.H.F. Grounded Grid Amplifier Va = 130V. Vg = -1.0V approx. Ia = 16mA. Power Gain = 10 db 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			<table border="1"> <thead> <tr> <th>Pin</th> <th>Electrode</th> </tr> </thead> <tbody> <tr><td>1</td><td>Grid g</td></tr> <tr><td>2</td><td>Cathode k</td></tr> <tr><td>3</td><td>Grid g</td></tr> <tr><td>4</td><td>Grid g</td></tr> <tr><td>5</td><td>Anode a</td></tr> <tr><td>6</td><td>Grid g</td></tr> <tr><td>7</td><td>Heater h</td></tr> <tr><td>8</td><td>Heater h</td></tr> <tr><td>9</td><td>Grid g</td></tr> </tbody> </table>	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
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																						
<u>CAPACITANCES (pF)</u>		<u>DIMENSIONS</u> See BS.448/B9A/2.1 Size Ref. No.2.																					
Cge (Nom.)	3.55	B	"A" Seated Height																				
Cae (Nom.)	0.055	B	"C" Diam.																				
Cag (Nom.)	1.6	B	"D" Overall Length																				
			MIN. MAX.																				
			- 49																				
			- 22.2																				
			- 56																				
<u>NOTES</u>																							
A. Measured at Va (b) 180V, RL 3.3 kΩ, Rk. 68Ω. 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 db	<u>Bandwidth</u>	100 Mc/s																				
	8 db		70 Mc/s																				
	10 db		50 Mc/s																				
	12 db		37 Mc/s																				
	14 db		30 Mc/s																				
	16 db		25 Mc/s																				

TESTS

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

TEST CONDITIONS:- unless otherwise stated									
		Vh (V) 6.3	Va(b) (V) 180	R <sub>k</sub> (KΩ) 3.3	R <sub>k</sub> (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%	-I <sub>g</sub>	-	-	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		0.5						
	Reverse Grid Current.	Rg 500KΩ max.	0.5		I <sub>g</sub>	-	-	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.  
*R<sub>a</sub> and R<sub>k</sub> to be by by passed by 64μf + 1000uf Caps. respectively.*
2. CAPACITANCE CONNECTIONS AS FOLLOWS :-

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

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

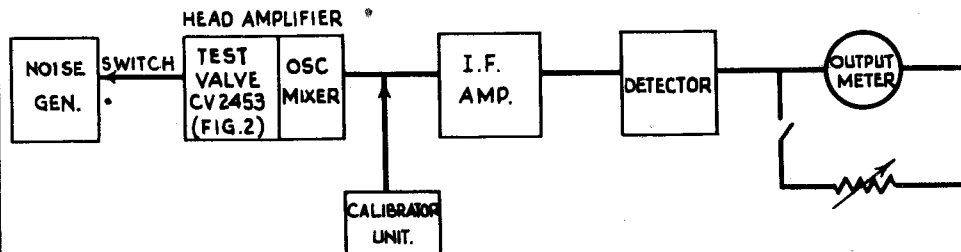


FIG.1. NOISE FACTOR SCHEMATIC DIAGRAM.

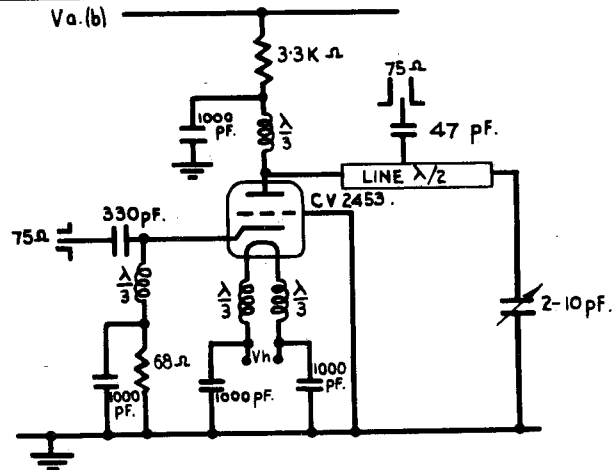


FIG.2. HEAD AMPLIFIER VALVE TEST CIRCUIT.