

MINISTRY OF SUPPLY (D.C.D.)

VALVE ELECTRONIC

CV491

Specification MAP/ CV491 Issue 3 Dated: 17.9.51 To be read in conjunction with K1001	<table> <tr> <th colspan="2">SECURITY</th></tr> <tr> <td>Specification</td><td>Valve</td></tr> <tr> <td>UNCLASSIFIED</td><td>UNCLASSIFIED</td></tr> </table>	SECURITY		Specification	Valve	UNCLASSIFIED	UNCLASSIFIED
SECURITY							
Specification	Valve						
UNCLASSIFIED	UNCLASSIFIED						

→ Indicates a change

TYPE OF VALVE - Double Triode				<u>MARKING</u>				
CATHODE - Indirectly heated				See K1001/4				
ENVELOPE - Glass, unmetallised								
PROTOTYPE - 12AU7								
<u>RATING</u>			Note	<u>BASE</u> B9A				
Heater Voltage (V)			12.6	A	<u>CONNECTIONS</u>			
Heater Current (A)			0.15	A				
Max. Anode Voltage (V)			330	D	Pin	Electrode		
Max. Anode Dissipation (W)			3.0	B, D				
Max. Cathode Current (mA)			20	B, D	1	A (b)		
Mutual Conductance (mA/V)			2.2	C	2	G (b)		
Amplification Factor			17	C	3	C (b)		
Anode Impedance (ohms)			7700	C	4	H		
Max. Heater - Cathode Voltage (V)			200	D	5	H		
					6	A (a)		
					7	G (a)		
					8	C (a)		
					9	HOT		
<u>CAPACITANCES (pF)</u>					<u>DIMENSIONS (mm)</u>			
Ca-g			1.5	B	Dimension		Min.	Max.
Cg-e			1.6	B				
Ca-e (a)			0.50		Amm		-	55.7
Ca-e (b)			0.35		Bmm		-	22.4

NOTES

- A. Centre tapped heater
- B. Each section, measured without metal screen
- C. Measured at: $V_a = 250V$; $V_{g1} = -8.5V$; ($I_a = 10.5 \text{ mA}$).
- D. Absolute maximum values

To be performed in addition to those detailed in K1001

Test Conditions				Tests	Limits		No. Tested	Note
					Min.	Max.		
	Links to H.P.	Links to L.P.	Links to E	CAPACITANCES (pF)				
				Ca(a) - g(a)				
				Ca(b) - g(b)				
				Cg(a) - e				
				Cg(b) - e				
				Ca(a) - e				
				Ca(b) - e				
							Results to be collated	1
	Vh	Va	Vg1					
b	12.6	0	0	Ih (A)	.138	.162	100% or S	
c	12.6	250	- 8.5	Ia (mA)	6.5	14.5	100%	2
d	12.6	250	- 30	Ia (μ A)	0	50	100% or S	2
e	12.6	250	- 8.5	Reverse Ig (μ A)	0	2.0	100%	3
f	12.6	250	- 8.5	gm (mA/V)	1.75	2.65	100%	2
g	12.6	250	- 8.5	μ	15.5	18.5	20 per week	2
h	12.6	100	0	gm (mA/V)	2.5	4.0	100%	2
j	12.6	30 max.	30	Emission (mA)	70	-	100%	2,4

NOTES

1. Measured without metal screen.
2. Each section to be tested separately, with opposite section earthed, or biased to cut off.
3. Anode (a) to be connected to Anode (b), Grid (a) to Grid (b), and Cathode (a) to Cathode (b). Of the total current not more than 1 μ A shall be present in any one section.
4. Test voltages to be applied only for sufficient time to obtain steady reading.

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Valve Electronic Type CV 491

TYPICAL OPERATING CONDITIONS

As Class A1 Amplifier.

Anode Voltage	100	250	Volts
Grid (G1) Voltage	0	-8.5	Volts
Amplification Factor	19.5	17	-
Anode Impedance	6250	7700	Ohms
Mutual Conductance	3.1	2.2	mA/V
Anode Current	11.8	10.5	mA

As Resistance Coupled Amplifier;

Anode Supply Voltage = 100 volts

Anode load (Ra megohms)	0.047		0.1		0.22	
Grid leak (succeeding valve megohms)	0.1	0.22	0.22	0.47	0.47	1.0
Cathode Resistance (ohms)	1800	2000	3800	4700	9500	11500
Output voltage (peak)	11	14	15	18	20	24
Voltage gain	11	11	11	11	11	11

Anode Supply Voltage = 200 volts

Anode load (Ra megohms)	0.047		0.1		0.22	
Grid leak (succeeding valve megohms)	0.1	0.22	0.22	0.47	0.47	1.0
Cathode Resistance (ohms)	1200	1400	2800	3600	8300	10000
Output voltage (peak)	26	29	33	40	44	54
Voltage gain	12	12	12	12	12	12

Anode Supply Voltage = 300 volts

Anode load (Ra megohms)	0.047		0.1		0.22	
Grid leak (succeeding valve megohms)	0.1	0.22	0.22	0.47	0.47	1.0
Cathode Resistance (ohms)	1200	1500	3000	4000	8800	11000
Output voltage (peak)	52	68	68	80	82	92
Voltage gain	12	12	12	12	12	12

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Typical Operating Conditions (Cont'd)As R.F. Doubler;Continuous ratings as a doubler without modulation.

D.C. anode voltage	250	Volts
D.C. grid voltage	-108	Volts
D.C. grid resistor	47,000	Ohms
Peak R.F. grid voltage	120	Volts
D.C. anode current	16	mA
D.C. grid current	2.3	mA
Succeeding valve grid resistor	22,000	Ohms
Succeeding valve grid drive	6	mA x.

x. Measured with typical coil doubling from 45 Mc/s.

As R.F. Trebler;Continuous ratings as an R.F. trebler without modulation.

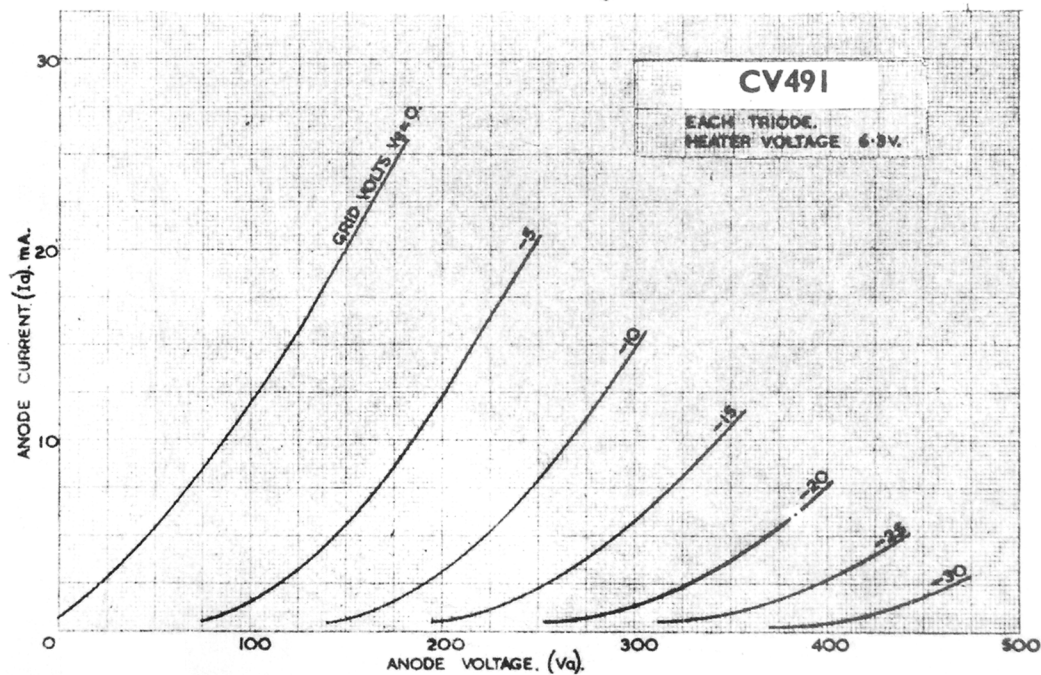
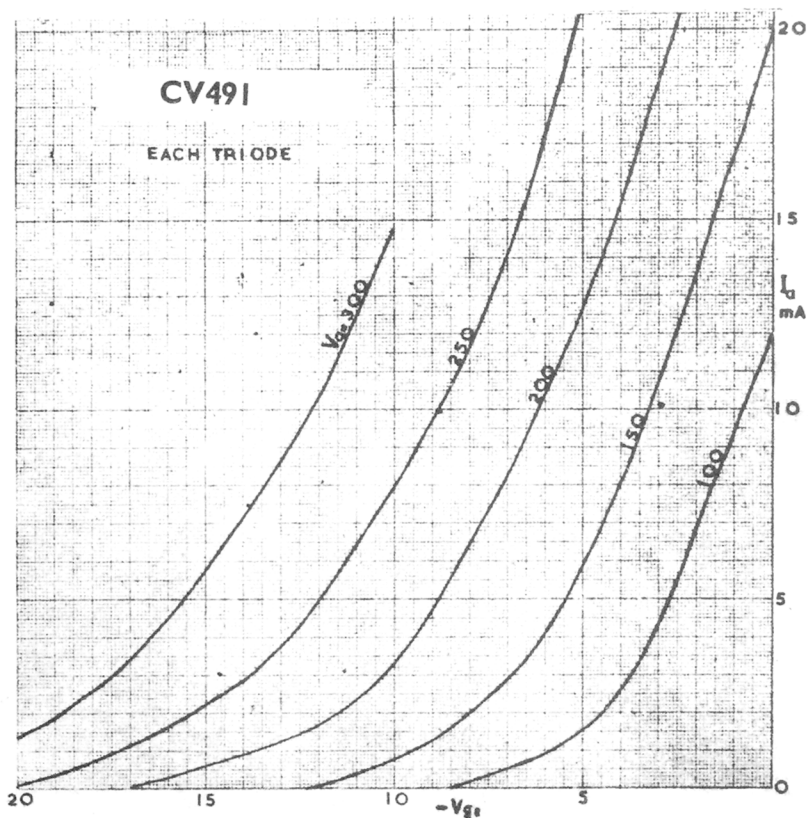
D.C. anode voltage	250	Volts
D.C. grid voltage	-124	Volts
D.C. grid resistor	62,000	Ohms
Peak R.F. grid voltage	140	Volts
D.C. anode current	16	mA
D.C. grid current	2.0	mA
Succeeding valve grid resistor	22,000	Ohms
Succeeding valve grid drive	2.5	mA x.

x. Measured with typical coil trebling from 30 Mc/s.

Mounting Position - AnyGeneral Applications:

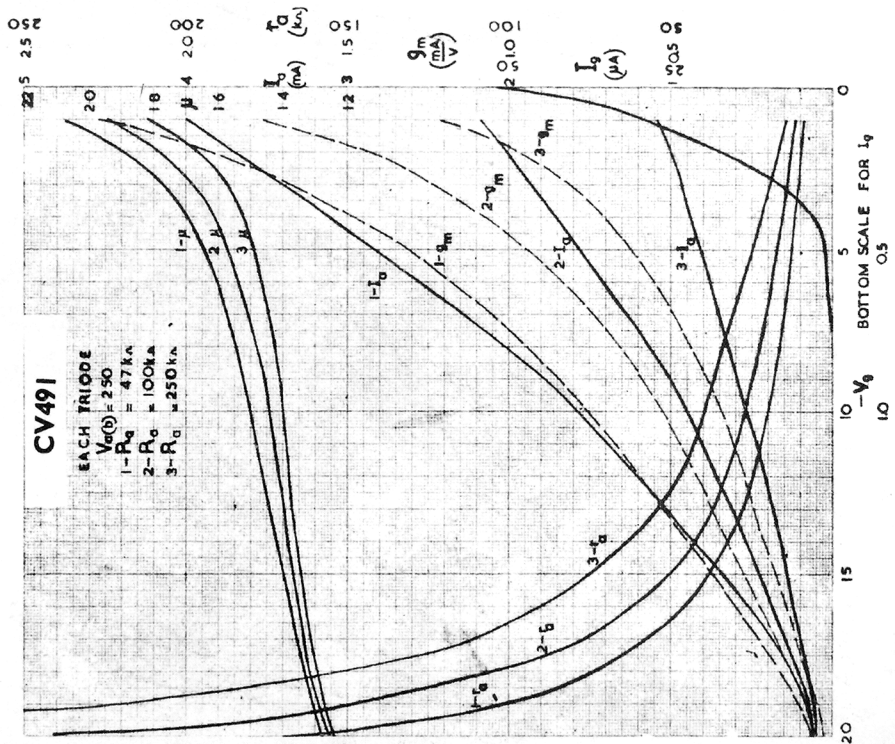
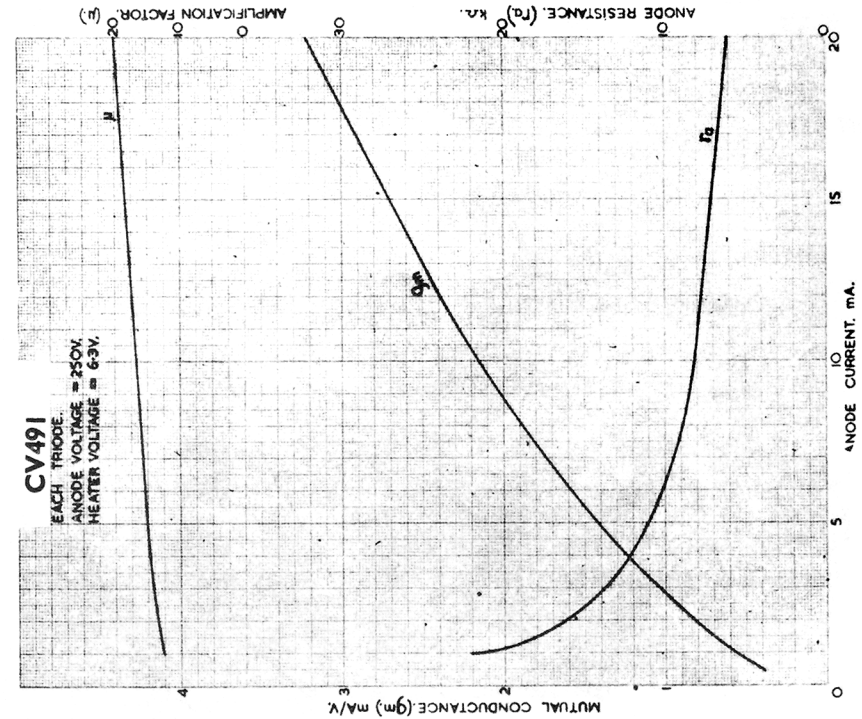
This type of valve is also suitable for the following applications:-

1. Cascade, Resistance Coupled, Amplifier.
2. Paraphase push-pull amplifier or phase inverter.
3. Cathode Follower - using one or both sections together.
4. Oscillator - up to 100 Mc/s.



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