

Specification MOS(A)/CV2294 Issue 2 Dated 2. 4. 54 To be read in conjunction with K1001	<u>SECURITY</u>	
	<u>Specification</u>	<u>Valve</u>
	UNCLASSIFIED	UNCLASSIFIED

—————> Indicates a change

TYPE OF VALVE - Grid-controlled Mercury-pool Modulator CATHODE - Mercury-pool ENVELOPE - Steel PROTOTYPE - VX9046		<u>MARKING</u> Sec K1001/4																																																																																															
		<u>BASE</u> See Drawing on Page 4																																																																																															
<u>RATING</u>		<u>DIMENSIONS AND CONNECTIONS</u> See Drawings on Pages 4 and 5																																																																																															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 10%;"></th> <th style="width: 10%;"></th> <th style="width: 10%; text-align: center;">Note</th> </tr> </thead> <tbody> <tr> <td>Ignition Solenoid Supply (V)</td> <td>110 + 5% DC or 230 + 15% AC 50-60 c/s</td> <td>(A)</td> <td>A</td> </tr> <tr> <td>Excitation and Ignition Anode Supplies (V)</td> <td>5.0 to 8.0</td> <td>(A)</td> <td></td> </tr> <tr> <td>Grid Supply (V)</td> <td>100 + 20 DC</td> <td>(A)</td> <td>B</td> </tr> <tr> <td>Bias Voltage (V)</td> <td>-400 ± 50</td> <td></td> <td></td> </tr> <tr> <td>Minimum Drive Pulse (V)</td> <td>+1000</td> <td></td> <td></td> </tr> <tr> <td>5 μsec duration</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Normal Grid-stopper Resistance (ohms)</td> <td>2000</td> <td></td> <td></td> </tr> <tr> <td><u>Low Voltage Anode</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maximum Hold-off Voltage (V)</td> <td>1500</td> <td></td> <td></td> </tr> <tr> <td>Maximum Inverse Voltage (V)</td> <td>500</td> <td></td> <td></td> </tr> <tr> <td>Peak Current (A)</td> <td>150</td> <td></td> <td></td> </tr> <tr> <td>(For 1 μsec pulse in HV anode)</td> <td></td> <td></td> <td></td> </tr> <tr> <td>For 2 μsec pulse in HV anode (A)</td> <td>200</td> <td></td> <td></td> </tr> <tr> <td>For 5 μsec pulse in HV anode (A)</td> <td>250</td> <td></td> <td></td> </tr> <tr> <td>Maximum Mean Input Power (kW)</td> <td>7</td> <td></td> <td>C</td> </tr> <tr> <td>Maximum Pulse Repetition Rate at 7 kW input (pps)</td> <td>1000</td> <td></td> <td></td> </tr> <tr> <td><u>High-Voltage Anode</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Maximum Hold-off Voltage (kV)</td> <td>22</td> <td></td> <td>D</td> </tr> <tr> <td>Maximum Inverse Voltage (kV)</td> <td>4</td> <td></td> <td>E</td> </tr> <tr> <td>Peak Current (A)</td> <td>350</td> <td></td> <td></td> </tr> <tr> <td><u>Operating Temperatures (°C)</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Mercury-pool</td> <td>15 to 50</td> <td></td> <td></td> </tr> <tr> <td>Base of Steel Tank</td> <td>50 max.</td> <td></td> <td>F</td> </tr> </tbody> </table>						Note	Ignition Solenoid Supply (V)	110 + 5% DC or 230 + 15% AC 50-60 c/s	(A)	A	Excitation and Ignition Anode Supplies (V)	5.0 to 8.0	(A)		Grid Supply (V)	100 + 20 DC	(A)	B	Bias Voltage (V)	-400 ± 50			Minimum Drive Pulse (V)	+1000			5 μsec duration				Normal Grid-stopper Resistance (ohms)	2000			<u>Low Voltage Anode</u>				Maximum Hold-off Voltage (V)	1500			Maximum Inverse Voltage (V)	500			Peak Current (A)	150			(For 1 μsec pulse in HV anode)				For 2 μsec pulse in HV anode (A)	200			For 5 μsec pulse in HV anode (A)	250			Maximum Mean Input Power (kW)	7		C	Maximum Pulse Repetition Rate at 7 kW input (pps)	1000			<u>High-Voltage Anode</u>				Maximum Hold-off Voltage (kV)	22		D	Maximum Inverse Voltage (kV)	4		E	Peak Current (A)	350			<u>Operating Temperatures (°C)</u>				Mercury-pool	15 to 50			Base of Steel Tank	50 max.	
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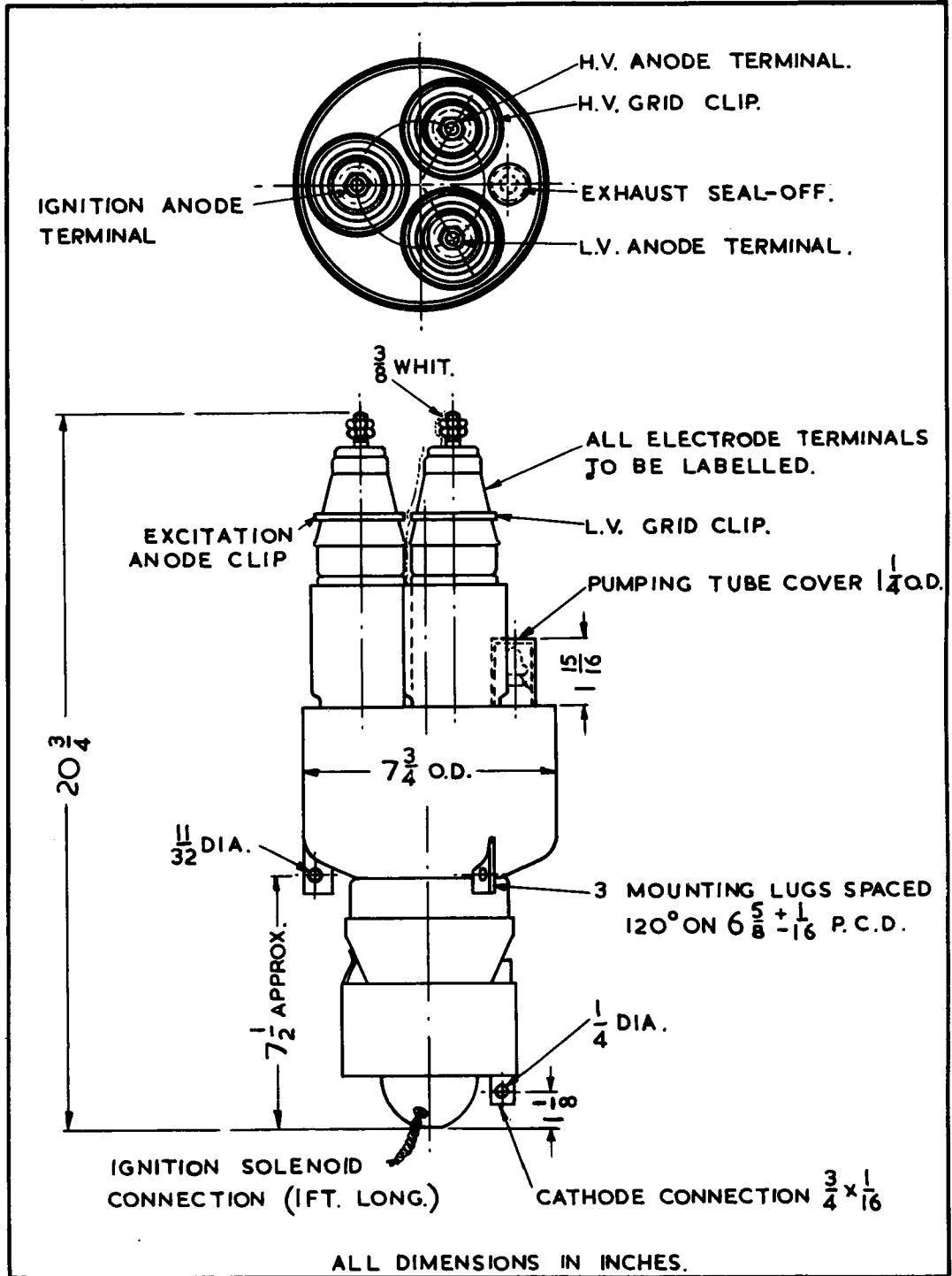
- A. The solenoid supply voltage shall be applied to leads 1 and 3 for 0.6 sec., and then, with 100 ohms in series, to leads 1 and 2 for 0.05 sec.
- B. Source impedance for drive pulse shall not exceed 1000 ohms.
- C. Maximum mean power shall be reduced linearly from 7 kW to 3.5 kW when pulse repetition rate is increased from 1000 to 1500 pps.
- D. The inverse voltage shall not exceed 500V for at least 20 μ secs after HV current pulse.
- E. Maximum rate of increase of anode current = 2000 A/ μ sec. HV grid pulse must be applied when the LV anode current is falling and has a value between 60% and 33% of its maximum value.
- F. The temperature of the base of the steel tank must not be below 25^oC when HT is applied to the valve.

To be performed in addition to those applicable in K1001

	Test Conditions	Test	Limits		No. Tested	Note
			Min.	Max.		
a	For ignition and excitation circuits, see Drawing on Page 5. Ignition and excitation anode supplies = 80V DC on open-circuit (ripple less than 1%). Adjust circuit resistance to give excitation current = 6A. Ignition solenoid supply voltage = 195V AC.	When the ignition supply voltage is applied to the coil, the excitation arc shall start. This test shall be repeated at least 20 times at approximately one-minute intervals.	-	1	100%	2
b	Excitation current = 6A.	Excitation Anode Voltage (V)	16	23	100%	
c	45-0-45V RMS 50 c/s AC supply on LV and HV anodes. Current limited to 8A in each anode by resistors. LV and HV grids connected to their respective anodes through 1000-ohm resistors. Normal excitation supply.	<u>Pick-up on LV and HV Anodes</u> No. of applications of the ignition supply to start the excitation, LV, and HV anode currents.	-	1	100%	
d	Each electrode (except ignition electrode) "meggorod" at 1 kV to envelope.	Insulation (megohms)	20	-	100%	
e	Apply 2 kV RMS 50 c/s AC (relative to the envelope) to each electrode in turn except the ignition electrode. Electrodes not under test to be left unconnected.	<u>Flashover</u> No. of failures	-	0	100%	
f	After one month's shelf life, apply 20 kV RMS 50 c/s AC between HV anode and all other electrodes (except ignition electrode) and envelope.	<u>Vacuum</u> After an initial cleaning-up period, no. of breakdowns occurring in a 2-minute period.	-	0	100%	

NOTES

- These tests shall be performed at 15-25°C ambient.
- The solenoid supply voltage shall be applied to leads 1 and 3 for 0.6 sec. and then, with 100 ohms in series, to leads 1 and 2 for 0.05 sec.



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