MINISTRY OF SUPPLY - DIRD(A)/RRE(South) VALVE ELECTRONIC

CV 2294

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

→ Indicates a change

TYPE OF VALVE - Grid-controlled Mercury-pool Modulator
CATHODE - Mercury-pool
ENVELOPE - Steel
PROTOTYPE - VX9046

MARKING
See K1001/4

BASE
See Drawing on Page 4

RATING

			Note
Ignition Solenoid Supply	(V)	110 ± 5% DC or 230 ± 15% AC 50-60 c/s	A
	(A)	5.0 to 8.0	
Excitation and Ignition Anode Supplies	(V)	100 ± 20 DC	
	(A)	6.0	
Grid Supply			B
Bias Voltage	(V)	-400 ± 50	
Minimum Drive Pulse 5 μsecs duration	(V)	+1000	
Normal Grid-stopper Resistance	(ohms)	2000	
Low Voltage Anode			
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	
High-Voltage Anode			
Maximum Hold-off Voltage	(kV)	22	
Maximum Inverse Voltage	(kV)	4	D
Peak Current	(A)	350	E
Operating Temperatures (°C)			
Mercury-pool		15 to 50	
Base of Steel Tank		50 max.	F

DIMENSIONS AND CONNECTIONS

See Drawings on Pages 4 and 5

NOTES

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 μsecs after HV current pulse.

E. Maximum rate of increase of anode current = 2000 A/μsec. 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°C when HT is applied to the valve.

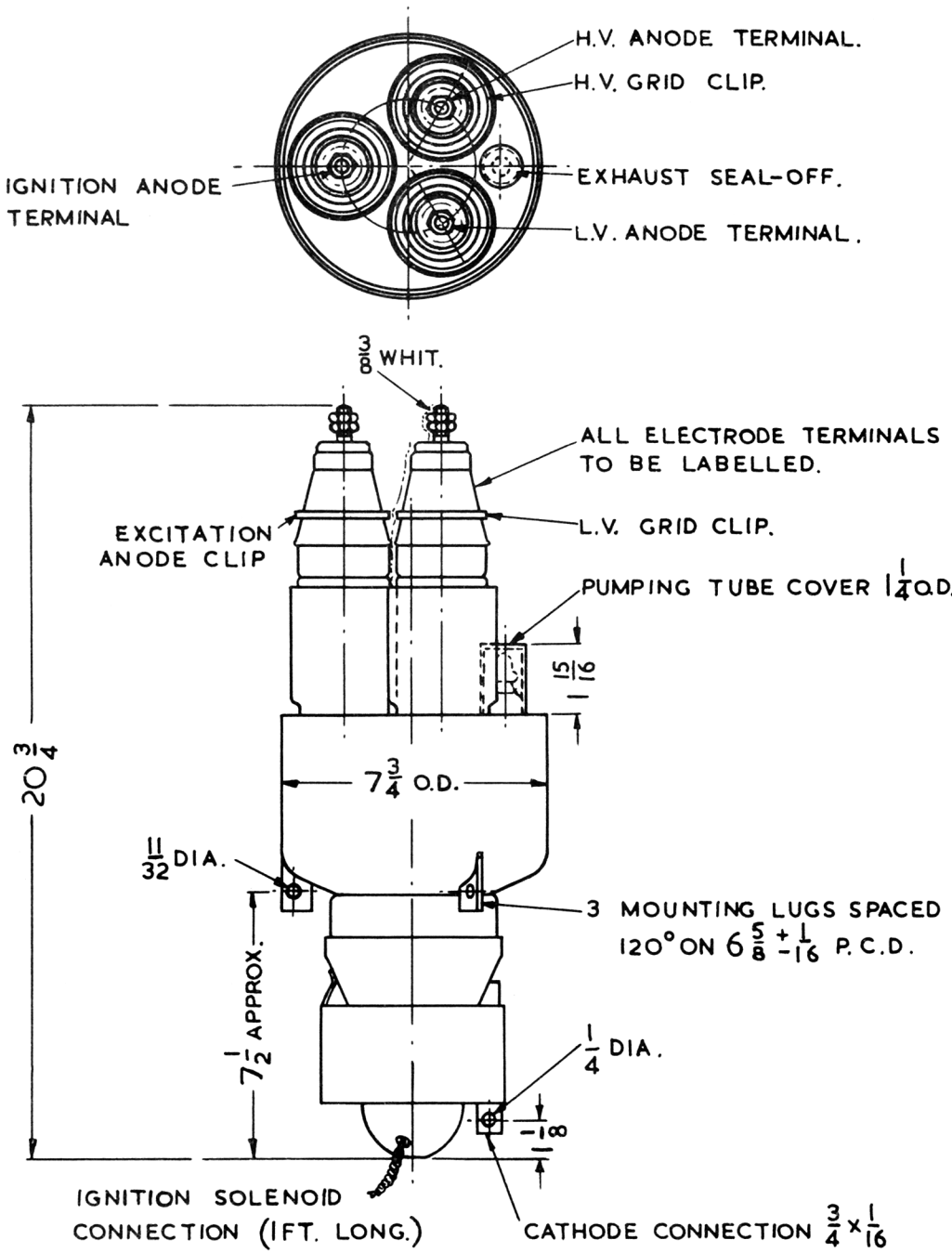
TESTS

To be performed in addition to those applicable in K1001

	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested	Note
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.	Pick-up on LV and HV Anodes No. of applications of the ignition supply to start the excitation, LV, and HV anode currents.	-	1	100%	
d	Each electrode (except ignition electrode) "meggered" 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.	Flashover 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.	Vacuum After an initial cleaning-up period, no. of breakdowns occurring in a 2-minute period.	-	0	100%	

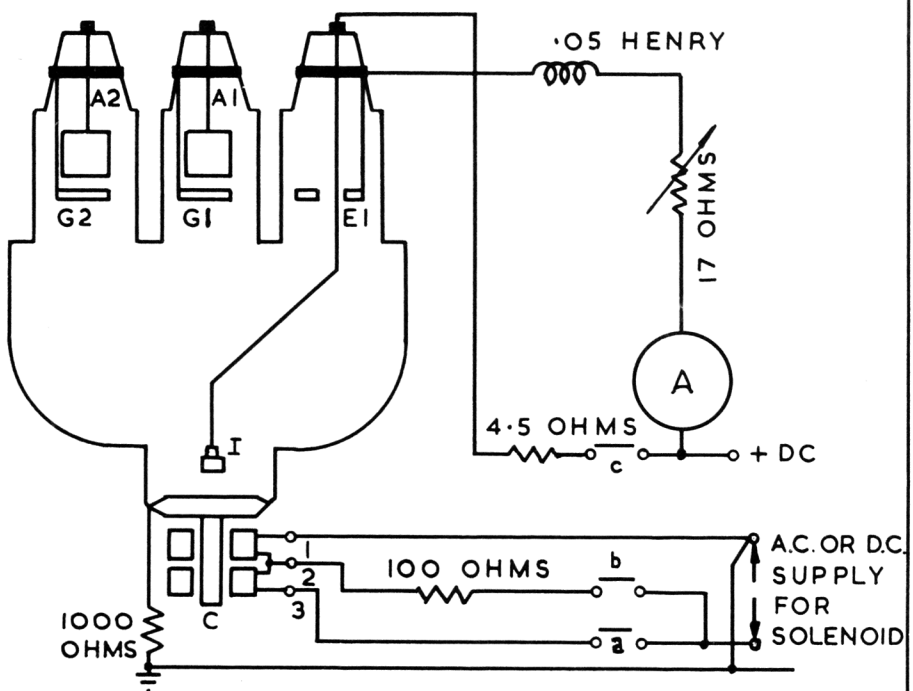
NOTES

1. Those tests shall be performed at 15-25°C ambient.
2. 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.



ALL DIMENSIONS IN INCHES.

CV2294

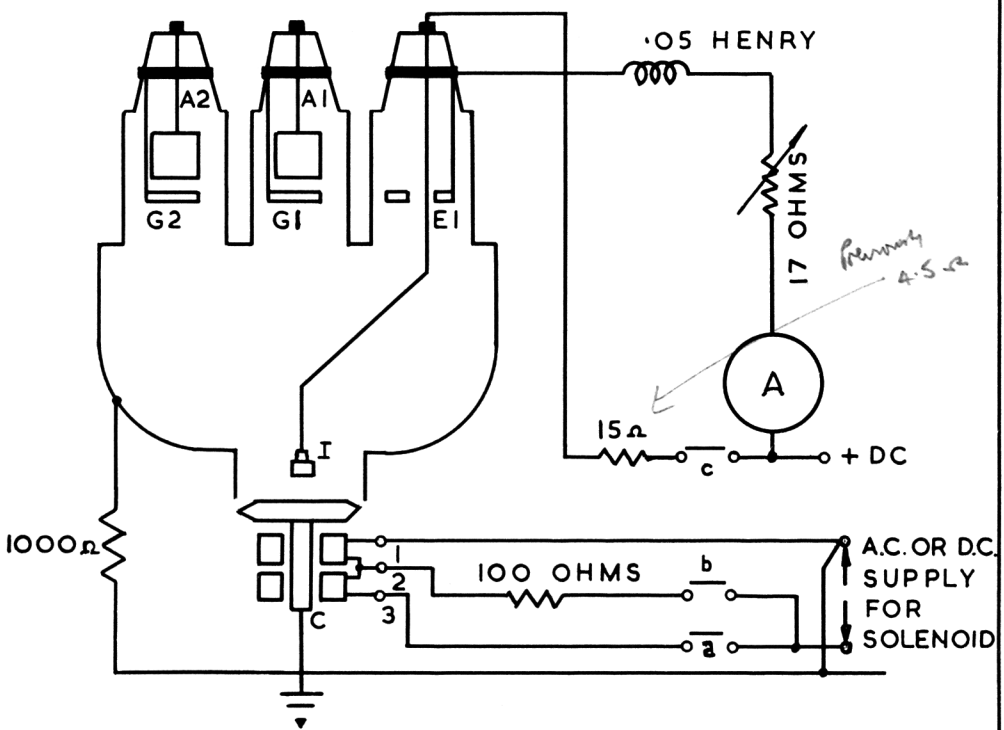


A1 - LOW VOLTAGE ANODE.
G1 - LOW VOLTAGE GRID.
A2 - HIGH VOLTAGE ANODE.
G2 - HIGH VOLTAGE GRID.
E1 - EXCITATION ANODE.
I - IGNITION ANODE
C - CATHODE.

TANK MUST BE INSULATED FROM EARTH.

CONTACT a AND c CLOSED FOR 0·6 SECS WHEN a AND c OPEN CONTACT b CLOSES FOR 0·05 SECS.

CV2294



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