MINISTRY OF SUPPLY - D.L.R.D.(A)/R.A.E.

VALVE ELECTRONIC

CV28

Specification MOSA/CV28 Issue 4 Dated 26.1.1955 To be read in conjunction with BS.1409, and K1001, ignoring clauses 5.2, 5.8.	SECURITY	
	Specification	Valve
	UNCLASSIFIED	UNCLASSIFIED

→ Indicates a change

TYPE OF VALVE - Aircooled triode

CATHODE - Directly heated, tungsten filament

ENVELOPE - Metal glass construction

→ PROTOTYPE - MOV ACT9 or 3J/121E

MARKING

See K.1001/4 and Note D

BASE

None

RATING		Marked Value	Note
Filament Voltage	(V)		A
Filament Current	(A)	22	
Max. Anode Voltage	(kV)	10	
Max. Anode Dissipation	(kW)	0.8	B
Mutual Conductance	(mA/V)	3.1	C
→ Anode Impedance	(kΩ)	12.5	C
Amplification Factor		40	C
Maximum total emission at 90% saturation	(A)	2	
Maximum input -			
Below 3 Mc/s	(kV)	10	
	(mA)	400	
Up to 30 Mc/s	(kV)	5	
	(mA)	400	
Up to 60 Mc/s	(kV)	4	
	(mA)	400	

CONNECTIONS AND DIMENSIONS

See Drawings on pages 3 or 4 ←

CAPACITANCES (pF)	
C in (nom)	23.2
C out (nom)	1.6
Ca,g1 (nom)	15.9

NOTES

A. Marked Value of Vf will be that of test (c).

B. With unrestricted air circulation. The dissipation may be increased to 1.1 kW, with forced air circulation giving an airflow pressure equal to 3" of water.

C. At Va = 5kV, Ia = 200 mA.

D. The valve shall be marked with the filament voltage, as determined in test shown on Page 2, Clause C. ←

N.B. VALVE ELECTRONIC CV28, LESS COOLING FINS, IS VALVE ELECTRONIC CV1994. ←

Z.9296.R.

CV28

TEST

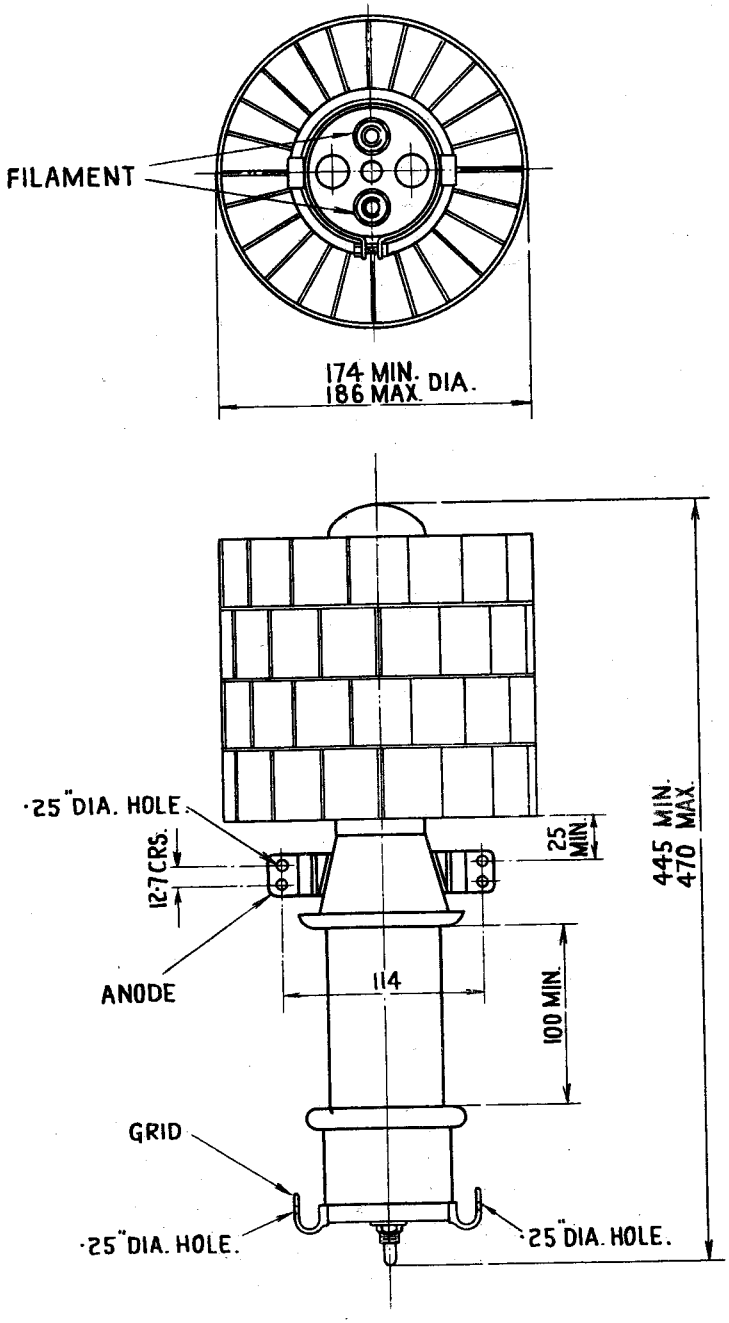
To be performed in addition to those applicable in K1001

	Test conditions				Test	Limits		No Tested
						Min	Max	
a	See K1001/AIII				Capacitances (pF) C in C out Ca,g1	 - - -	 29.0 2.0 20.0	 2%(10) 2%(10) 2%(10)
b	Vf	Va	Vg	Ia(mA)				
	16.0	0	0	0	If (A)	21.0	24.0	100%
c	-	500 Volts to grid and anode strapped		300	Vf (V) This value of Vf times 1.29 is to be the marked voltage	11.7	13.2	100%
d	16.0	5000	-	200	Ia to be maintained steady for 10 mins. the grid potential being read at the commencement of the test and after successive intervals of 1 min. During test the grid potential shall attain a steady value. Grid potential variation throughout test (V) Reverse Ig1 at beginning and end of test (µA)	- -	6.0 30.0	100% 100%
e	Marked Voltage	5000	-	200	Amplification factor	34.0	46.0	100%
f	Marked Voltage	5000	-	200	Anode Impedance (Ω)	11,000	15,000	100%

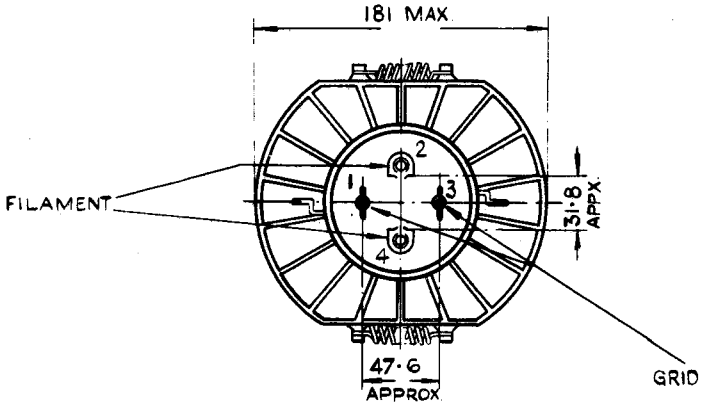
Life A minimum life of 1000 hours is expected, life failure being considered to occur when the emission of the valves has fallen below 300 mA with a filament voltage of 10% above that required for an emission of 300 mA at the commencement of the life test; other conditions as in test clause 'c' above. The designs, materials and processing should be controlled with this in view.

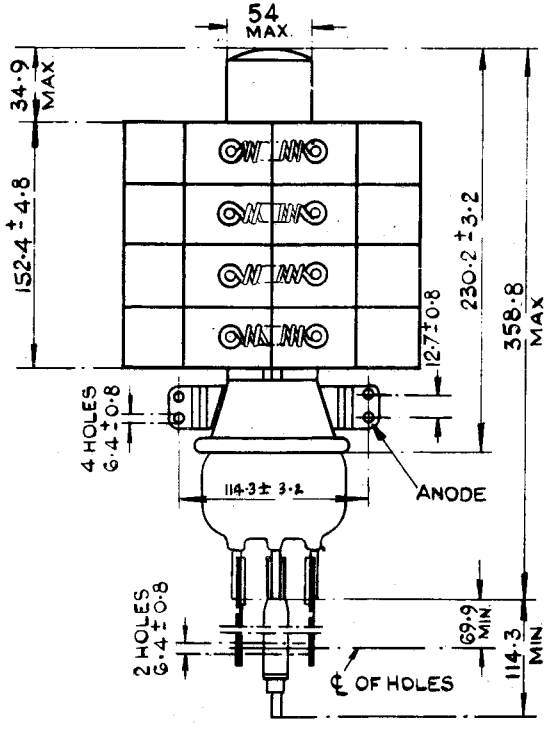
Records will be kept by Service users of the lives (against each serial number), and cases of poor lives will be reported for the guidance of the contractor.

CV28



DIMENSIONS IN MILLIMETERS EXCEPT WHERE OTHERWISE STATED.





ALL DIMENSIONS IN MILLIMETERS

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS.

1. H.F. Power Amplifier and Oscillator. Class C. Telegraphy (Unmodulated. Key down conditions (one valve)).
Maximum Permissible Ratings.

D.C. Anode Voltage	10,000 volts.
D.C. Anode Current	400 mA.
Input	(3.25 kW (3.9 kW *
D. C. Grid Current	100 mA.
Anode Dissipation	(800 watts (1100 watts *

Typical Operation.

D.C. Anode Voltage	10,000*	10,000	7,500	5,000 volts
D.C. Anode Current	380	320	360	360 mA.
D.C. Grid Voltage	-500	-500	-500	-480 volts
≠ D.C. Grid Current	50	40	45	50 mA.
Grid Leak Resistance	10,000	12,500	11,000	9,600 ohms
H.F. Drive Peak Voltage	1,000	925	1,000	1,000 volts
≠ Driving Power	60	50	60	65 watts
Load Impedance	12,000	15,000	10,000	6,400 ohms
Anode Dissipation	1,000	760	700	550 watts
Output	2.8	2.44	2.0	1.25 kW.

2. Class C., H.F. Amplifier - Grid Modulated.
(Carrier conditions (one valve). Permissible modulation 100%).
Maximum Permissible Ratings.

D.C. Anode Voltage	10,000 volts
D.C. Anode Current	230 mA.
Input	(1.3 kW (1.75 kW *
D.C. Grid Current	100 mA.
Anode Dissipation	(800 watts (1100 watts *

Typical Operation

D.C. Anode Voltage	10,000*	7,500*	10,000	7,500 volts
D.C. Anode Current	170	225	125	165 mA.
D.C. Grid Voltage	-430	-385	-330	-320 volts
≠ D.C. Grid Current	3.0	4.0	2.5	3.0 mA.
H.F. Drive Peak Voltage	560	600	420	480 volts.
ϕ≠ Driving Power	25	35	12	20 watts
x Peak Modulation Voltage	240	265	180	200 volts
x Audio Modulation Power	5.0	6.0	3.0	4.0 watts
Impedance into which Modulator Stage must be designed to work	5,800	6,000	5,500	5,000 ohms
Anode Load Impedance	15,000	7,500	19,000	11,000 ohms
Anode Dissipation	1,050	1,090	770	790 watts
Output	650	600	480	450 watts

3. Class C., H.F. Power Amplifier - Anode modulated.
(Carrier conditions (one valve). Permissible modulation 100%).
Maximum Permissible Ratings.

D.C. Anode Voltage	8,000 volts
D.C. Anode Current	250 mA
Input	2.0 kW
D.C. Grid Current	100 mA
Anode Dissipation	530 watts

Typical Operation.

D.C. Anode Voltage	8,000	5,000 volts
D.C. Anode Current	225	225 mA
≠ D.C. Grid voltage	-450	-320 volts
≠ D.C. Grid Current	25	30 mA
H.F. Drive Peak Voltage	800	680 volts
≠ Driving Power	26	26 watts
¤ Audio Modulation Power	900	565 watts
Impedance into which Modulator Stage must be designed to work	35,000	22,000 ohms
Anode Load Impedance	18,000	10,000 ohms
Anode Dissipation	400	300 watts
Output	1,400	825 watts

≠ Obtained by Grid Resistance

4. H.F. Power Amplifier - Class B. Telephony.
(Carrier Conditions (one valve). Permissible modulation 100%).
Maximum Permissible Ratings.

D.C. Anode Voltage	10,000 volts
D.C. Anode Current	250 mA
Input	(1.22 kW (1.65 kW ¤
D.C. Grid Current	100 mA
Anode Dissipation	(800 watts (1100 watts ¤

Typical Operation

D.C. Anode Voltage	10,000x	7,500x	10,000	7,500	5,000 volts
D.C. Anode Current	160	200	120	150	200 mA
D.C. Grid Voltage	-175	-100	-175	-100	-60 volts
≠ D.C. Grid Current	2.0	3.0	1.5	2.5	5.0 mA
H.F. Drive Peak Voltage	235	220	200	185	220 volts
∅ ≠ Driving Power	15	15	10	12	20 watts
Anode Load Impedance	17,000	10,000	24,000	13,000	6,700 ohms
Anode Dissipation	1,070	1,020	790	765	700 watts
Output	530	480	410	360	300 watts

≠ Subject to wide variation. The figures given are approximate only.
∅ At crest of audio cycle with 100% modulation.
¤ 100% modulation.
x With forced air cooling.