MINISTRY OF SUPPLY (D.C.D.)

VALVE ELECTRONIC **CV209**

Specification MAP/CV209/Issue 4 Dated 7.8.47. To be read in conjunction with K1001. ignoring clauses 5.2, 5.3, 5.8.	SECURITY	
	Specification	Valve
	RESTRICTED	RESTRICTED

→ Indicates a change

TYPE OF VALVE : Magnetron

CATHODE : Indirectly heated

ENVELOPE : Copper

MARKING

See K1001/4

The word "cathode" and an arrow shall be marked on the valve in such a position as to indicate to which of the heater terminals the cathode is connected

RATING			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.8	
Nominal Operating Frequency	(Mc/s)	9375	
Max. Mean Power Input	(W)	180	A
TYPICAL OPERATING CONDITIONS			
Peak Anode Voltage	(kV)	12.5	A
Peak Anode Current	(A)	11.5	A
Field Strength	(Gauss)	2670	
Peak Power Output	(kW)	45	A

BASE

None

DIMENSIONS AND CONNECTIONS

See drawing on page 4.

PACKING

See K1001/7.3

NOTES

A: When operating under these conditions the magnetron must be air-cooled such that the temperature of the block does not exceed 140°C.

B: The filament volts should be applied for a period of at least two minutes before the HT volts are applied.

To be performed in addition to those applicable in K1001.

	Test Conditions				Test	Limits		No. Tested	Notes
						Min.	Max.		
	Field Strength (Gauss)	Vf	Modulator HT. Line Voltage(kV) See Note 6	Peak Ia(A) See Note 6					
a	0	6.3	0	0	If (A)	0.7	0.9	100%	
b	2670±50	0	4.1±0.1	10.0	Peak Va (kV)	11.0	14.0	100%	2 & 3
c	2670±50	0	4.1±0.1	10.0	Output Frequency (Mc/s)	9225	9525	100%	3 & 4
d	2670±50	0	4.1±0.1	10.0	There shall be no continuous base line on the oscilloscope, corresponding to pulses on an incorrect frequency			T/A	3 & 4
e	2670±50	0	4.1±0.1	10.0	Efficiency	20%	-	100%	3 & 5
f	2750 min Spark gap breakdown voltage shall be 15.0 kV min. to 15.2 kV max. Valve to be switched on from cold.	0	4.1±0.1	10.0	The valve shall not cause the modulator to trip more than five times before functioning normally and satisfactorily			20% (10)	8

NOTES

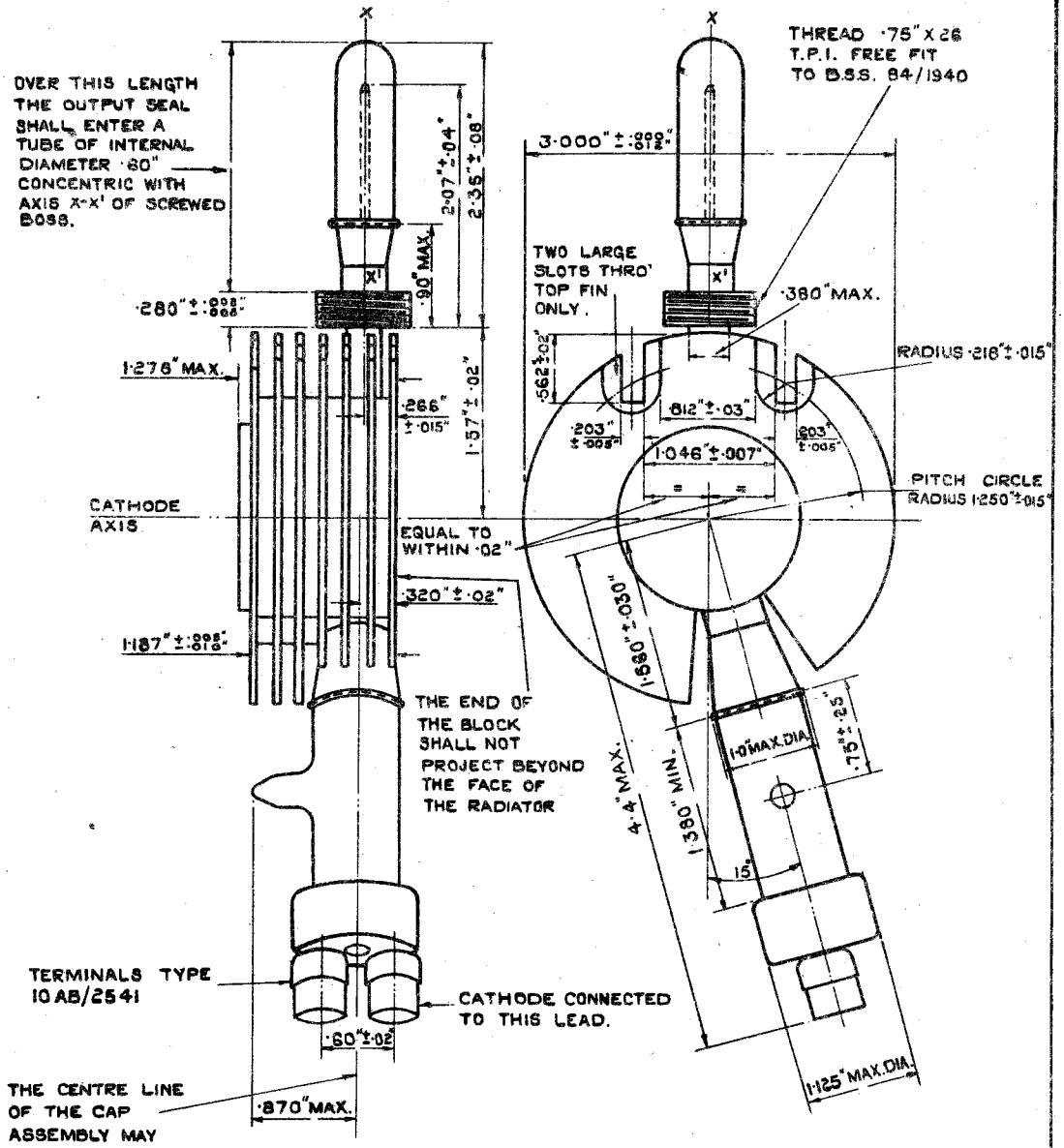
1. For the above tests the temperature of the magnetron block shall not exceed 140°C.
2. The valve shall be run for a period of not more than two minutes with Vf = 6.3. At the end of that time the HT voltage shall be switched on and the filament voltage shall be switched off simultaneously. All subsequent tests shall be carried out with Vf = 0.
3. This test shall be carried out using modulator type 64 Ref.No.10DB/956 adjusted for a repetition rate of 1200 pps. a transformer type 205 Ref.No.10KB/6034 and a standard output circuit as used in H.F. Box of TR3529A Ref.No.10DD/6085, or other approved apparatus. The waveguide shall be terminated in a resistive load giving a standing wave voltage ratio better than 1.1 to 1.0. The matching shall be adjusted so that the frequency pulling produced by a standing wave ratio of 1.5 to 1.0 in any phase is less than 10 Mc/s. The waveguide shall be modified in such a manner as to allow for the attachment of the wavemeter or spectrometer. The modulator type 64 must deliver 135 kW ±10% the valve under test when the HT line voltage is adjusted to 4.1 kV.
4. To be measured using a high "Q" Wavemeter with the output fed through a pulse amplifier into an oscilloscope sufficiently sensitive to give a reasonable indication on 5% missed pulses.
5. If a valve which has once passed test clause (e), is re-tested for any reason, it shall be considered satisfactory if the measured output on re-test is within ±10% of the original value.
6. The manufacturer may set up the valves under test to modulator line voltage or peak Ia as preferred.

NOTES (CONTD.)

7. For test purposes the magnetic field conditions shall be similar to those which occur when the valve type CV209 is inserted in the air gap of an average magnet type 3 Ref.No.10E/769.

8. This test shall be carried out under the same conditions as specified in Note 3 with the exception that the matching rods should be screwed right out. The spark gap shall be connected across the valve under test and shall be of the CV189 type. The test shall be applied first in the test schedule and not less than 24 hours after ageing is completed.

CV 209



NOTE :- TO ENSURE INTERCHANGEABILITY BETWEEN CV 209 AND CV208, THE APERTURE IN THE HOUSING, FOR THE FILAMENT SEAL SHOULD CLEAR AN ELIPTICAL CYLINDER CONCENTRIC WITH AXIS OF FILAMENT STEM ASSEMBLY, HAVING MAJOR AXIS OF 1·25" PARALLEL TO AXIS OF CATHODE AND MINOR AXIS OF 1·063" IN A PLANE PARALLEL TO THE RADIATOR FIN. IF THE HOUSING DOES NOT SPLIT, THE DESIGNER SHOULD EXAMINE THE DRAWING ABOVE AND BOTH DRAWINGS IN SPECIFICATION CV 208

ALL DIMENSIONS IN INCHES