

ADMIRALTY SIGNAL & RADAR ESTABLISHMENT

Specification AD/CV355. Issue No.2.

Dated 25.2.49.

To be read in conjunction with K1001 ignoring clauses :- 5.2, 5.3, 5.8.

SECURITYSpecification

Restricted

Valve

Unclassified

TYPE OF VALVE:- Magnetron, pre-plumbed.CATHODE:- Indirectly heated, oxide coated.ENVELOPE:- Copper and glass.PROTOTYPE:- E1511.MARKING

See K1001/4.

Additional markings:

Serial No.

See Note B.

RATING

			Note
Heater Voltage (AC or DC)	(V)	6.3	A
Heater Current	(A)	1.3	
Approx. Nominal Wavelength	(cm)	3.25	B
Max. Frequency Pulling	(Mc/s)	15	C
Peak Anode Input Power	(kW)	500	D
Duty Cycle		.0005	

Typical Operating Conditions

Peak Anode Voltage	(kV)	25	E
Peak Anode Current	(A)	20	E
Peak Power Output	(kW)	200	E

DIMENSIONS & CONNECTIONS

See Drawing, page 3.

PACKAGING

See K1005.

NOTES

- A. If the input power is sufficiently high $V_h = 6.3$ V may be required for starting only and during operations may be reduced or switched off. V_h must be applied for at least 1.5 minutes before V_a is applied.
- B. No technical information shall appear on the valve or packing.
- C. For a S.W.R. of 1.5:1.
- D. Peak anode input power limited by cathode dissipation at the stated duty cycle. When switching on, the power should be increased gradually from zero to full input. During operation and testing air must be blown through a suitable fitting on to the radiator fins of the anode, so that the block temperature does not rise above 140°C .
- E. These figures are for pulse operation with :-

Recurrence frequency : 500 pps. : 2,000 pps. : 4,000 pps.
Pulse length : 1 microsec. : 0.2 microsec. : 0.1 microsec.
Pulse shape : Sensibly square.
Field strength : 4,500 oersteds external, 5,500 oersteds internal.

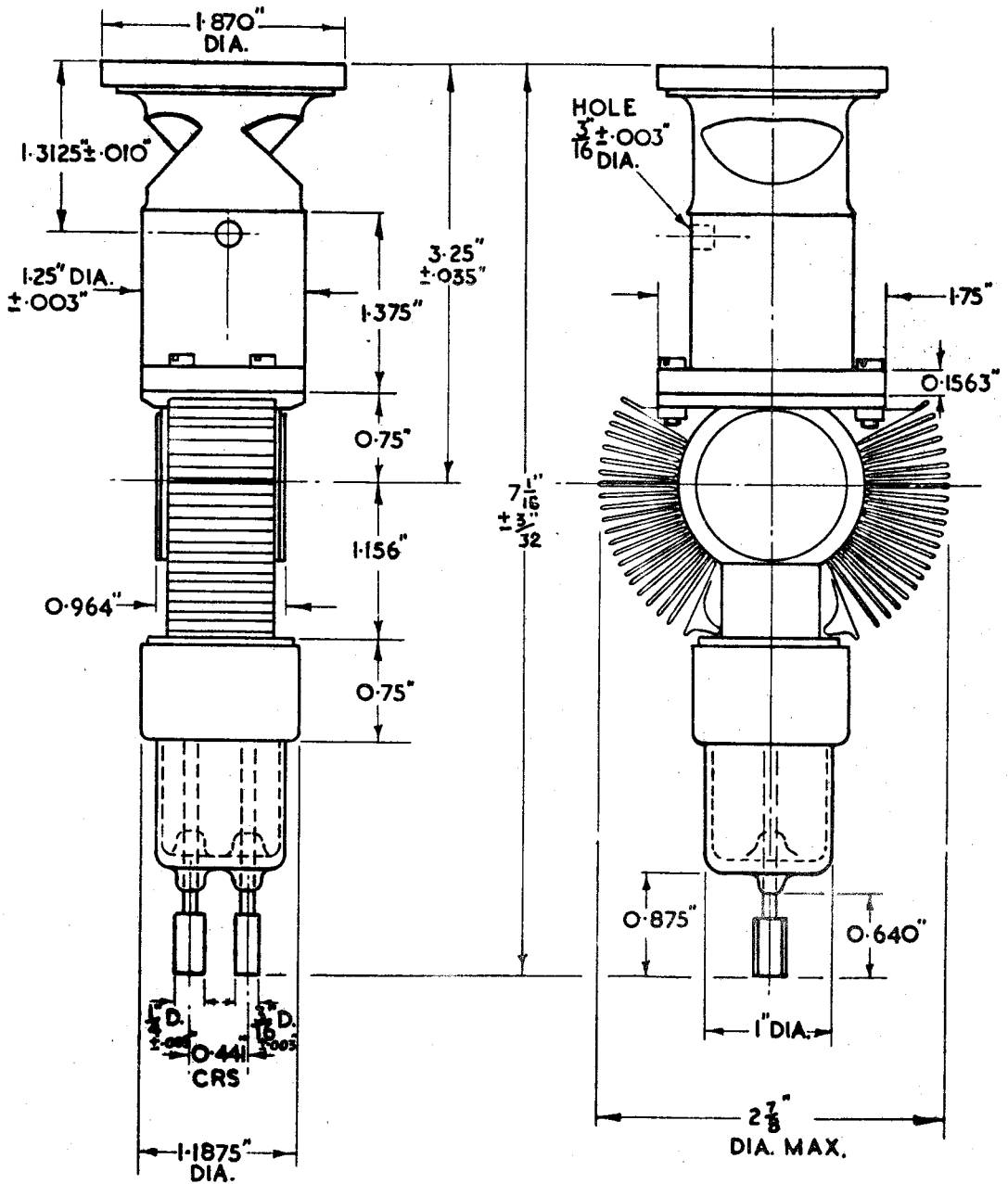
The valve is required to operate with any field in the range 4500 ± 200 oersteds.

To be performed in addition to those applicable in K1001.

	Test Conditions		Test	Limits		No. Tested	Note
	Vh (V)	Ia (A) peak		Min.	Max.		
a	6.3		Ih (A)	1.2	1.4	100%	
b	6.3 reduced to 0	20	Va peak (kV)	21	27	100%	1,2, 3,4.
c	0	20	(i) Frequency (Mc/s)	9150	9300	100%	1,2,3.
	A mismatcher to introduce a voltage S.W.R. of 1.5:1 with variable phase shall be used near the magnetron, followed by a matched termination. The max. frequency deviation which occurs as the phase is changed over 360° shall be noted.		(ii) Frequency pulling (Mc/s)	-	15	100%	
d	0	20	Efficiency = $\frac{\text{Power output}}{\text{Power input}}$ (%)	35	-	100%	1,2, 3,5.
	Efficiency is to be measured by an approved method.						
e	0	Ia peak to be varied from 10 to 20 A. The change of frequency is to be observed.	Frequency continuity	The frequency shall vary smoothly and without discontinuity.	Small %	1,2,3.	
	10 to 20 A. The change of frequency is to be observed.						

NOTES

- The valve is to be pulse tested, according to the above table (tests 'b' to 'e') in an approved circuit, and with the following test conditions :-
 - Recurrence frequency : 500 pps. or (2000 pps.
 - Minimum pulse length : 1 microsec. (0.2 microsec.
 - Pulse shape : Sensibly square.
 - Field strength : 4500 ± 50 oersteds.
- The cathode lead side of the valve shall be adjacent to the north pole of the magnet.
- During Type Approval the operation of the valve at a field strength of 4300 oersteds and 4700 oersteds should be established.
- The magnetron shall be processed so as to ensure as far as possible that only brief ageing (of the order of 10 minutes or less) is necessary when the power applied is gradually increased from zero to the full input. No serious or continued flashing (internal or external) must occur during the tests.
- The apparatus used for the measurement of output power is to be checked after every 500 valves tested, or once a month (whichever applies first) against the calorimetric method of measurement.



NOTE:- ALL DIMENSIONS ARE NOMINAL EXCEPT WHERE OTHERWISE STATED.