C.V.2376.

ADMIRALTY SIGNAL AND RADAR ESTABLISHMENT

Specification AD/CV2376 Issue No.3 Dated 5.4.56 To be read in conjunction with K1001	SECURITY Specification: Unclassified Valve: Unclassified

⟶ Indicates a change

TYPE OF VALVE: Magnetron
CATHODE: Indirectly heated, oxide coated.
ENVELOPE: Copper and glass
PROTOTYPE: VX9087

MARKING
See K1001/4

RATINGS

			Note
Heater Voltage	(V)	3.0	A
Heater Current	(A)	3.8	
Nominal operating frequency	(Mc/s)	9650	
Frequency pulling (Max.)	(Mc/s)	15	
Max. mean input power	(W)	150	B
TYPICAL OPERATING CONDITIONS			C
Magnetic field strength	(Oersteds)	3250	D
Peak Anode Voltage	(kV)	11.5	
Peak Anode current	(A)	12	
Peak power output	(kW)	45	

DIMENSIONS

See drawing on Page 4

NOTES

A. The heater voltage shall be maintained at 3.0 volts for at least 2 minutes before the application of HT voltage. When valve is operated at maximum anode dissipation, the heater voltage shall be reduced to 2 volts.

B. The temperature of the anode block shall not exceed 140°C, and forced air cooling is required to ensure this.

C. These conditions refer to pulse operation with pulses of 1 microsecond duration and repetition rate 1000 pps, and with the rate of rise of pulse voltage not exceeding 150 kV per microsecond.

D. The valve shall be operated with the north pole of the magnet adjacent to the cathode lead.

Z.11640.R.

TESTS

To be performed in addition to those applicable in K1001

	Test Conditions					Test	Limits		No. tested	Note
	Vh (V)	Pulse Length (usec.)	Rep. Freq. (pps)	Field strength (Oersted)	Ia (Peak) (A)		Min.	Max.		
a	3.0	-	-	-	-	Ih (A)	3.5	4.0	100%	
b	2.5	1.0	500	3250 ± 50	12	Va Peak (kV)	10.5	12.5	100%	1,2, 3,4
c	2.5	1.0	500	3250 ± 50	12	Efficiency (%)	25	-	100%	1,2, 3,4
d	2.5	1.0	500	3250 ± 50	12	Frequency (Mc/s)	9600	9700	100%	1,2, 3,4
e	2.5	1.0	500	3250 ± 50	12	Frequency Pulling and Spectrum (Mc/s)	-	15	100%	1,2, 3, 5,6
f	2.5	1.0	500	3250 ± 50	Varied from 8 to 14	Spectrum and stability			100%	1,2, 3,4, 6.7
g	2.0	2.0	500	3800 ± 50	12	Starting stability			100%	1,3, 4,8

NOTES

1. Vh shall be maintained at 3V for 2 minutes before Va is applied. Vh shall then be reduced to the stated voltage.

2. The maximum rate of rise of the voltage pulse shall not be less than 150 kV/microsecond, and the current pulse shall be substantially rectangular.

3. See Note D.

4. The output waveguide shall be terminated in a load giving a VSWR better than 1.1.

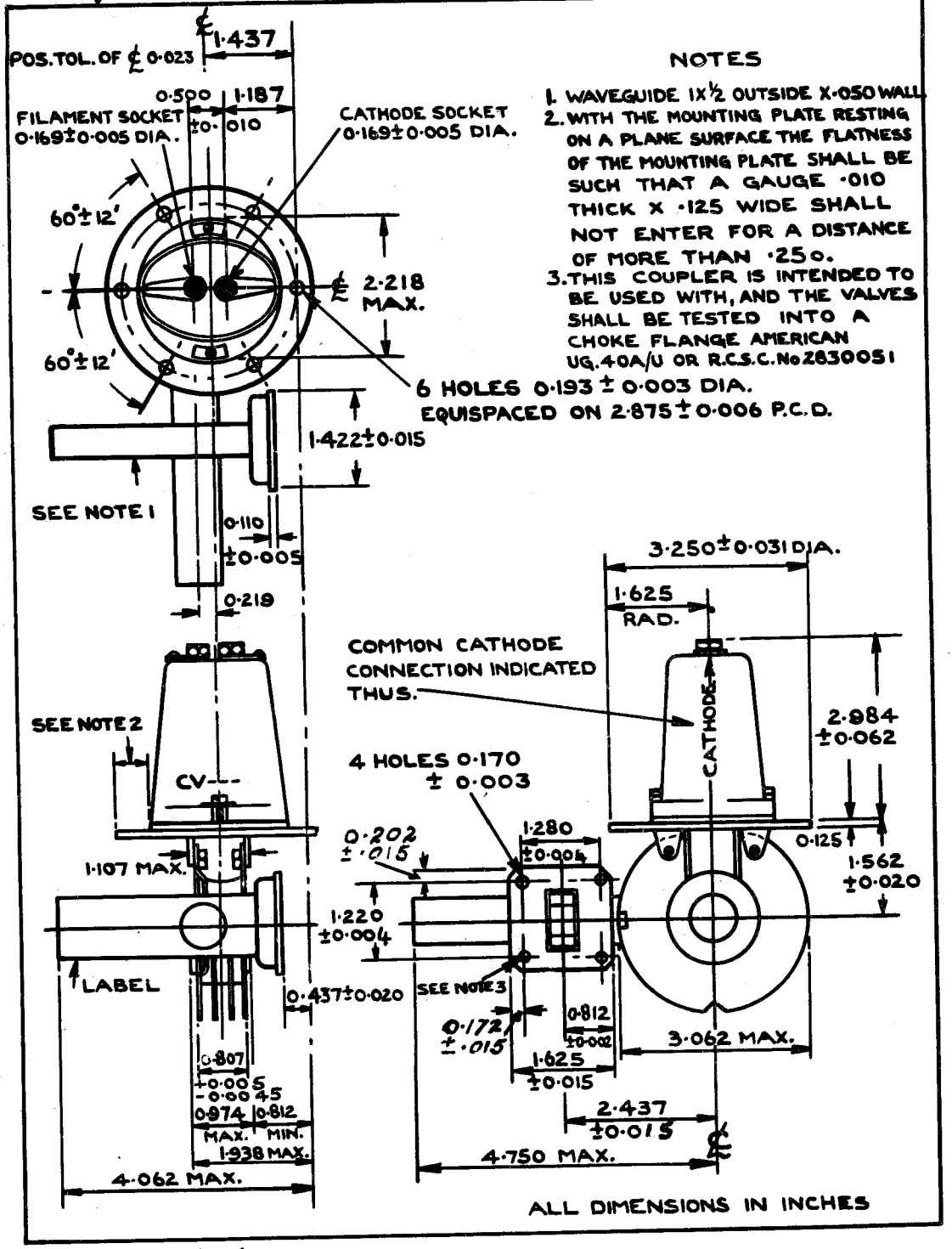
5. The output waveguide shall be terminated in a load giving a VSWR of not less than 1.5, and the mismatch shall be varied through all phases. The conditions shall be adjusted initially as for test (c) with 12A peak anode current, and this current shall then be allowed to vary with the phase of the mismatch.

6. The separation of the first minima, as viewed on a spectrum analyser, shall not exceed 3 Mc/s and the amplitudes of the first minima shall not exceed 40% of that of the main lobe of the spectrum.

7. There shall be no missing pulses, as indicated by the spectrum analyser, during a 15 second interval while the peak current is varied over the specified range.

/8. ...

8. After a holding period of not less than seven days, Vh = 3V shall be applied. Two minutes later Vh shall be reduced to 2V and Va shall be increased directly to the value which gives Ia (peak) equal to 12A. The valve shall then be operated for four minutes under these conditions. Current pulses which are more than 20% larger than the normal current pulses shall be attributed to arcing in the magnetron. The number of arcs which occur during the last minute of the test interval shall be counted by an electronic arc counter and the fraction of the applied pulses which result in arcs during this minute shall not exceed 0.5%. Details of a suitable arc counter may be obtained from the Specifying Authority.


℄ 1·437
POS. TOL. OF ℄ 0·023
0·500
1·187
±0·010
FILAMENT SOCKET
0·169±0·005 DIA.
CATHODE SOCKET
0·169±0·005 DIA.
60°±12'
60°±12'
℄ 2·218
MAX.
6 HOLES 0·193 ± 0·003 DIA.
EQUISPACED ON 2·875 ± 0·006 P.C.D.
1·422±0·015
SEE NOTE 1
0·110
±0·005
0·219
SEE NOTE 2
CV---
1·107 MAX.
LABEL
0·437±0·020
0·807
+0·005
-0·0045
0·974
MAX.
0·812
MIN.
1·938 MAX.
4·062 MAX.
NOTES
1. WAVEGUIDE 1X½ OUTSIDE X·050 WALL
2. WITH THE MOUNTING PLATE RESTING ON A PLANE SURFACE THE FLATNESS OF THE MOUNTING PLATE SHALL BE SUCH THAT A GAUGE ·010 THICK X ·125 WIDE SHALL NOT ENTER FOR A DISTANCE OF MORE THAN ·250.
3. THIS COUPLER IS INTENDED TO BE USED WITH, AND THE VALVES SHALL BE TESTED INTO A CHOKE FLANGE AMERICAN UG.40A/U OR R.C.S.C. No 2830051
3·250±0·031 DIA.
1·625
RAD.
COMMON CATHODE
CONNECTION INDICATED
THUS.
CATHODE
2·984
±0·062
4 HOLES 0·170
± 0·003
0·202
±·015
1·280
±0·004
0·125
1·562
±0·020
1·220
±0·004
SEE NOTE 3
0·172
±·015
0·812
±0·002
3·062 MAX.
1·625
±0·015
2·437
±0·015
4·750 MAX.
ALL DIMENSIONS IN INCHES