CV3982

VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

Specification AD/CV3982	SECURITY	
Issue No. 2 dated 1st October, 1962.	Specification	Valve
To be read in conjunction with K.1001	Unclassified	Unclassified

→ Indicates a change

TYPE OF VALVE - Magnetron

CATHODE - Indirectly heated, oxide coated

ENVELOPE - Copper and Glass

PROTOTYPE - M506

MARKING

See K.1001/4

Additional Marking:

Operating Frequency

Amdt 2

RATING
(All limiting values are absolute)

			Note
Heater Voltage	V	3.0	A
Heater Current	A	3.8	
Peak Anode Voltage (Max)	kV	15	
Peak Anode Current (Max)	A	12	
Operating Frequency (Nom)	Mc/s	9410	
Frequency Pulling (Max)	Mc/s	15	
Mean Input Power (Max)	W	150	B
TYPICAL OPERATING CONDITIONS (1)			
Magnetic Field Strength	oersteds	3250	C
Peak Anode Voltage (Approx.)	kV	11.5	
Peak Anode Current	A	12	
Peak Power Output (Approx.)	kW	45	
Pulse Repetition Rate	P.P.S.	1000	
Pulse Duration	μSec	1	
Rate of Rise of Pulse Voltage (Max)	kV/μSec	150	
OPERATING CONDITIONS (2)			
Magnetic Field Strength	oersteds	3800	C
Peak Anode Voltage (Approx.)	kV	14	
Peak Anode Current	A	12	
Peak Power Output (Min)	kW	45	
Pulse Repetition Rate	P.P.S.	1100	
Pulse Duration	μSec	0.4	
Rate of Rise of Pulse Voltage (Max)	kV/μSec	200	

DIMENSIONS AND CONNECTIONS

See Drawing, page 4.

NOTES

A. The heater voltage shall be maintained at 3.0 volts for at least 2 minutes before application of H.T. voltage.

→ VH shall then be reduced according to the following input conditions:- ←

The mean input powers

0-30 Watts	Vh = 3.0
31-80 "	Vh = 2.5
81-120 "	Vh = 2.0
121-150 "	Vh = 1.5

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

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

D. The Joint Service Catalogue Number is:- 5960-99-000-3982

TESTS

To be performed in addition to those applicable in K.1001

Test Conditions - Unless otherwise specified

tp (μ sec)	P.R.F. (p.p.s.)	Field Strength (oersteds)	Ia Peak (Amps.)	Note C (Page 1)
1.0	1000	3250 ± 50	12	

	TEST	TEST CONDITIONS	INSP. LEVEL	SYMBOL	LIMITS MIN.	LIMITS MAX.	UNITS
a	Heater Current	Vh = 3.0 volts Note 1	100%	Ih	3.5	4.0	A
b	Peak Anode Voltage	Notes 2 and 3	100%	Va(peak)	10.5	12.5	kV
c	Mean Output Power	Notes 2 and 3	100%	Po(mean)	35	-	W
d	Frequency	Notes 2 and 3	100%	f	9360	9460	Mc/s
e	Frequency Pulling and Spectrum	Notes 2, 4 and 5	100%	Δ f BW	- -	15 3	Mc/s Mc/s
f	Mode Change	Ia(peak) varied 10-14 Amps Notes 2, 3 and 5	100%				
g	Frequency Pushing	Ia(peak) varied 12-14 Amps Notes 2 and 3	100%	Δ f	-	5	Mc/s
h	Starting Stability	tp - 2.0 μSec. P.R.F.- 500 p.p.s. FIELD - 3800 ± 100 oersteds Notes 2, 3, 6 and 7	100%	MP	-	0.5	%
→ j	Peak Anode Voltage	tp - 0.4 μSec. P.R.F. - 1100 p.p.s. FIELD - 3800 ± 100 oersteds Notes 2 and 3	100%	Va(peak)	13.0	15.5	kV
→ k	Mean Output Power	tp - 0.4 μSec. P.R.F. - 1100 p.p.s. FIELD - 3800 ± 100 oersteds Notes 2, 3 and 9	100%	Po(mean)	20	-	W
l	Spectrum and Mode change	tp - 0.4 μ Sec. P.R.F. - 1100 p.p.s. FIELD - 3800 ± 100 oersteds Notes 2, 4, 7, 9 and 10	 100%	BW MP	- -	7.5 0.25	Mc/s %
m	Cold Test v.s.w.r.	Vh - 3.0 volts Note 8	100%	RATIO	6.0		
n	Cold Test P.O.M. relating to plane of reference	Vh - 3.0 volts Note 8	100%		-3	+3	mm

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NOTES

1. The heater current shall be measured 6 minutes after application of heater voltage.

2. Vh shall be maintained at 3.0 volts for 2 minutes before Va is applied. Va shall be increased to a value which gives Ia(Peak) = 12 Amps. and Vh reduced to 1.5 volts for tests b to h and 2.5 volts for tests j, k and l.

3. The output waveguide shall be terminated in a load giving a v.s.w.r. better than 1.06:1.

4. The output waveguide shall be terminated in a mismatched load which gives a v.s.w.r. of not less than 1.5:1.

5. During a 15 second test interval, there shall be no mode change as indicated by missing pulses on the spectrum analyser, or by double voltage or current traces on the oscilloscope.

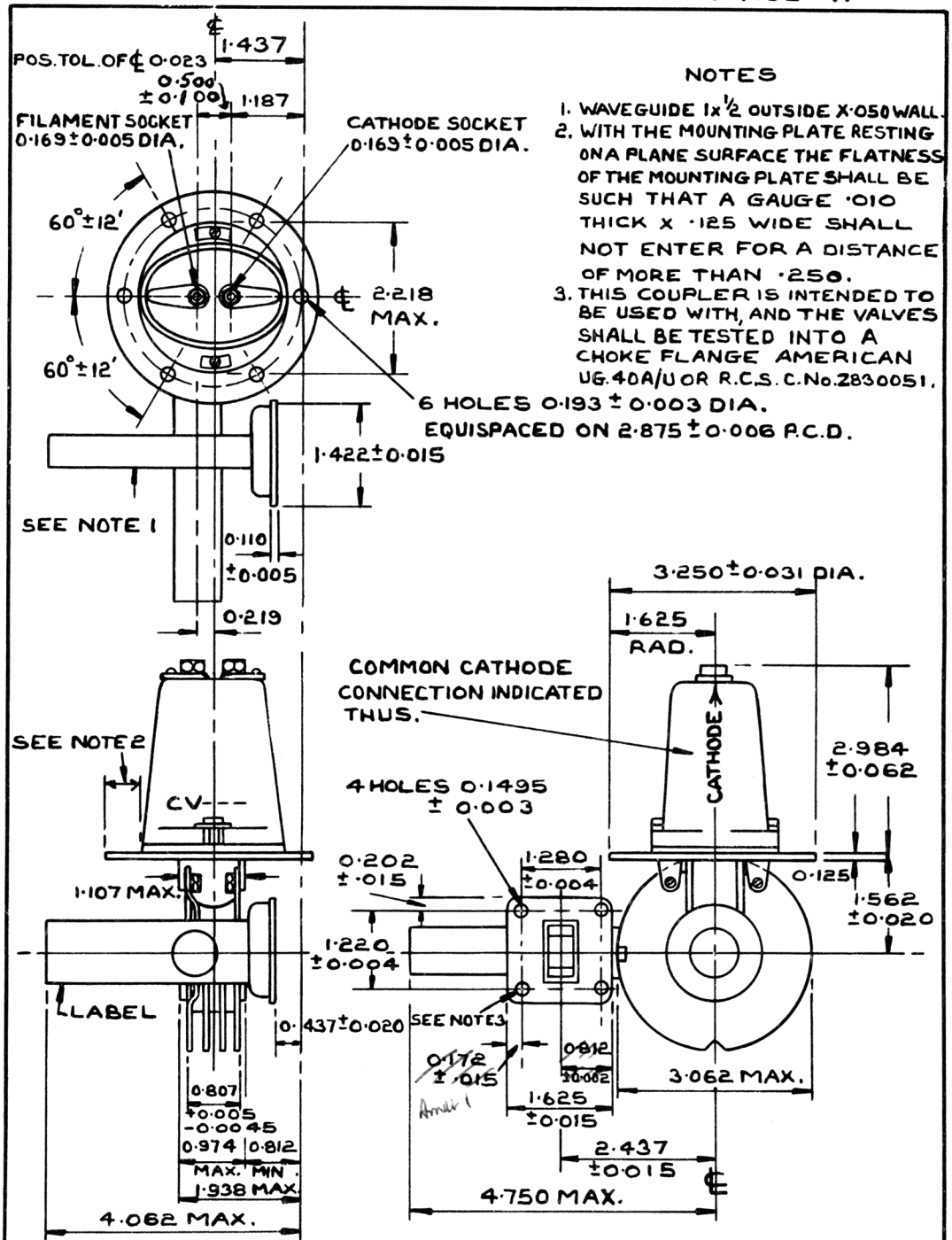
6. After a holding period of not less than 7 days, Vh and Va shall be applied as specified in Note 2. The valve shall then be operated for 4 minutes under these conditions. During the last minute of the test period the percentage of missing pulses shall be less than the specified amount.

7. Deficient pulses, due to any causes, are considered to be missing if the r.f. energy is less than 70% of the normal energy level in the specified frequency range.

8. The v.s.w.r. and position of voltage minimum, are to be measured at the frequency recorded in "test d". The plane of reference for the P.O.M. (Position of S.W. minimum is 19.5 mm measured from the face of the magnetron coupling flange into the valve.

9. The rate of rise of voltage, defined as the steepest tangent to the leading edge of the voltage pulse above 80% amplitude, shall be not less than 200 kV/μ Sec.

10. The percentage of missing pulses shall be less than the specified value over the last 30 seconds of a test period which is not to exceed 5 minutes. For this test the phase of the v.s.w.r. shall be adjusted to produce maximum instability.

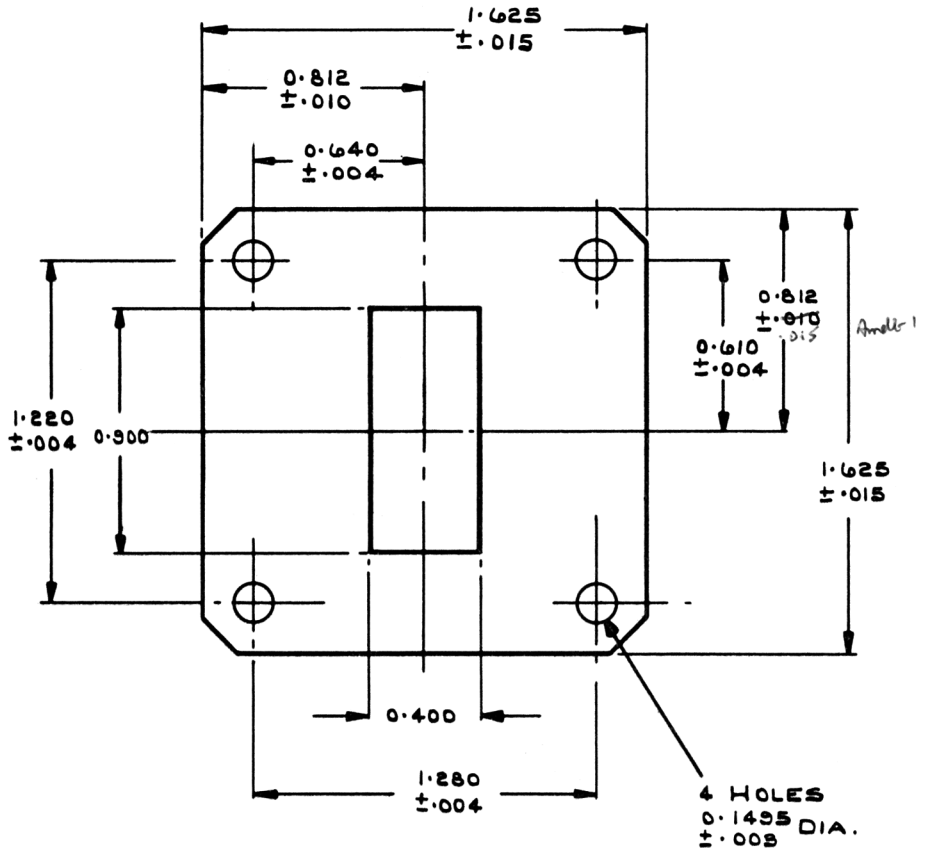


NOTES

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.

ALL DIMENSIONS IN INCHES.

OUTPUT COUPLER



SCALE :- 2:1

ELECTRONIC VALVE SPECIFICATIONS

SPECIFICATION AD/CV3982. ISSUE No.2 DATED 1st OCTOBER, 1962

AMENDMENT NO.1

Page 4 - OUTLINE DRAWING

Delete all reference to the dimensions "0.172 ± .015" and "0.812 ± 0.002". (These are situated immediately below and to the right of the instruction "See Note 3" approximately 2 inches above the bottom centre of the page).

Page 5 - OUTPUT COUPLER (Right hand side of drawing).

Amend the dimension "0.812 ± 0.010" to read "0.812 ± 0.015".

February, 1963.
175328/NJ

T.V.C. for
A.S.W.E.

JAH
28/2/63

ELECTRONIC VALVE SPECIFICATIONS.

SPECIFICATION AD/CV3982 ISSUE NO. 2 DATED 1ST OCTOBER, 1962

AMENDMENT NO. 2

Page 1. Box headed MARKING.

Insert : "Additional Marking:- Operating Frequency".

TVC for A.S.W.E.

December, 1963
N.213605

17/3/64