VALVE ELECTRONIC

ADMIRALTY SURFACE WEAPONS ESTABLISHMENT

CV2313

Specification AD/CV2313 Issue No. 5 reprint "A" dated 29/1/60 To be read in conjunction with K1001	SECURITY Specification: Unclassified Valve: Unclassified

⟶ Indicates a change

TYPE OF VALVE: Magnetron, Tunable.

CATHODE: Indirectly Heated.

ENVELOPE: Copper and Glass.

PROTOTYPE: VX4122

MARKING

See K1001/4, also Note 'E'.

Additional Marking:

Serial No. .....

The word "Cathode" to be adjacent to cathode terminal.

RATING			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.8	
Operating Frequency	(Mc/s)	9440 to 9510	D
Max. Mean Input Power	(W)	150	A

TYPICAL OPERATING CONDITIONS

Peak Anode Voltage	(kV)	14	A, B, C.
Peak Anode Current	(A)	12	"
Magnetic Field Strength (Oersteds)		6600	"
Peak Power Output	(kW)	50	"

DIMENSIONS

See drawing on Page 4.

NOTES

A. The valve shall be run with the heater at 6.3 volts for a period of at least two minutes before the application of H.T.

B. These operating conditions apply for a pulse length of 0.6 uS, and a pulse repetition rate of 1650 p.p.s., and assumes operation of the valve into British Standard Waveguide No. 16 with Inter-Service Coupler No. Z830003 with a v.s.w.r. not exceeding 1.5:1. Under these conditions the heater voltage should be reduced to 4 volts when the H.T. is applied.

C. The valve shall be forced-air cooled so that the temperature of the block never exceeds 140°C.

D. A mechanical tuning arrangement is provided so that the valve can be set to operate at any frequency in this range.

E. No technical information shall appear on the valve or packing.

CV2313

TESTS

To be performed in addition to those applicable in K1001.

	Test Conditions						Test	Limits		No. Tested	Note
	Field Strength (Oersteds	Vh (V)	Pulse Length (/u Sec.)	Rep. Freq. (p.p.s.)	Freq. (Mc/s)	Peak Ia (A)		Min.	Max.		
a	0	6.3	0	0	0	0	Heater Current (A)	0.7	0.9	100%	
b	6600 ± 100	0	0.5	1820	9475	12	Peak Anode Voltage (kV)	14	18	100%	1, 3
c	6600 ± 100	0	0.5	1820	Adjust	12	Efficiency (%)	25	-	100%	1, 2, 3.
d	6600 ± 100	0	0.5	1820	Adjust	12	Frequency Range Upper Limit (Mc/s) Lower Limit (Mc/s)	9510 -	- 9440	100%	1, 3
e	6600 ± 100	0	0.5	1820	9475	12	Frequency Pulling (Mc/s)	-	20	100%	1, 3, 4.
f	6600 ± 100	0	0.5	1820	9475	12	R.F. Band-Width (Mc/s)	-	5	T.A.	1, 3, 4, 5.
g	6600 ± 100	0	0.5	1820	Adjust	Varied 8 to 14	Percentage of pulses missing (%)	-	0.2	T.A.	1, 2, 3, 4, 6.
h	6600 ± 100	0	0.3	3300	Adjust		Percentage of pulses missing (%)	-	0.2	T.A.	1, 2, 3, 4, 6.
j	6600 ± 100	0	0.5	1820	9475	12	Life hours	500	-	2% or 1 per order	1, 3, 7.

NOTES

1. The heater shall be at Vh = 6.3 volts for two minutes before applying H.T. The H.T. shall then be switched on and the heater voltage shall be simultaneously reduced to zero.

2. Tests to be performed at minimum, maximum and nominal centre frequency for each frequency variant. The minimum and maximum frequencies applicable are the limit frequencies of test d.

NOTES (CONT'D)

3. The valve shall be coupled to British Standard Waveguide No. 16 by means of Inter-Service Coupler No. Z830003; the termination shall be a resistive load producing a v.s.w.r. better than 1.1:1.

4. The rate of rise of pulse voltage shall be at least 150 kV/μS at the operating voltage of the magnetron. A reactor, giving a v.s.w.r. of 1.5:1 shall be inserted in the waveguide and the phase varied through at least 180°.

5. The R.F. bandwidth shall be measured between "quarter-power points" by means of an R.F. spectrometer.

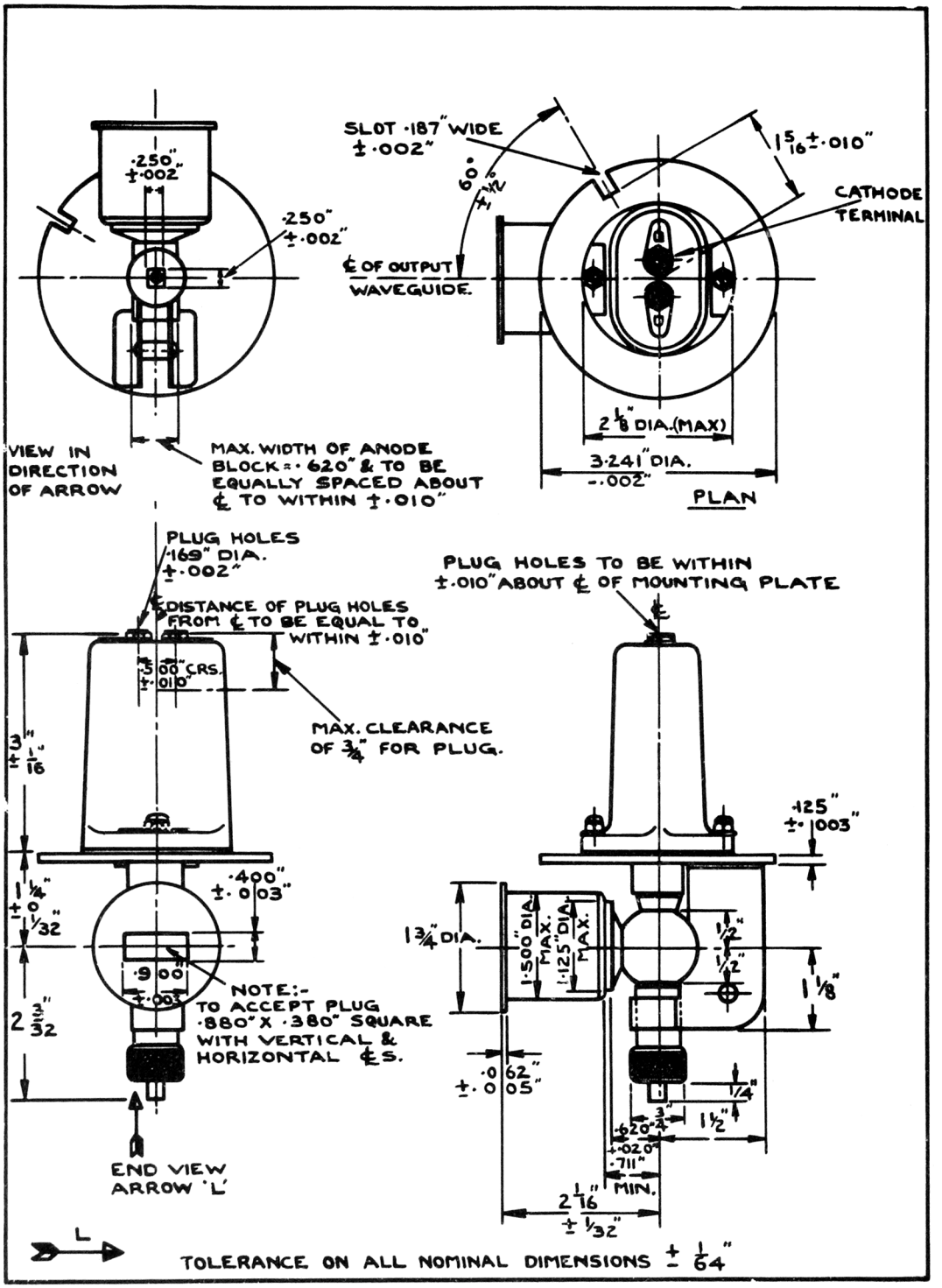
6. A missing-pulse counter based on the system described in A.S.R.E. Technical Note GX/52/9 shall be used to measure the number of missing pulses for any 10 second interval.

7. Lot size and the timing of the commencement of a life test with respect to lot production are factors governed by production rate and quantity of valves on order. It will therefore be necessary for the production contract to specify these requirements giving a test and release sequence.

A valve will be considered to have failed the life test if, at the conclusion of the test, the power output has decreased by more than 20% on that obtained at the start of the test, or if the percentage of pulses missing exceeds 0.2% (test g).

If the representative life test sample passes the test, the lot shall be accepted. If the sample fails to pass the test, another sample from the same lot shall be life tested. If the second sample passes the test, the lot shall be accepted, but if this sample also fails to pass the test, the lot shall be rejected. At the discretion of the Government Authority, a rejected lot may be submitted for acceptance following a joint investigation by the contractor and the Government Authority.

On passing two successive tests satisfactorily, the percentage tested may be reduced to 1% or 1 per order, but the original life test rate, 2% or 1 per order whichever is the greater, must be restored following any subsequent failure.


.250" ±.002"
.250" ±.002"
VIEW IN DIRECTION OF ARROW
MAX. WIDTH OF ANODE BLOCK = .620" & TO BE EQUALLY SPACED ABOUT ℄ TO WITHIN ±.010"
SLOT .187" WIDE ±.002"
60° ±½°
℄ OF OUTPUT WAVEGUIDE.
1 5/16 ±.010"
CATHODE TERMINAL
2 1/8" DIA.(MAX)
3.241" DIA. -.002"
PLAN
PLUG HOLES .169" DIA. ±.002"
℄ DISTANCE OF PLUG HOLES FROM ℄ TO BE EQUAL TO WITHIN ±.010"
.500" CRS. ±.010"
MAX. CLEARANCE OF ¾" FOR PLUG.
3" ± 1/16"
1¼" ± 0 1/32"
.400" ±.003"
2 3/32"
.900" ±.003"
NOTE:- TO ACCEPT PLUG .880" X .380" SQUARE WITH VERTICAL & HORIZONTAL ℄S.
END VIEW ARROW 'L'
PLUG HOLES TO BE WITHIN ±.010" ABOUT ℄ OF MOUNTING PLATE
.125" ±.003"
1¾" DIA.
1.500" DIA. MAX.
1.125" DIA. MAX.
½"
½"
1⅛"
.062" ±.005"
¼"
1½"
.620" +.020" -.004"
.711" MIN.
2 1/16" ± 1/32"
L
TOLERANCE ON ALL NOMINAL DIMENSIONS ± 1/64"