VALVE ELECTRONIC **CV2304**

ADMIRALTY SIGNAL & RADAR ESTABLISHMENT

Specification AD/CV2304/Issue No. 2. Dated : 30. 6. 54. To be read in conjunction with K1001, ignoring clause 5.2.1.	SECURITY Specification: Unclassified Valve: Unclassified

→ Indicates a change

TYPE OF VALVE:- Velocity modulated oscillator with waveguide output.
CATHODE:- Indirectly Heated.
ENVELOPE:- Shielded metal glass.
PROTOTYPE:- K324.

MARKING

See K1001/4.
Additional marking :
Serial No. .....

RATING			Note
Heater Voltage	(V)	6.3	
Heater Current	(A)	0.56	
Tuning Range	(Mc/s)	9000 to 10,000	
Power Output (Min)	(mW)	30	
Max. Resonator Dissipation	(W)	20	
Max. Resonator Voltage	(V)	400	
Reflector Voltage Range	(V)	-215 to -415	
→ Min. Electronic Tuning Range	(Mc/s)	20	
→ Max. Reflector Voltage Change to give 15 Mc/s frequency change	(V)	25	
Max. Total Impedance in Reflector to Cathode circuit	(MΩ)	0.5	

BASE
IO
See K1001/A.IV/D2.

CONNECTIONS

Pin	Electrode
1	NC
2	Heater
3	NC
4	NC
5	Resonator
6	NC
7	Heater & Cathode
8	NC
T.C.	Reflector

TOP CAP
See K1001/A.1/D5/5.2.

DIMENSIONS
See Page 4. ←

NOTES

→ 1. Clockwise rotation of the tuner shaft increases the frequency.

→ 2. The manufacturer is to tune each valve by means of the mechanical tuner to 9725 ± 10 Mc/s. The tuner shaft is then to be secured by means of a protectively-covered soft iron wire which is passed through the slot on the shaft and under the other end of the shaft. The two ends of the wire are to be twisted together and secured with a lead seal.

TESTS

To be performed in addition to those applicable in K1001.

	Test Conditions				Test	Limits		No. Tested	Note
	Vh (V)	Vres. (V)	Vref. (V)	Freq. (Mc/s)		Min.	Max.		
a	6.3	0	0	-	Heater Current (A)	0.52	0.61	S	1
b	6.3	350	Adjust for Max. R.F. Power	9000	i. Power Output (mW) ii. V reflector (V)	30 -215	- -415	100%	
c	6.3	350	-do-	10,000	i. Power Output (mW) ii. V reflector (V)	30 -215	- -415	100%	
d	6.3	350	-do-	Any point between 9000 to 10,000	i. Power Output (mW) ii. V reflector (V) iii. Beam Current (mA)	30 -215 -	- -415 44	100%	
e	6.3	350	-do-	As for 'd'	Electronic Tuning i. Frequency change when the reflector voltage is varied from $\frac{1}{2}$P max. through P max. to $\frac{1}{2}$P max. (Mc/s) ii. Mean rate of change of electronic tuning. (Mc/s/v)	20 3/5	- -	100%	2
f	6.3	350	-do-	-do-	Temperature Effects Frequency drift (Mc/s per 1°C)	0	+0.10	T.A.	3
g	6.3	350	-do	-do-	Switching Test Frequency Excursion (Mc/s)	-	5	T.A.	4
h	6.3	350	-do-	-do-	Frequency Pulling (Mc/s)	-	10	S	1,5.
j	0	400	0	-	Cathode Resonator Insulation (MΩ)	2	-	S	1

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TESTS (Contd.)

	Test Conditions				Test	Limits		No. Tested	Note
	Vh (V)	Vres. (V)	Vref. (V)	Freq. (Mc/s)		Min.	Max.		
k	0	1000	0	-	Reflector-Resonator Insulation (MΩ)	100	-	S	1
l	6.3	350	Adjust for Max. RF power	As for 'd'	Mechanical backlash on driving shaft Total excursion (degrees)	-	50	S	1,6.
m	0	0	-	-	Tuning Shaft Torque (inch-oz)	-	20	S	1,7.

NOTES

1. These tests to be performed on six valves per day or 10% of the day's production whichever is the greater. If this sample batch passes these tests, then all valves will be accepted to these tests. If there are any rejects in the batch then all the valves in the day's production will be tested.

2. In Tests 'e' (i) and (ii), the valve is to work into a matched load through an attenuator of not greater than 10 db.
In Test 'e' (ii), adjust V ref. to the value V ref.1 which gives maximum power, P max., at that setting of the mechanical tuner. Then, measure the frequencies and output powers at V ref. = V ref. 1 + 12½ volts and at V ref. = V ref. 1 - 12½ volts. The two frequencies must differ by at least 15 Mc/s.

3. With the temperature of the valve raised from ambient to 100°C the frequency drift per degree centigrade shall be within the limits specified. For the purpose of this test, the temperature is to be taken as that of the waveguide body.

4. The frequency drift shall be measured between 4 mins. and 15 mins. after switching on all supplies.

5. Measured by varying the phase of the V.S.W.R. in the waveguide output (of not greater than 0.66) through 180°. There are to be no discontinuities in the electronic tuning or power characteristics during this test.

6. Without changing R.F. frequency, rotate the tuning shaft clockwise and anti-clockwise measuring total excursion.

7. This test is to be made when the valve has been cold for at least 24 hours, and also when at normal operating temperature.

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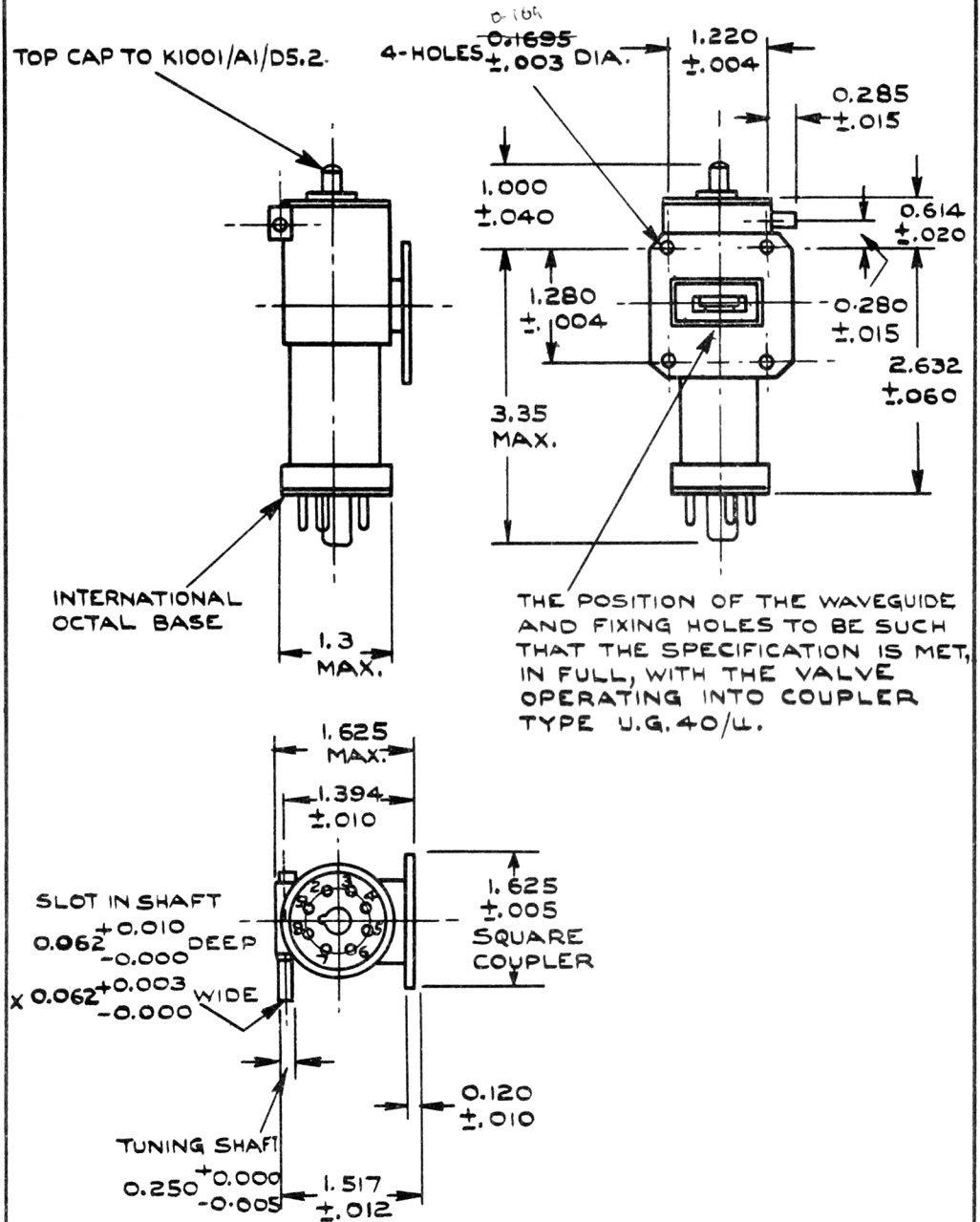

ALL DIMENSIONS IN INCHES

ELECTRONIC VALVE SPECIFICATION
AD/CV2304 ISSUE NO. 2 DATED 30.6.54

AMENDMENT NO. 1

Page 4 Diameter of fixing holes waveguide flange:-

4 holes 0.1695" ± 0.003

Amend to read: 4 holes 0.169" ± 0.003

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