

ADMIRALTY SIGNAL AND RADAR ESTABLISHMENT

Specification AD/CV217/Issue 4. Dated: 19.2.53. To be read in conjunction with K1001, ignoring clauses:- 5.2; 5.8.	<u>SECURITY</u>	
	<u>Specn.</u> Unclassified	<u>Valve</u> Unclassified

→ Indicates a change

<u>TYPE OF VALVE:</u> Velocity modulated beam type local oscillator.	<u>MARKING</u> See K1001/4. Additional Marking- Serial No. ....
<u>CATHODE:</u> Indirectly heated.	
<u>ENVELOPE:</u> Copper glass with resonator.	
<u>PROTOTYPE:</u> KRN3.	

<u>RATING</u>			Note	<u>BASE</u>	
Vh (V)	4.0			IO - See K1001/ AIV/D2	
Ih (A)	1.3				
Approx. tuning range (cms)	3.04 to 3.14			Pin	Electrode
Max. resonator wattage (W)	10			1	Grid
Resonator voltage (kV)	1.35		C	2	Heater
Reflector voltage range (V)	-210 to -300		C	3	No connection
Grid voltage range (V)	0 to -100			4	No connection
Approx. negative Vg for oscillation cut off (V)	150			5	No connection
Total AFC range (Mc/s)	20		A	6	No connection
Total reflector voltage change for above freq. change. (V)	20 to 40		B	7	Heater
Max. series grid resistance (Ω)	25,000			8	Cathode
Max. series reflector resistance (Ω)	25,000			TC	Reflector
Max. temp. of resonator	140°C			<u>TOP CAP</u> See K1001/AI/D5.2.	
				<u>DIMENSIONS</u> See Drawing Page 4.	

NOTES

- A. By variation of reflector voltage. From 1/2 power to 1/2 power at any mean frequency in the range.
- B. Superimposed on initial setting.
- C. Va = Resonator voltage. Vr = Reflector voltage.

Finish The circuit portions of the valve are required to be silver plated. All other parts excluding the valve pins and top-cap, are to be given an approved corrosion resisting coating.

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TESTS

To be performed in addition to those applicable in K1001

	Test Conditions				Test	Limits		No. Tested	Note
	Vh (V)	Vg (V)	Vr (V)	Va (V)		Min.	Max.		
	a	0	G-C potential 250 V minimum			G-C insu- lation ( $M\Omega$ )	0.1		
b	4.0	See K1001/5.3		H-C leakage ( $\mu A$ )	-	50	100%		
c	4.0			Ih (A)	1.0	1.6	100%		
d	4.0	Ad- jus- ted	Ad- jus- ted	1350	(i) Power output(mW)	15	-	100%	1
					(ii) Vr (V)	-210	-300		
Vg adjusted (not +ve) to give Ia = 7.4 mA, or max. available Ia if less than 7.4 mA. Valve tuned to 9870 Mc/s. Unloaded power measurement.					(iii) Vg (V)	0	-100		
e	4.0	As in 'd'	Initi- ally as in 'd'	1350	(i) Freq. change (Mc/s)	20	-	100%	1
					(ii) Vr change (V)	20	40		
<p>Valve tuned initially to 9870 Mc/s. Power output fed through an approved form of waveguide transformer to a section of <math>1" \times \frac{1}{2}"</math> O.D. waveguide terminated by a load for which the SWR is better than 0.9. Vr varied first from a value less than to value more than that observed in test 'd', and then similarly in the reverse direction; to ensure that any hysteresis effect will be revealed, the variation must be of sufficient amplitude to stop oscillation on both sides of the mean Vr. The magnitude of the frequency change which is free from any hysteresis effect, and which corresponds to output power of not less than half of the value found in test 'd' is to be observed. The change in Vr corresponding to a change in frequency of 20 Mc/s is to be observed.</p>									

TESTS (CONTD.)

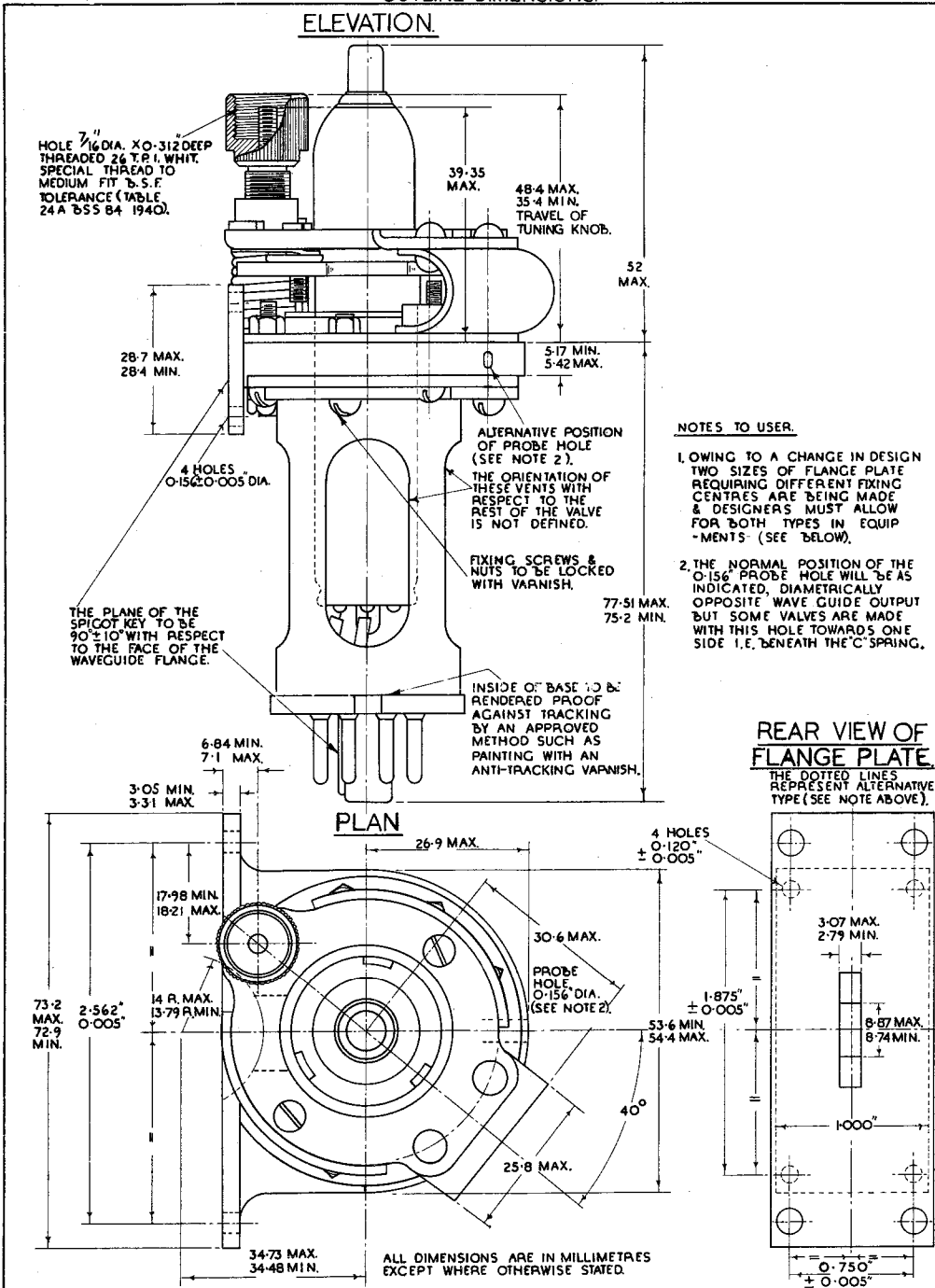
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	Test Conditions				Test	Limits		No. Tested	Note
	Vh (v)	Vg (v)	Vr (v)	Va (v)		Min.	Max.		
f	4.0	As in 'd'	Ad-justed	1350	(i) Power output (mW)	15	-	100%	1
	Valve tuned to 9550 Mc/s. Unloaded power measured.				(ii) Vr (V)	-210	-300		
g	4.0	As in 'd'	Initially as in 'f'	1350	(i) Freq. change (Mc/s)	20	-	100%	1
	Valve tuned initially to 9550 Mc/s. Test analogous to 'e' performed with reference to reflector voltage and power observed in 'f'.				(ii) Vr change (V)	20	40		
h	4.0	As in 'd'	Ad-justed	1350	Power output (mW)	15	-	10% (1)	1
	Valve tuned to 9700 Mc/s. Unloaded power measured.								
j	After 24 hours rest at approx. max. torque position.				Tuning Torque (inch-ozs)	-	70	100%	

NOTE

1. Tests to be made with grid and reflector supplies whose respective total series resistance is 50,000 ohms. The Vg and Vr specified may be taken as including the voltage drop across these resistances, as this should be negligible with a good valve. Should the grid lose control of the anode current as a result of grid current flowing, the valve shall be rejected.

## OUTLINE DIMENSIONS.



### NOTES TO USER.

1. DUE TO A CHANGE IN DESIGN TWO SIZES OF FLANGE PLATE REQUIRING DIFFERENT FIXING CENTRES ARE BEING MADE & DESIGNERS MUST ALLOW FOR BOTH TYPES IN EQUIPMENTS (SEE BELOW).
2. THE NORMAL POSITION OF THE 0.156" PROBE HOLE WILL BE AS INDICATED, DIAMETRICALLY OPPOSITE WAVE GUIDE OUTPUT BUT SOME VALVES ARE MADE WITH THIS HOLE TOWARDS ONE SIDE I.E. BENEATH THE 'C' SPRING.