

MINISTRY OF SUPPLY, D.L.R.D.(A)/R.A.E.

Specification MAP/CVI29 Issue 5 Dated 15.4.52 To be read in conjunction with K1001 ignoring clauses:- 5.3, 5.2, 1.2, 7.2.	<table border="1"> <tr> <th colspan="2">SECURITY</th></tr> <tr> <td>Specification</td><td>Valve</td></tr> <tr> <td>UNCLASSIFIED</td><td>UNCLASSIFIED</td></tr> </table>	SECURITY		Specification	Valve	UNCLASSIFIED	UNCLASSIFIED
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—————&gt; Indicates a change

TYPE OF VALVE - Velocity modulated beam oscillator.			<u>MARKING</u>  See K1001.		
CATHODE - Indirectly heated					
ENVELOPE - Glass unmetallised					
PROTOTYPE - CV87 with simplified tuner mechanism and smaller frequency coverage.			<u>BASE</u>  I.O.		
<u>RATING</u>			Note	<u>CONNECTIONS</u>	
				Pin	Electrode
Heater Volts	(V)	4.0	A	1	Grid
Heater Current	(A)	1.4		2	Heater
Tuning Range	(Mc/s)	(9550 9200)		3	No Connection (See Note E)
Nominal Frequency	(Mc/s)	9375	B C.	4	" "
Max. Resonator Dissipation	(W)	10		5	" "
Resonator Voltage	(kV)	1.6		6	" "
Reflector Voltage Range	(V)	(-300 -550)		7	Heater
				8	Cathode
Reflector Voltage (target) at 9375	Mc/s	-420		T.C.	Reflector
Grid Volts (operating)		(-5 -100)	D	Connection to resonator is made via metal framework.	
Grid Volts (target)		-35			
Max. negative grid volts for oscillation cut-off		-150			
			<u>TOP CAP</u>  See K1001/A1/D5.2		
			<u>DIMENSIONS</u>  See drawing on page 4		

NOTES

- The valve must operate satisfactorily with any voltage within the range  $4.0 \pm 5\%$ .
- With connection cooling in free air.
- $V_a$  = Resonator voltage,  $V_r$  = reflector voltage. The terms anode and resonator are synonymous.
- This figure is not necessarily the same as that for starting oscillation, as there is an hysteresis effect which varies from valve to valve; it should, therefore, be used with caution.
- Circuit designers are advised that no external connection should be made to pin 3, since certain loose wires may be connected internally to this pin.

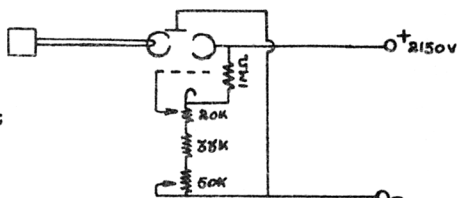
To be performed in addition to those applicable in K1001.

	Test Conditions				Test	Limits		No. Tested	Note
	V <sub>h</sub>	I <sub>a</sub> (mA)	V <sub>a</sub> (kV)	V <sub>r</sub>		Min.	Max.		
a	Cathode - grid potential 250v minimum				Cathode - grid insulation (megohms)	0.1	-	100%	
b	4.0	0	0	0	I <sub>h</sub> (A)	0.8	1.6	100%	
c	4.0	6.25	1.6	Adjusted	1. Frequency range over which oscillation can be obtained (Mc/s) 2. V <sub>r</sub> (V) over this range 3. Power output (mw) at 9200 Mc/s 4. Power output (mw) at 9550 Mc/s 5. V <sub>g</sub> (V)	9200 -300 75 75 -5	9550 -550 - - -100	100% 100% 100% 100% 100%	
d	V <sub>h</sub> adjusted. Frequency varied by means of tuner.				V <sub>h</sub> switched off until the current has dropped to less than 2mA. V <sub>h</sub> re-applied.			10% (20)	1
e	The H.T. supply is switched 3 times in succession.				The valve must re-start each time.			10% (20)	1
f	The resonator is hit with the bob of a pendulum of weight 1/4 lb. suspended on a 6" wire, such that the point of suspension is vertically above the centre of the bob, when the latter is just in contact with the resonator. The bob is drawn back through an angle of 45° and then released.				1. Instantaneous change in crystal current (mA) 2. Permanent change in crystal current (mA)	- -	0.2 0.1	10% (20)	1

	Test Conditions				Test	Limits		No. Tested	Note
	V <sub>h</sub>	I <sub>a</sub> (mA)	V <sub>a</sub> (kV)	V <sub>r</sub>		Min.	Max.		
g	4.0	6.25	1.6	Adjusted	Frequency Drift Mc/s	-	10		2
	V <sub>g</sub> adjusted between -5 & -100. V <sub>r</sub> adjusted between -300 & -550.				Frequency drift from 1 1/2 minutes after switching on, to 10 minutes after switching on.				
h	4.0	6.25	1.6	Adjusted	1. Random variations in frequency (Mc/s)	-	+5	T.A.	
	V <sub>g</sub> & V <sub>r</sub> adjusted for optimum power output. Valve tuned to 9375 Mc/s and vibrated for half an hour under approved conditions.				2. Average variation in frequency (Mc/s)	-	±1 1/2	T.A.	

NOTE 1. Test to be carried out in circuit shown below.

Crystal Mixer Ref.No.10DB/6597 with a CV221 attached such that the axis of the tuner is perpendicular to the axis of the crystal.



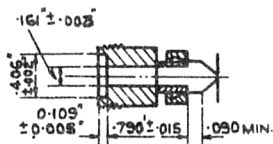
V<sub>g</sub> is adjusted to give total H.T. current not greater than 8mA.

V<sub>r</sub> is adjusted to give first oscillation, and then optimum output at a frequency of 9375 Mc/s.

Coupling adjusted to give 0.5mA crystal current.

NOTE 2. Before bulk delivery commences the result on 25 valves shall be submitted to MOS RDC8. If these are satisfactory, the manufacturer will not be required to carry out the test on further valves.

THREAD TO BE  $\frac{1}{2} \times 40$  T.P.I. TO  
TABLE 24A BS 84-1940.  
AFTER PLATING.



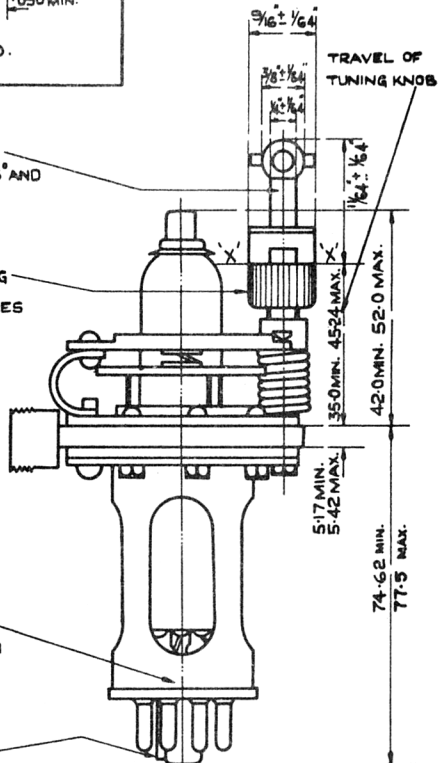
THESE DIAMETERS TO BE CONCENTRIC WITHIN  $\pm 0.10$ .

FLEXIBLE COUPLING. THIS COUPLING SHALL BE CAPABLE OF  
OPERATION WHEN DISPLACED THROUGH ANY ANGLE UP TO  $6^\circ$  AND  
SHALL BE DETACHABLE AT AXIS 'X' 'X'.

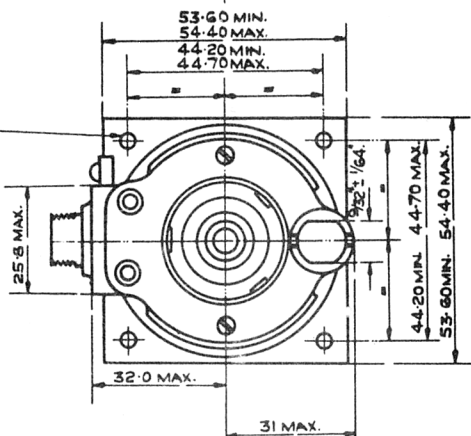
TUNING KNOB. INTERNAL THREAD AND FLEXIBLE COUPLING  
THREAD TO BE  $\frac{7}{16} \times 26$  T.P.I. TO FREE FIT B.S.F. TOLERANCES  
(TABLE 25A BS 84-1940) AFTER PLATING.

INSIDE OF BASE TO BE RENDERED PROOF  
AGAINST TRACKING BY AN APPROVED  
METHOD SUCH AS PAINTING WITH ANTI-  
TRACKING VARNISH. ANY FREE WIRES  
PROTRUDING THROUGH THE BASE OF THE  
VALVE SHOULD BE CUT OFF FLUSH WITH THE GLASS,  
TERMINATED IN A SPHERICAL BLOB, TERMINATED IN  
A LOOP OF APPROX  $\frac{1}{8}$ " DIA. OR CONNECTED TO PIN No.3.  
TO AVOID CORONA DISCHARGE.

KEYWAY ON SPIGOT TO FACE PARALLEL TO CABLE  
ENTRY WITHIN  $10^\circ$  OF  $\phi$ .



4 HOLES  $0.162 \pm 0.005$  DIA.



ALL DIMENSIONS IN MILLIMETRES  
UNLESS OTHERWISE STATED.