VALVE ELECTRONIC

CV314

ADMIRALTY SIGNAL & RADAR ESTABLISHMENT

Specification AD/CV314 Issue No. 3. Dated : 25.9.50. To be read in conjunction with K1001, ignoring clauses 5.8 and 7.2.	SECURITY Specification: Unclassified Valve: Unclassified

TYPE OF VALVE:- Electron Beam Noise Generator

CATHODE:- Indirectly heated

ENVELOPE:- Glass, unmetallised

PROTOTYPE:- CV35 selected and modified. (See Note A)

RATING			Notes
Heater Supply Voltage	(V)	4.0	B
Max. Heater Current	(A)	1.45	B
Max. Cathode Beam Current	(mA)	1.0	B
Tuning Range	(cm)	9.8 to 10.2	
Operating Resonator Voltage	(kV)	2.1 to 2.3	C,D
Grid Voltage	(V)	0	

MARKING

See K1001/4
Additional Marking
Serial Number .....

BASE

I.O.
See K1001/AIV/D2.

CONNECTIONS

Pin	Electrode
1	Grid
2	Heater
3	No connection
4	No connection
5	No connection
6	No connection
7	Heater
8	Cathode
TC	Collecter, essentially strapped to earth.

DIMENSIONS

See page 3, Fig. 2.

TOP CAP

See K1001/AI/D5 ref. 5.2.

PACKAGING

The packing of the original CV35 should be used (see Note A) with suitable markings.

NOTES

A. This valve is produced from valve type CV35 by addition of an output coupling loop and plug, Ad. Patt. 67748. Each valve is selected and adjusted to give a noise output equal to within $\frac{1}{4}$ db to a zero level of noise, defined by A.S.R.E. by means of standard reference valves, when operated at midband (10 cm) with the rated resonator voltage and a collecter current of 600 μA (adjusted by regulating the heater supply). The noise output power is then assumed proportional to the collecter current and virtually constant over the tuning range.

B. The heater ratings are nominal; in operation the heater voltage is adjusted to give a cathode emission of 1 mA. max.

C. The terms anode and resonator are synonymous. Va = Resonator Voltage. Vr = Reflecter Voltage.

D. The valve shall be processed to withstand a maximum anode voltage of 5 kV (AC or DC) with respect to grid and reflector strapped.

E. The tuners which are to be reasonably slack when unlocked, are to be supplied lubricated with graphite.

F. The resonator and tuning plungers, but not the coupling loop, are to be plated entirely with copper, silver and gold, in that order.

TESTS

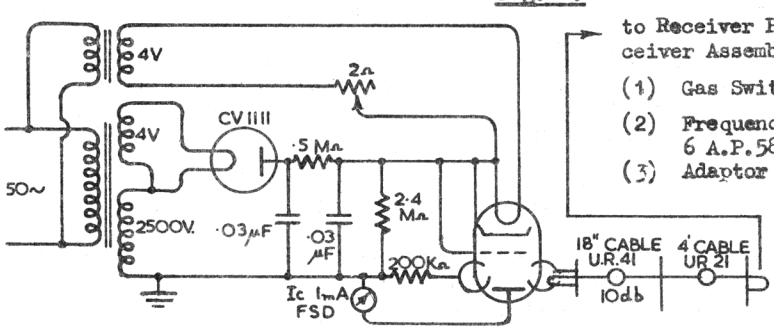
To be performed in addition to those applicable in K1001.

	Test Conditions			Test	Limits		No. Tested	Note
	Vf (V)	I_c (collector) (μA)	Va (kV)		Min.	Max.		
a	See K1001/5.3.			Heater Cathode Leakage (μA)	-	50	100%	
b	See K1001/5.2.1.2.			Cathode Grid insulation (Megohm)	1.0		100%	
c	4.0	-	-	Ih (A)	1.1	1.65	100%	
d		600	2.2	Noise output at about 3000 Mc/s as compared with zero level on standard valve. (db)	-.25	+.25	100%	1,2
	The output coupling loop A.P.67748 should be orientated and locked into position for satisfactory noise output in test circuit Fig. 1.							
e		600	2.2	Stability test I_c after 1 minute (μA)	400	800	100%	2,3
	After the valve reaches thermal equilibrium it is to be switched off for 5 mins. and switched on again.							
f		600	2.2	Frequency range of noise output (Mc/s)	2940 to 3060		100%	2
	Tuners moved over the range							

NOTES

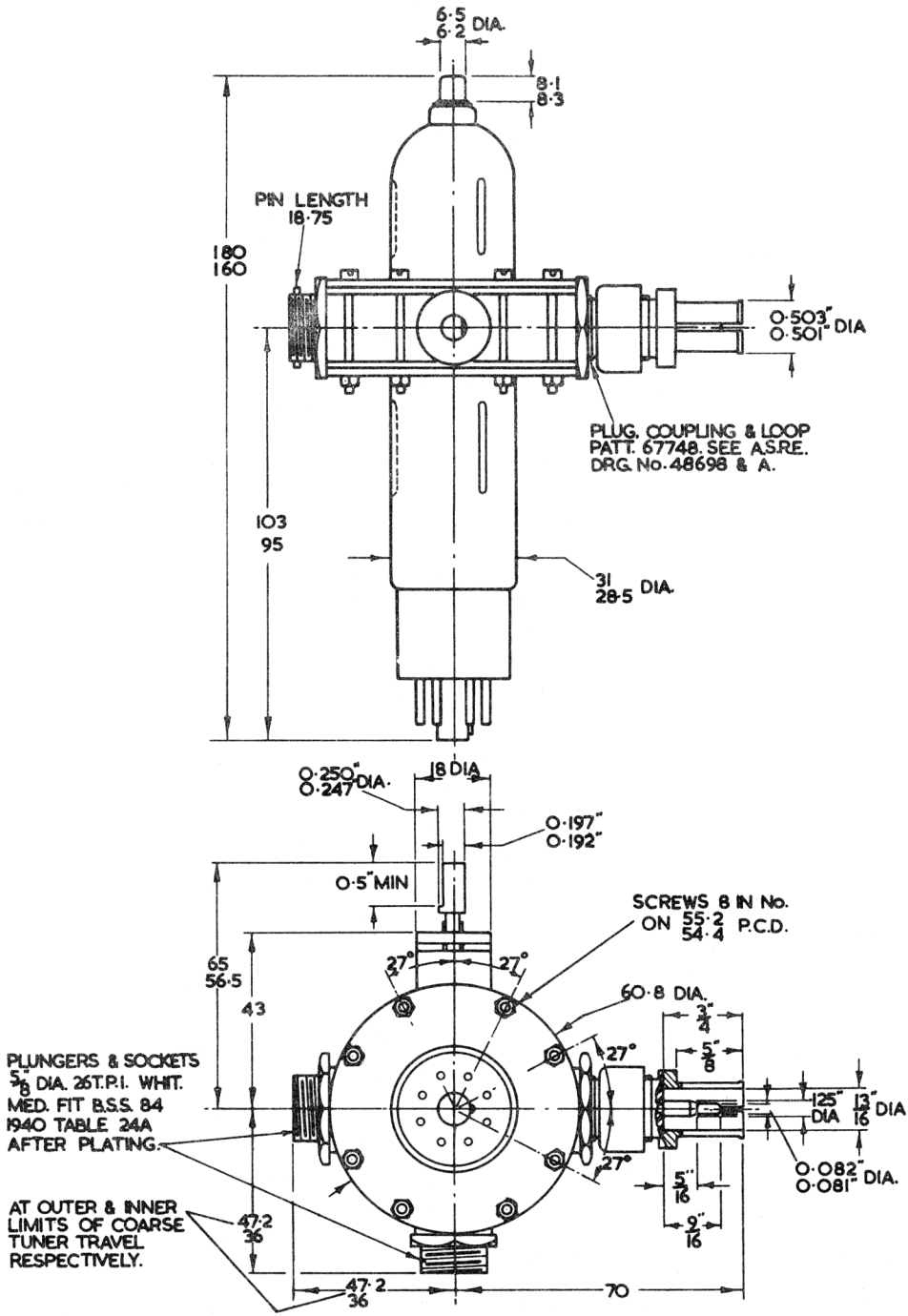
1. The standard valve is selected and calibrated in A.S.R.E. Its noise output is given in db relative to a preassumed zero level of noise, produced in conditions of test to clause 'd'.
2. In tests 'd', 'e' and 'f', the heater voltage is adjusted to limit the beam current reaching the collector to 600 μA.
3. The stability test eliminates gassy valves in which the cathode suffers from gas poisoning and other electrodes from fluctuation of surface conditions.

Fig. 1.



The RF Receiver Assembly must be mounted on a length of 3" x 1" waveguide, into which the noise output from Cable U.R.21 can be fully matched.

CV314



NOTES:-

1. ALL DIMENSIONS IN MILLIMETRES EXCEPT WHERE OTHERWISE STATED.
2. THE UNSPECIFIED PORTION OF THE TOP CAP MAY BE OF ANY CONVENIENT SHAPE & MATERIAL.
3. THE RESONATOR MUST BE ASSEMBLED WITH THE DIE CASTINGS IN THE POSITION SHOWN.