VALVE ELECTRONIC **CV13**

ADMIRALTY SIGNAL ESTABLISHMENT

Specification AD/CV13/Issue 4. Dated 25.2.46. To be read in conjunction with K1001 ignoring clauses:- 5.2; 5.3; 5.8.	SECURITY Specification ~~Restricted~~ unless Valve ~~Restricted~~ unless

TYPE OF VALVE:- Hot-cathode, mercury vapour grid-controlled triode, rated for operation only in circuits where it is required to deliver current impulses of short duration.

CATHODE:- Indirectly heated.

ENVELOPE:- Glass.

PROTOTYPE:- BT9/B.

MARKING

See K1001/4.

Additional Marking

Serial No. .....

RATING			Note
Vh	(V)	5.0	
Approx. Ih	(A)	20	
Max. peak Va	(kV)	16	A
Max. peak Ia	(A)	120	A
Max. rate Ia rise	(A/μS)	500	A
Max. neg. standing Vg	(V)	-250	
Condensed mercury temp. °C. for above rating -			
Min:		45°	
Max:		55°	

DIMENSIONS AND CONNECTIONS.

See Fig. 2.

PACKING

See ~~K1001/7.5.~~ K1005

NOTES

A. These ratings are given for Tp = 1 μS, and PRF = 500 per S.

B. Limiting temperatures.

(i) Mercury condensation temperature. This may be taken as the glass bulb temperature measured by a thermocouple at the coldest spot on the valve, observable as the point at which mercury condensation takes place.

(ii) Ambient temperature. This is defined as the temperature measured at a point 2" from the glass bulb, and on a level with the cap band.

During the tests, the ambient temperature must be as specified.

C. Mounting. When testing, the valve is to be mounted vertically, with anode uppermost in an enclosure screened from draughts.

D. Pre-heating. Before testing, the valve is to be pre-heated for not less than 15 mins. with Vh = 5.0 V.

E. Mercury Distribution. During test 'c', there should be no liquid mercury at the anode end of the valve, and pre-heating should be allowed to ensure this. (Such pre-heating is facilitated by placing a cowl over the anode end of the valve. A suitable cowl can be made from 2-mil asbestos paper, shaped into cone of height 6", and base diameter 4". The cowl must be removed before the test).

CV13

TESTS

To be performed in addition to those applicable in K1001.

See Notes B, C, D and E.

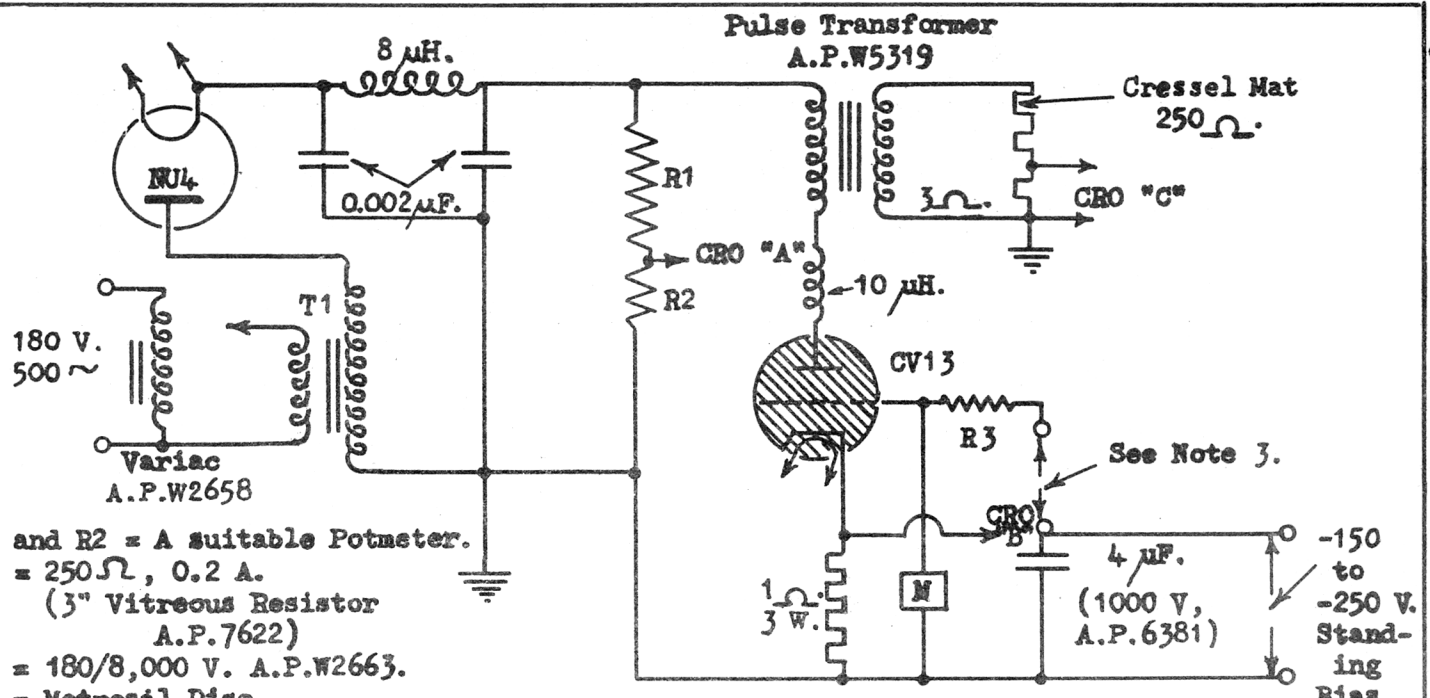
	Test Conditions	Test	Limits Min.	Limits Max.	No. Tested
a	Vh = 5 V. (AC or DC).	Ih (A)	18.0	22.0	100% or S
b	Ambient temperature :- 10° - 30°C. Vh = 5 V. (AC or DC) Vg = 0 V. Anode resistance set to give Ia = 12.5 A.	Voltage drop Va (V)	-	20	10% (1)
c	Ambient temperature :- 30°C. approx. Vh = 5 V. (AC or DC). Grid resistance = 0.01 Megohm. Va = 16 kV. (AC peak : 50 c/s) applied through a resistance of 0.2 to 0.4 megohm. Vg = -250 V. approx. gradually reduced until an arc strikes between cathode and anode. Note -Vg.	Striking voltage -Vg (V)	-	-100	100%
d	Valve pulse operated in circuit shewn in Fig.1, with forward Va between 14 and 15 kV. Minimum duration of test: 2 minutes.	Operation. The valve shall deliver a clean and steady 120 A. pulse of approx. 1 μS. duration.			20% (2)

FOR INFORMATION. The following ancillary items have been standardised by the Admiralty, to maintain blown air at 45-55°C :-

Metal shroud, A.P. W3616.

Blower and heater unit (bulkhead mounting), A.P. W4057.

Temperature controlling unit, A.P. W3723.



TEST CIRCUIT FOR CV13.

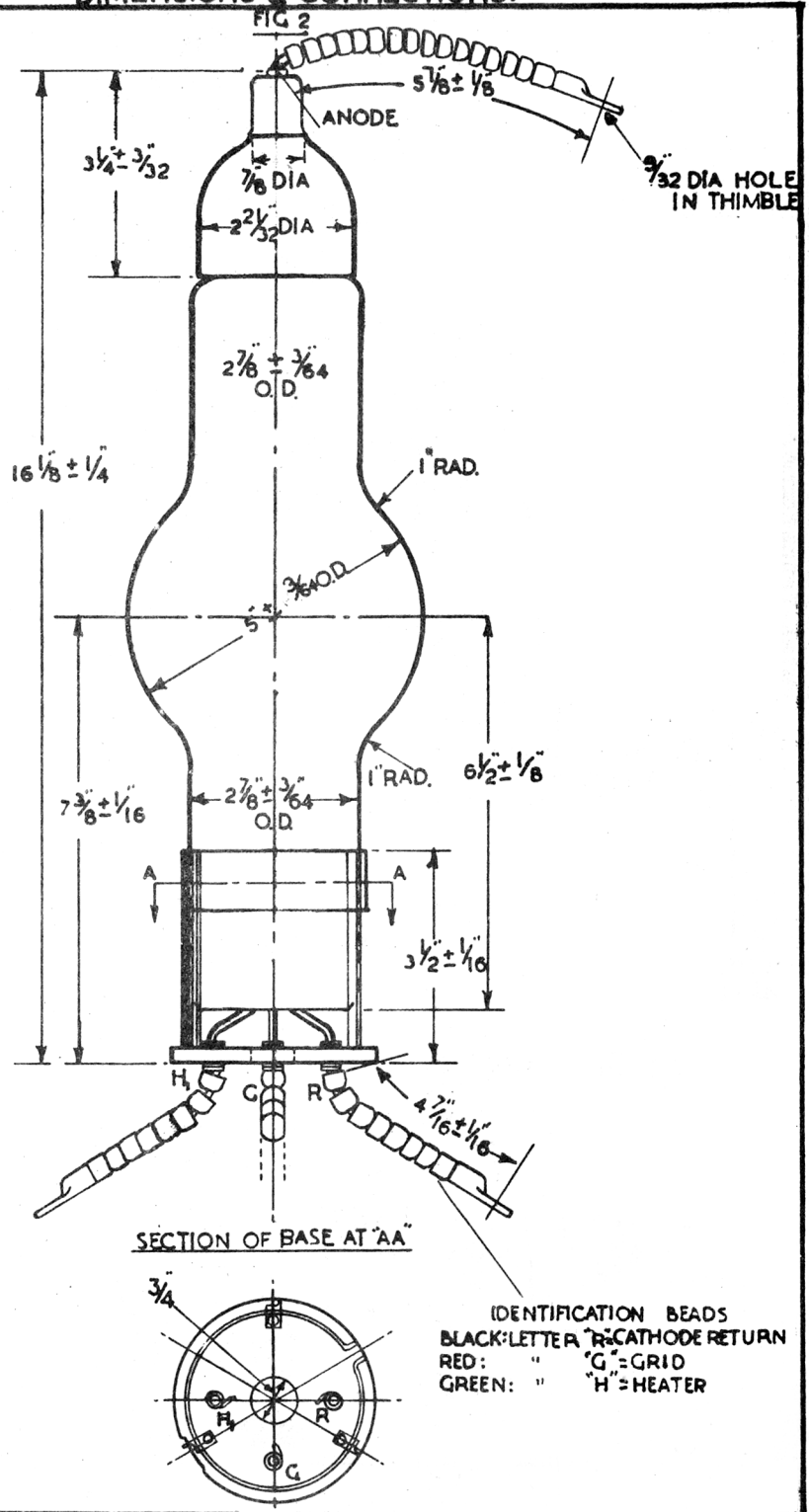
FIG. 1.

NOTES

1. The forward anode voltage may be measured by the setting of the variac which should be checked daily by a reading made at CRO "A".
2. The peak anode current is measured by use of CRO "C". A measurement may also be made at CRO "B" as a check.
3. Voltage pulse similar (on open circuit) to half sine wave of about 8 micro-seconds base and 400 volts peak.

CV13.

FIG. 2


5 7/8 ± 1/8
ANODE
9/32 DIA HOLE IN THIMBLE
3 1/4 ± 3/32
7/8 DIA
2 21/32 DIA
2 7/8 ± 3/64 O.D.
16 1/8 ± 1/4
1" RAD.
3/64 O.D.
5"
7 3/8 ± 1/16
2 7/8 ± 3/64 O.D.
1" RAD.
6 1/2 ± 1/8
A
A
3 1/2 ± 1/16
H1
C
R
4 7/16 ± 1/16
SECTION OF BASE AT "AA"
3/4
H1
R
C
IDENTIFICATION BEADS
BLACK: LETTER "R" = CATHODE RETURN
RED: " "G" = GRID
GREEN: " "H" = HEATER