VALVE ELECTRONIC **C V 782**
(1R5)

MINISTRY OF SUPPLY (S.R.D.E.)

Specification MOS/CV782/Issue 3 Dated:- 12.11.47 To be read in conjunction with K1001	SECURITY Specification: Restricted Valve: Unclassified

——→ indicates a change

TYPE OF VALVE:- Pentagrid converter
CATHODE:- Directly heated
ENVELOPE:- Glass-unmetallised
PROTOTYPE:- 1R5

MARKING
See K1001/4
Additional marking :-
1R5

RATING		Note
Filament voltage (V)	1.4	
Filament current (mA)	50	
Max. anode voltage	100	
Max. screen voltage (G2/4)	75	
Max. grid voltage (G3)	0	
Max. cathode current (mA)	6.5	
Conversion conductance (uA/V)	250	A
CAPACITANCES (pF)		
Cag3 (max)	0.4	
Cae	7.0	
Cg3e	7.0	

BASE
B7G.

Pin	Electrode
1	F-ve, G5
2	Anode
3	G2/4
4	G1
5	F-ve, G5
6	G3
7	F+ve

DIMENSIONS
See K1001/AI/D4

Dimensions	Min.	Max.
A mm	-	54
B mm	-	19

NOTES

A. Measured at Va = 90, Vg2/4 = 45
Vg3 = 0, Vg1 = 15V. AC.

TESTS

To be performed in addition to those applicable in K1001

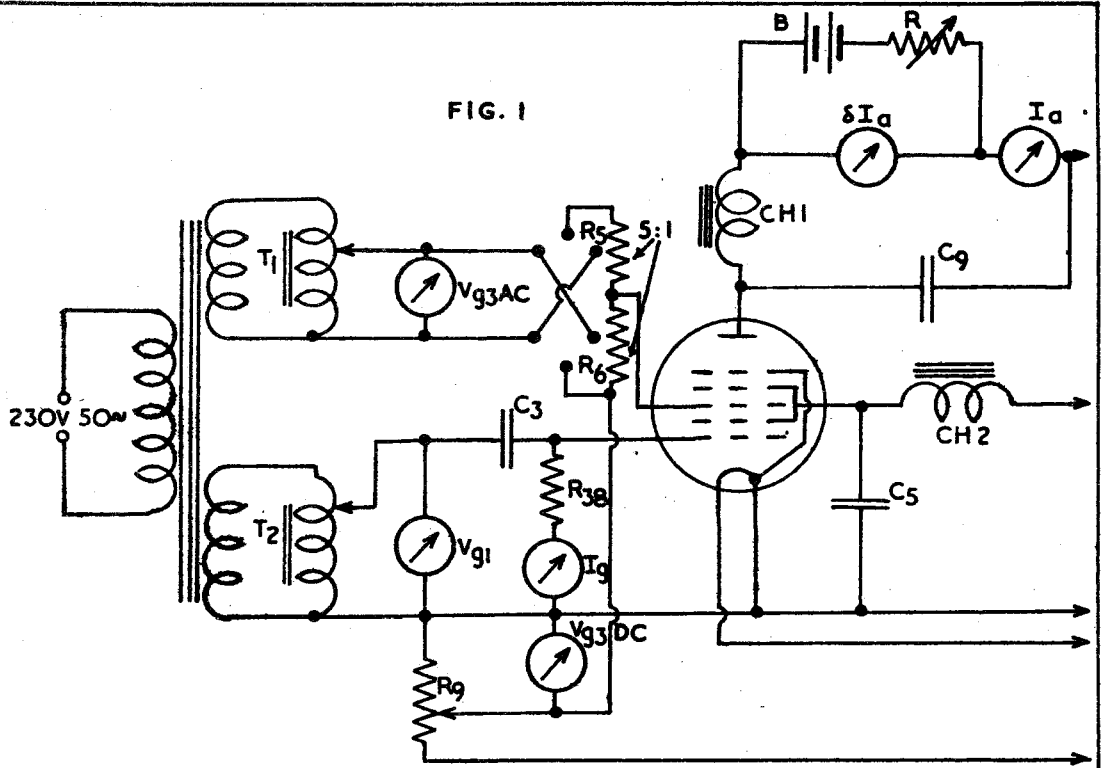
	Test conditions					Test	Limits Min.	Limits Max.	No. tested
a	See K1001/AIII					Capacitances (pF)			
	Links to H.P.		Links to L.P.	Links to E					
	2		6	1,3,4,5, 7,8,9,10, TC_1, TC_2		(i) C_{ag3}		0.4	6
	2		1,3,4,5, 7.	6,8,9,10, TC_1, TC_2		(ii) C_{ae}	5.2	8.8	per
	6		1,3,4,5, 7.	2,8,9,10, TC_1, TC_2		(iii) C_{g3e}	5.6	8.4	week
	Vf	Va	Vg2/4	Vg1	Vg3				100%
b	1.4	-	-	-	-	If (mA)	44	56	or S
c	1.4	90	45	15AC	0	gc (Note 2)(uA/V)	160	340	100%
d	1.4	90	45	15AC	-1	Rev.I_{g3} (uA)	-	0.6	100%
e	1.4	90	45	15AC	0	Ia (mA)	0.34	0.94	100%
f	1.4	90	45	15AC	0	Ic (mA)	1.53	3.45	100%
g	1.1	90	45	15AC	0	gc (uA/V)	130	340	100%
h	1.1	-	45	0	0	I_{g1} (uA) (Note 1)	125	-	100%

NOTES

1. This test is performed with the anode floating, using a Boonton 10A Oscillator set with R_{g1} = 50,000 ohms, and with grid-to-filament resonant impedance adjusted to 9,500 ohms, or equivalent oscillator circuit (See Fig.2)
2. The effective conversion conductance is measured as follows:- Set the voltages as given in the specification. Then adjust the backing-off voltage across the microammeter (δIa) so that a zero reading is shown. Reverse the phase of the voltage applied to G3 and note the reading on the microammeter (δIa). The reading in microamps is numerically equivalent to the effective conversion conductance in micromhos.
3. Concessions will be given to individual manufacturers to carry out alternative tests to c - h if required. Tests c - g can all be carried out using the apparatus shown in Fig.1, with the addition of a screen current meter for test f and a galvanometer shunted for AC in the lead from G3 to R9 for test d.

CV 782

FIG. 1



B,R = Backing-off circuit

C_3 = 8uF coupling capacitor

C_5 = 8uF filter capacitor

C_9 = 2uF filter capacitor

CH1 = 50H choke

CH2 = 50H choke

R_5 = 4/5 of $(R_5 + R_6)$

R_6 = 1/5 of $(R_5 + R_6)$ $\quad R_5 + R_6 = 5k\Omega \pm 10\%$

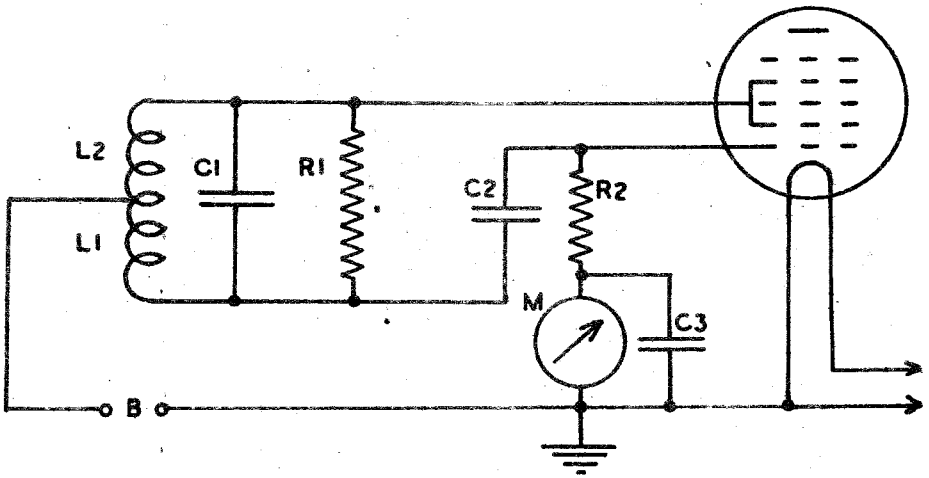
R_9 = 2kΩ

R_{38} = 100kΩ ± 5%

T_1 = Variac transformer

T_2 = Variac transformer

For 1% accuracy in the reading of effective conversion conductance on meter δIa, the resistance of the backing-off circuit should at no time be less than 100 times the resistance of the meter δIa and any other resistance in the same arm.



B = D.C. supply voltage

C1 = 100pF mica capacitor

C2 = 200pF mica capacitor

C3 = 0.1uF capacitor

M = D.C. microammeter

R1 = 44kΩ resistor

R2 = 50kΩ wire wound resistor

L1 = 83uH

L2 = 48uH

L1-L2 = 23.3uH

Coil diameter = 1.25"; winding length = 59/64";
wire = #30 enamelled copper; turns = 83.
Tap at 33 turns from G2/4 end.

FIG. 2.

DATA SHEET

Valve Electronic Type CV 782

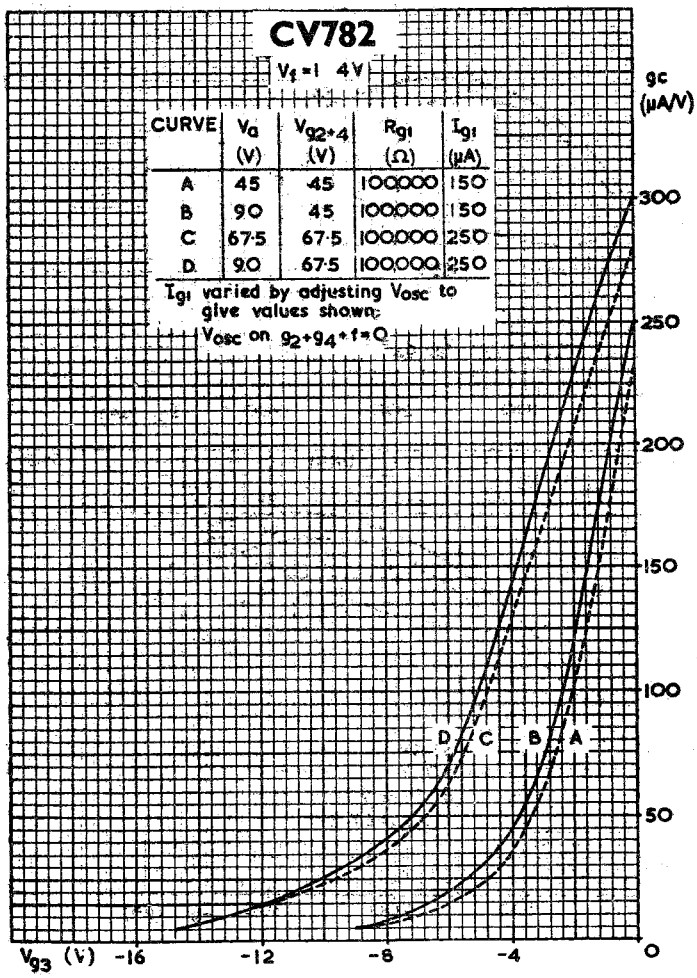
TYPICAL OPERATING CONDITIONS

As Frequency Changer - at up to 30 mc/s

Anode Voltage	45	90	90	Volts
Anode current	0.7	0.8	1.6	mA
Screen (G2) Voltage	45	45	67.5	Volts
Screen (G2) Current	1.9	1.9	3.2	mA
Oscillator Grid (G1) resistor	0.1	0.1	0.1	Megohm
Oscillator Grid (G1) Current	0.15	0.15	0.25	mA
Control Grid (G3) Voltage	0	0	0	Volts
Anode Impedance	0.6	0.8	0.6	Megohm
Conversion Conductance	0.24	0.25	0.3	mA/V
G3 bias for Gc = 0.005 mA/V	-9.0	-9.0	-14	Volts
Total Cathode Current	2.75	2.75	5.0	mA

Note

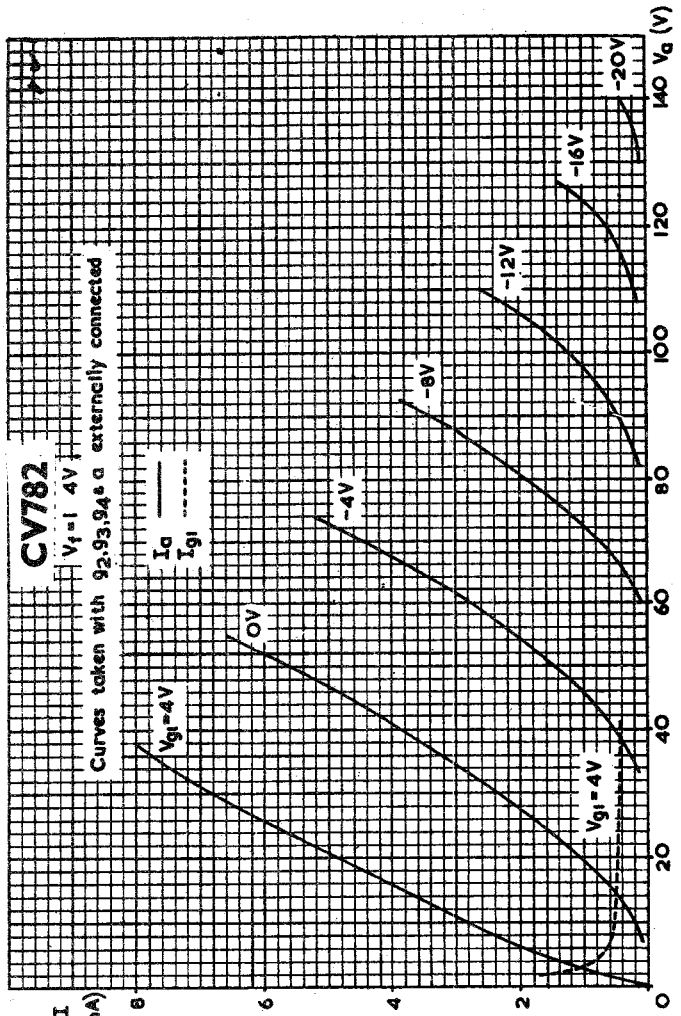
The control grid (G3) has variable-μ characteristics making it suitable for use with A.V.C.

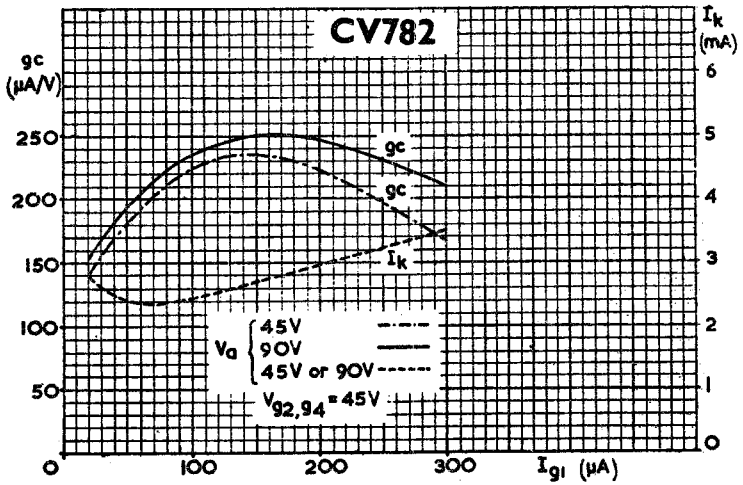


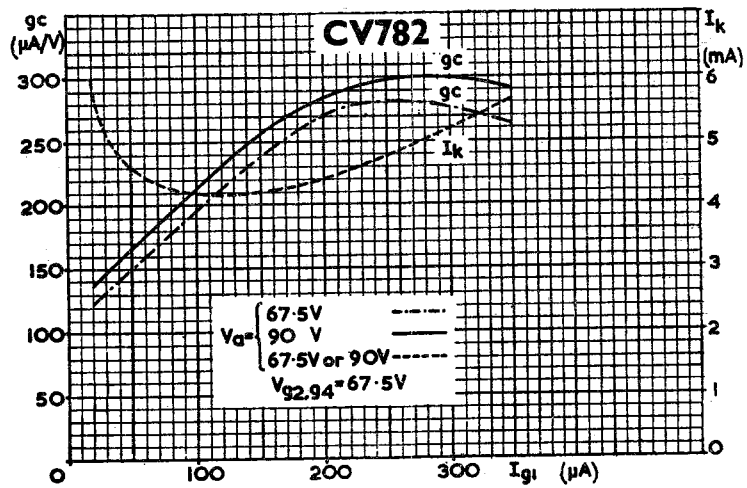
CURVE	V_a (V)	V_{g2+4} (V)	R_{g1} (Ω)	I_{g1} (μA)
A	45	45	100,000	150
B	90	45	100,000	150
C	67·5	67·5	100,000	250
D	90	67·5	100,000	250

I_{g1} varied by adjusting V_{osc} to give values shown.
V_{osc} on $g_2+g_4+f=Q$

CV 782/a/2.


CV782
V_f=1.4V
Curves taken with 92-93-94 a externally connected
I_a
I_{g1}
V_{g1}=4V
0V
-4V
-8V
-12V
-16V
-20V
V_{g1}=4V
I (mA)
8
6
4
2
0
20
40
60
80
100
120
140
V_a (V)





Conversion Conductance and Cathode Current plotted against Oscillator Grid Current

R_{g1}=0.1 M Ω V_{ss}=0

CV 782/a/4.