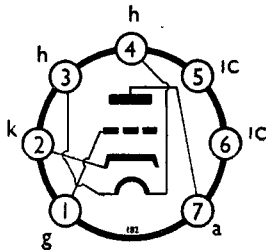


TYPE : A1714 (CV408) — G. E. C.

VHF/UHF TRIODE
(OXIDE COATED CATHODE)

A triode with planar electrodes for use as an RF oscillator at frequencies up to 1000 Mc/s or as a power or low noise amplifier at frequencies up to about 300 Mc/s.
The A1714 is a commercial equivalent of CV408.

BASE CONNECTIONS AND VALVE DIMENSIONS



View from underside of base.

Base : B7G
Bulb : Tubular
Max. overall length : 54 mm.
Max. seated length : 47.5 mm.
Max. diameter : 19 mm.

HEATER

V_h	6.3	V
I_h	0.49 (approx)	A

MAXIMUM RATINGS (Design centre)

V_a	250	V
p_a	2.5	W
I_k	45	mA
$i_k(pk)$	150	mA
V_g	-30	V
p_g	0.1	W
I_g	10	mA
$v_{h-k}(pk)$	90	V

CAPACITANCES (of unshielded valve)

* c_{a-g} 0.9 pF * $c_{a-all\ less\ g}$ 1.3 pF † $c_{g-all\ less\ a}$ 3.0 pF

*Measured on a cold valve.

†Measured at 1Mc/s, with $V_a=150$, $I_a=10\mu A$.

CHARACTERISTICS

V_a	150	V
I_a	10	mA
V_g	-2.2 (approx)	V
g_m	8.5	mA/V
μ	45	
$r_{eq\ noise\ ref\ g}$	500	Ω
* r_{in} (45 Mc/s)	40	k Ω
* c_{g-all} (45 Mc/s)	5	pF

*Measured with anode decoupled to cathode.

TYPICAL OPERATION

Class A Neutralised RF Amplifier

The following data relate to the use of the A1714 in the first stage of a 45 Mc/s amplifier as in the circuit of fig. 1.

The input coil L1 consists of five turns of 20 s.w.g. copper wire on a 1 $\frac{1}{8}$ in. diameter polystyrene former, the input tap being chosen for optimum noise factor. The coil is tuned to maximum response at 45 Mc/s by C2 which may be a 2-8pF trimmer.

T1 is a bifilar 1 : 1 transformer, tuned to 45 Mc/s by a dust-iron core, the secondary being connected to give phase reversal, thus permitting neutralisation by C3, a small trimmer of approximately 2pF maximum capacitance. The neutralisation is performed by applying a 45 Mc/s signal to the input terminals and adjusting C3 for minimum output with no h.t. on the A1714.

A slightly improved noise factor can usually be obtained by further small adjustments to C2 and C3 when the resulting asymmetric response is permissible.

With this circuit a grid-anode voltage gain of about 10 is obtained with a 3db bandwidth of the order of 2.5 Mc/s. The following stage may be a conventional pentode amplifier.

V _{a(b)}	200	V
V _a	150 (approx)	V
I _a	10 (approx)	mA
Noise factor	1.9 (approx)	db

Class C Lumped-Circuit CW Oscillator

The circuit is shown in fig. 2. The anode and cathode circuits are screened from one another by an earthed copper plate placed vertically across the valve socket and soldered to tags 1 and 5 and to the central screening boss. The feedback then occurs almost entirely via the inter-electrode capacitances of the valve. The capacitors C1, C2 and C3 are of the feed-through type. For a frequency of 500 Mc/s L2 consists of one turn of 16 s.w.g. copper wire, approximately $\frac{1}{2}$ in. in diameter. The RF choke L1 is a self-supporting solenoid made by close-winding a piece of 28 s.w.g. enamelled copper wire, one-third of a wavelength long, on a $\frac{1}{2}$ in. diameter former. R1 is a 100Ω variable resistor.

The load is connected in series with a capacitor C4, of about 0.25pF, connected across about two-thirds of L2. The value of C4, the position of the tap on L2 and the value of R1 are adjusted for optimum output power at the desired anode current. With a suitably designed distributed circuit, the A1714 will give approximately 0.75W output at 1000 Mc/s.

V _{a(b)}	100	V
I _a	30	mA
P _a	1.8 (approx)	W
R1 (cathode resistor)	70 (approx)	Ω
I _g	10 (approx)	mA
V _{g-k(pk)}	8 (approx)	V
Z _a	1 (approx)	kΩ
P _L	0.9 (approx)	W
f	500	Mc/s

INSTALLATION

The valve may be mounted in any position.

A separate screening can should be used when the application demands.

In equipment subject to vibration or shock, the use of a retaining device is recommended.

Free air circulation around the bulb is preferable.

The temperature of the hottest part of the bulb must not exceed 220°C.

TYPE : A1714 - G. E. C. DATA CONTINUED.

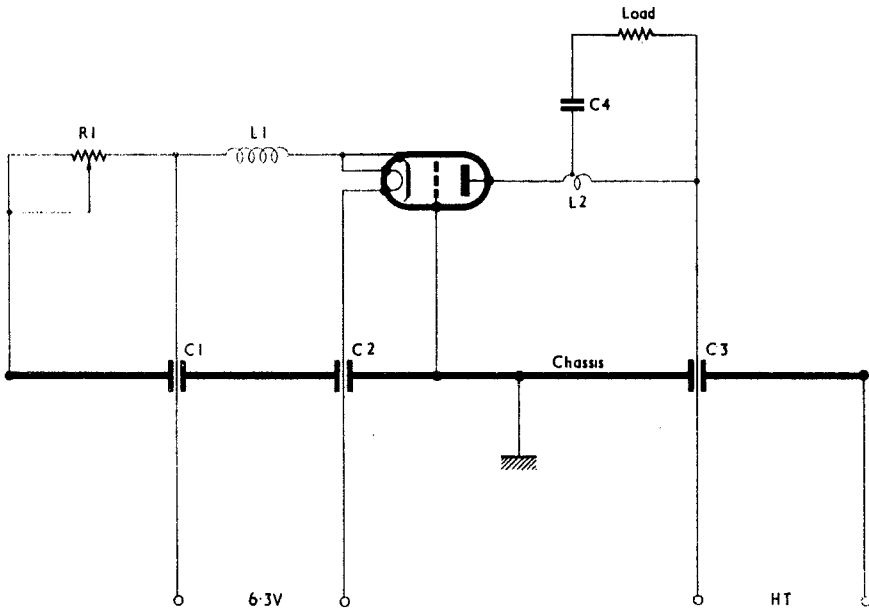


Fig. 2. Class C Lumped Circuit CW Oscillator. Component values are as follows :
 R1 100Ω pot.; C1, C2 and C3 1000pF; C4 0.25pF (approx).

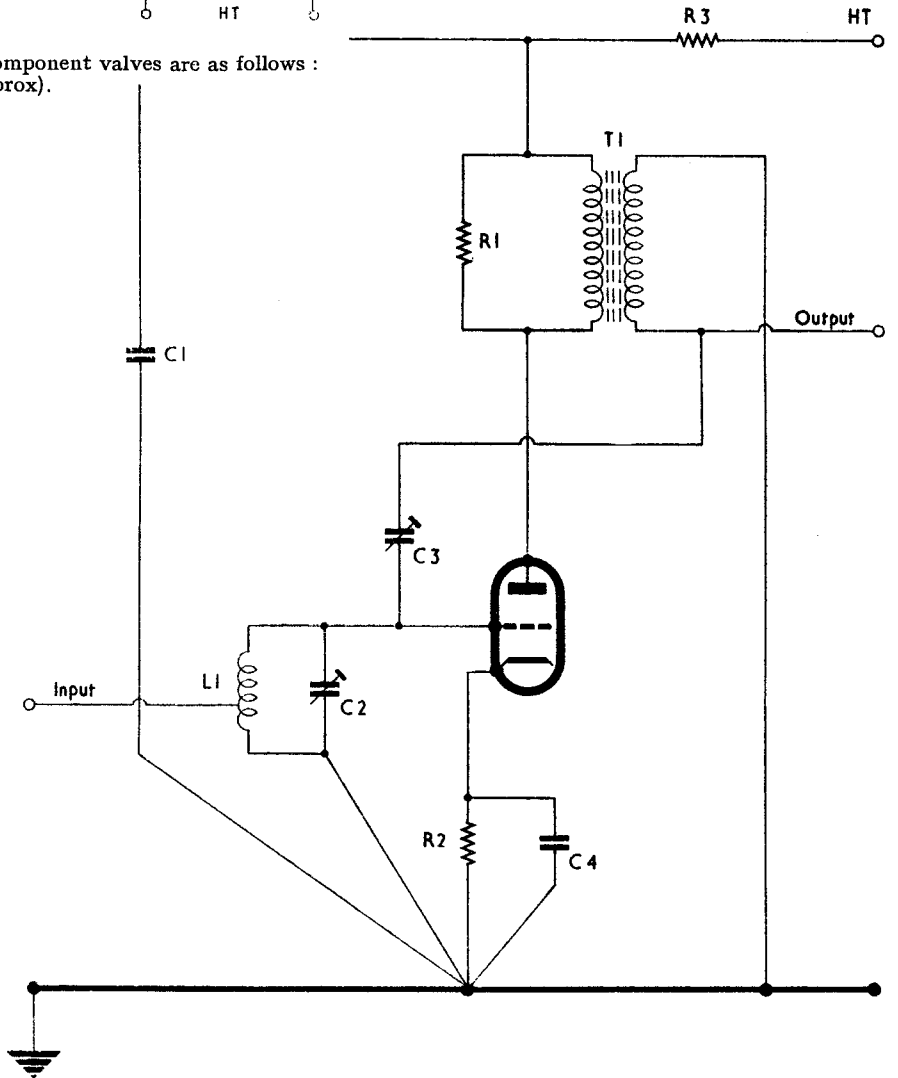


Fig. 1. Class A Neutralised RF Amplifier. Component values are as follows :
 R1 1.5kΩ; R2 180Ω; R3 4.7kΩ; C1 and C4 1000pF; C2 2-8pF;
 C3 2pF max (approx).

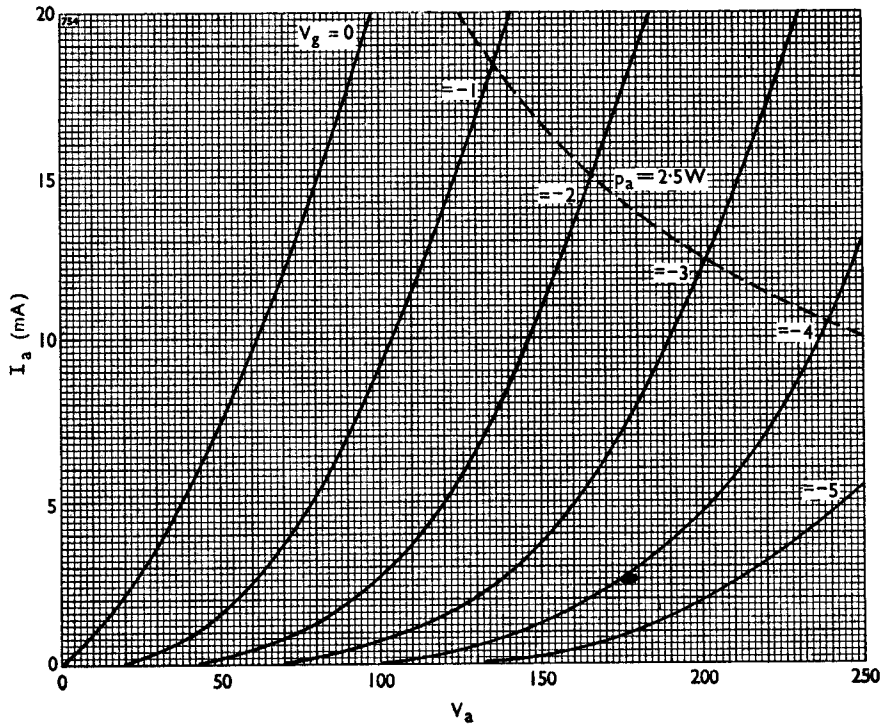


Fig. 3.

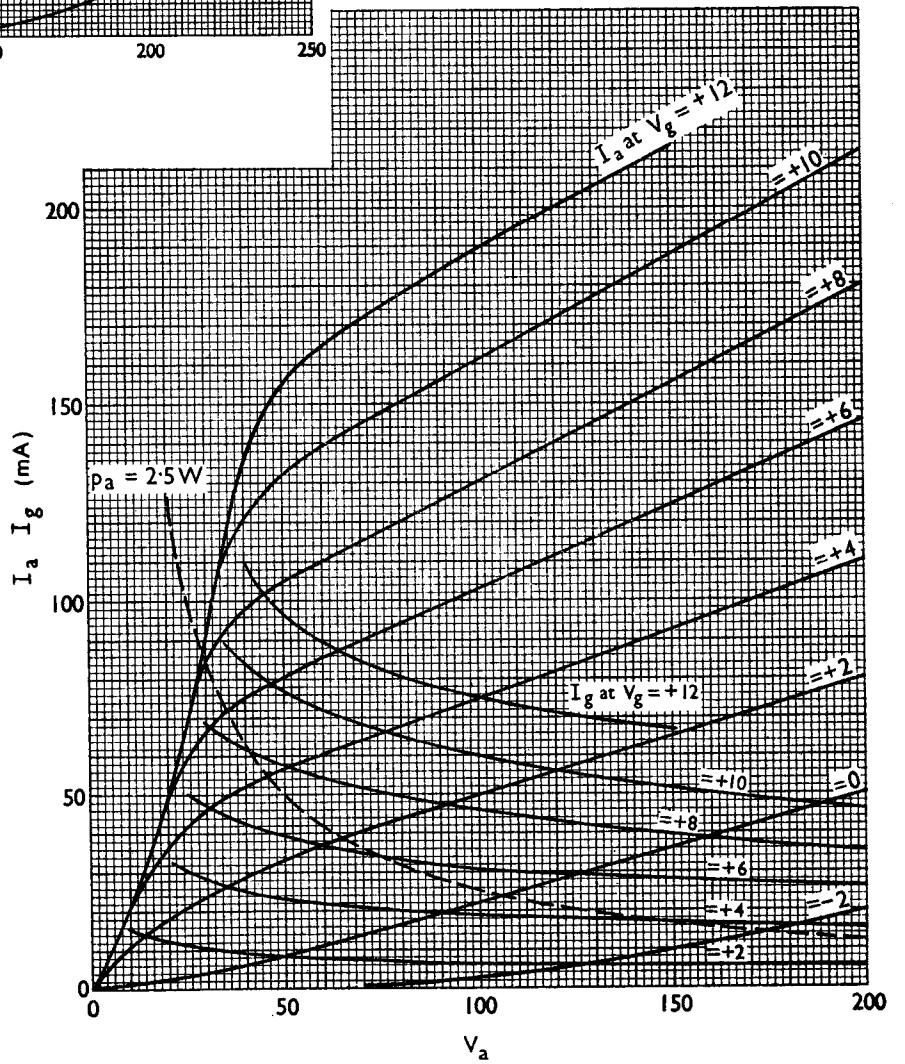


Fig. 4.