Triode *Type ACT 14*

HF AMPLIFIER AND OSCILLATOR

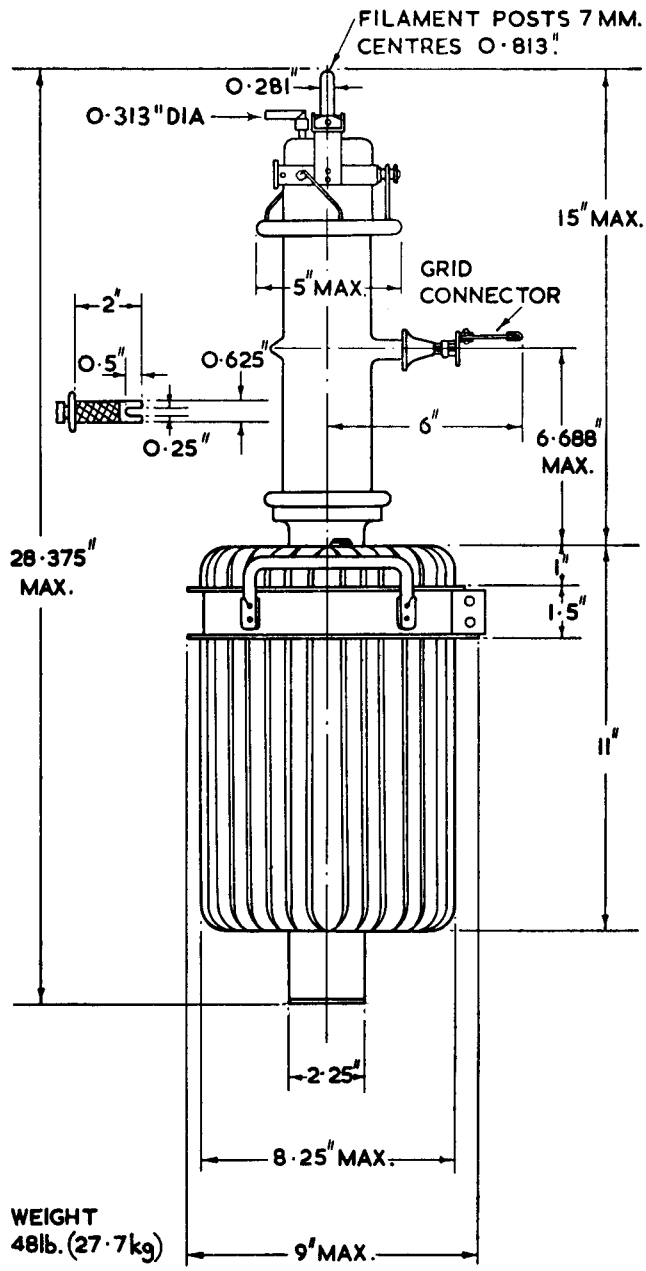
General. A forced-air cooled transmitting triode fitted with a tungsten filament.

Cooling. The anode requires cooling by air blast and the volume of air necessary is 600 cu. ft. per minute at a pressure equal to an 8-in. head of water. All cooling supplies must be started before the application of any voltage and the temperature of the air intake must not exceed 35°C (95°F).

Filament Starting. The cold resistance of the filament is approximately 0·021 Ω. The filament current must never exceed 105 A at any time during the switching-on period. If the valve is operated for periods greater than 15 minutes without anode voltage being applied, the filament voltage must be reduced to one-half its normal value during the standby period.

Mounting. The valve must be mounted with its axis vertical and the filament seals uppermost. Rigid connections must be made to the anode only.

Seasoning. Whenever a new valve is put into service, or when a valve has been idle for periods of approximately 2 months, it must be seasoned by operating for at least one hour at half the normal anode voltage and current. The anode voltage should then be increased slowly to the normal value.



MARCONI'S WIRELESS TELEGRAPH COMPANY LIMITED

Head Office: Marconi House, Chelmsford, England. Telephone: Chelmsford 3221. Telegraphic Address: Expanse, Chelmsford

APPROXIMATE DATA

V_f		18–20	V
I_f		72	A
$V_{a(max)}$		12	kV
$p_{a(max)}$		10	kW
$p_{gl(max)}$		350	W
$I_{gl(pk)\ (RF)\ (max)}$		30	A
μ	taken at Va 10 kV	45	
r_a	taken at Va 10 kV	5,000	Ω
g_m	taken at Va 10 kV, V_{gl} 0 V	9	mA/V
$f_{(max)}$		40	Mc/s
$c_{a\text{-}gl}$		31·8	pF
$c_{a\text{-}k}$		2·2	pF
$c_{gl\text{-}k}$		24·3	pF

Each valve is marked with the filament voltage to give 10 A emission at 90% saturation.

Typical Operation

(1) HF POWER AMPLIFIER AND OSCILLATOR. CLASS C TELEGRAPHY

(Unmodulated, one valve, key down conditions)

V_a		12·0	10·0	8·0	kV
I_a		2·6	2·5	2·4	A
V_{gl}		−375	−460	−290	V
I_{gl}	(a)	140	130	250	mA
$v_{gl(pk)}$		1,375	1,460	1,290	V
P_{dr}	(a)	200	200	320	W
Z_a		2,300	1,860	1,630	Ω
p_a		9·7	8·3	6·2	kW
P_{out}		21·5	16·7	13·0	kW

(2) HF POWER AMPLIFIER. CLASS C

(Anode modulated, one valve, carrier conditions, permissible modulation 100%)

V_a		10·0	7·5	kV
I_a		1·05	1·0	A
V_{gl}		−685	−575	V
I_{gl}	(a)	25	26	mA
$v_{gl(pk)}$		1,145	1,035	V
P_{dr}	(a)	40	30	W
Z_a		4,480	3,160	Ω
p_a		2·2	2·0	kW
P_{out}		8·3	5·5	kW

(3) HF POWER AMPLIFIER. CLASS B TELEPHONY

(One valve, carrier conditions, permissible modulation 100%)

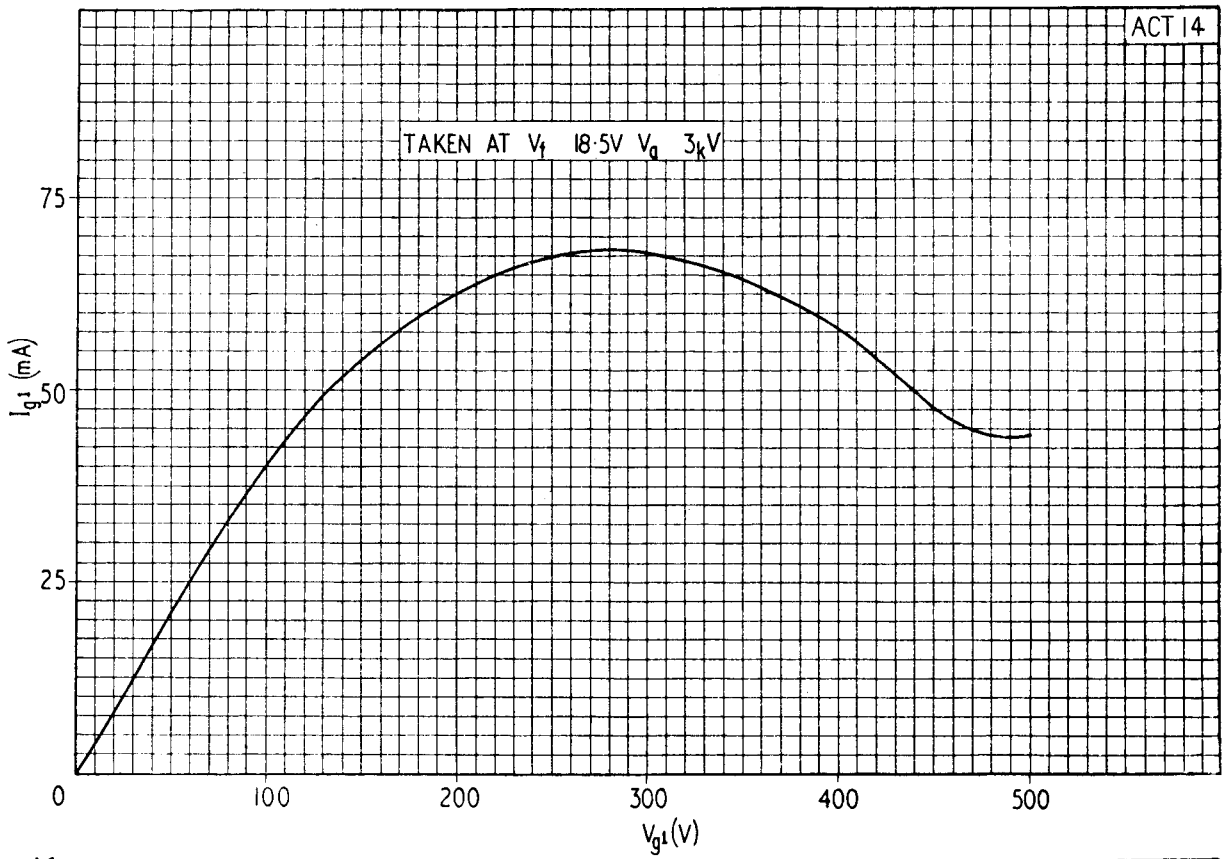
V_a		12·0	10·0	kV
I_a		1·2	1·2	A
V_{gl}		−270	−220	V
$v_{gl(pk)}$		510	490	V
P_{dr}	(a) (b)	20	20	W
Z_a		2,530	2,000	Ω
p_a		10·0	8·5	kW
P_{out}		4·4	3·5	kW

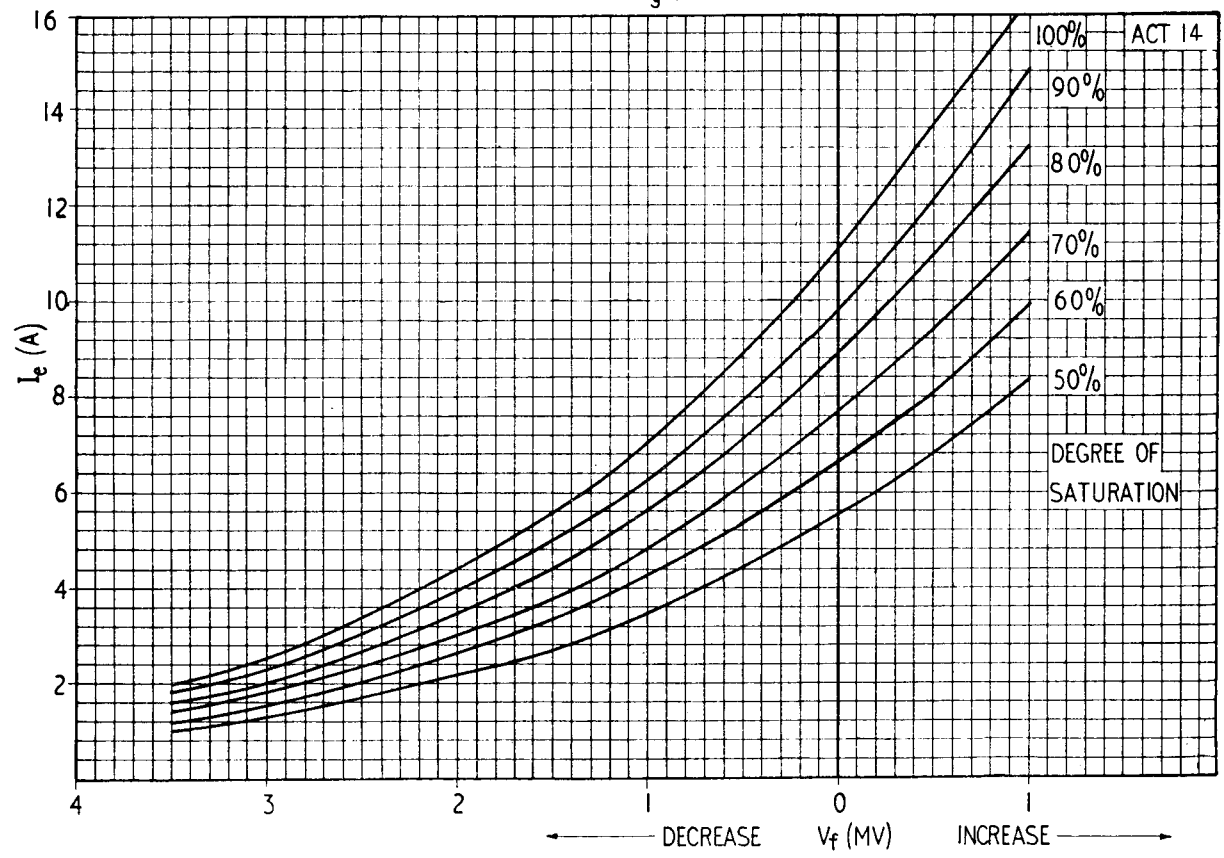
The figures quoted above are only applicable when operating at frequencies of up to 15 Mc/s. Above this the anode voltage must be reduced to the following percentages of the maximum:

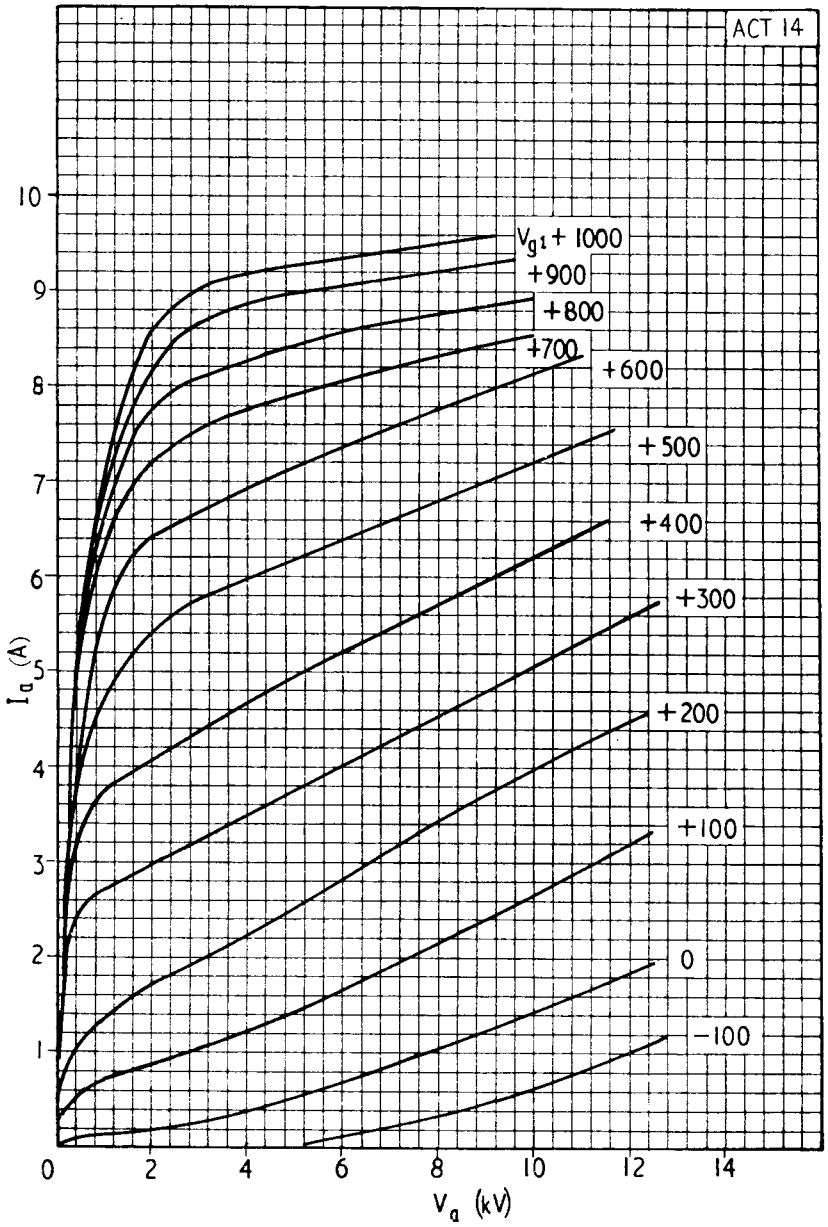
f (Mc/s)	15	20	25	40
$\%V_{a(max)}$	100	85	65	35

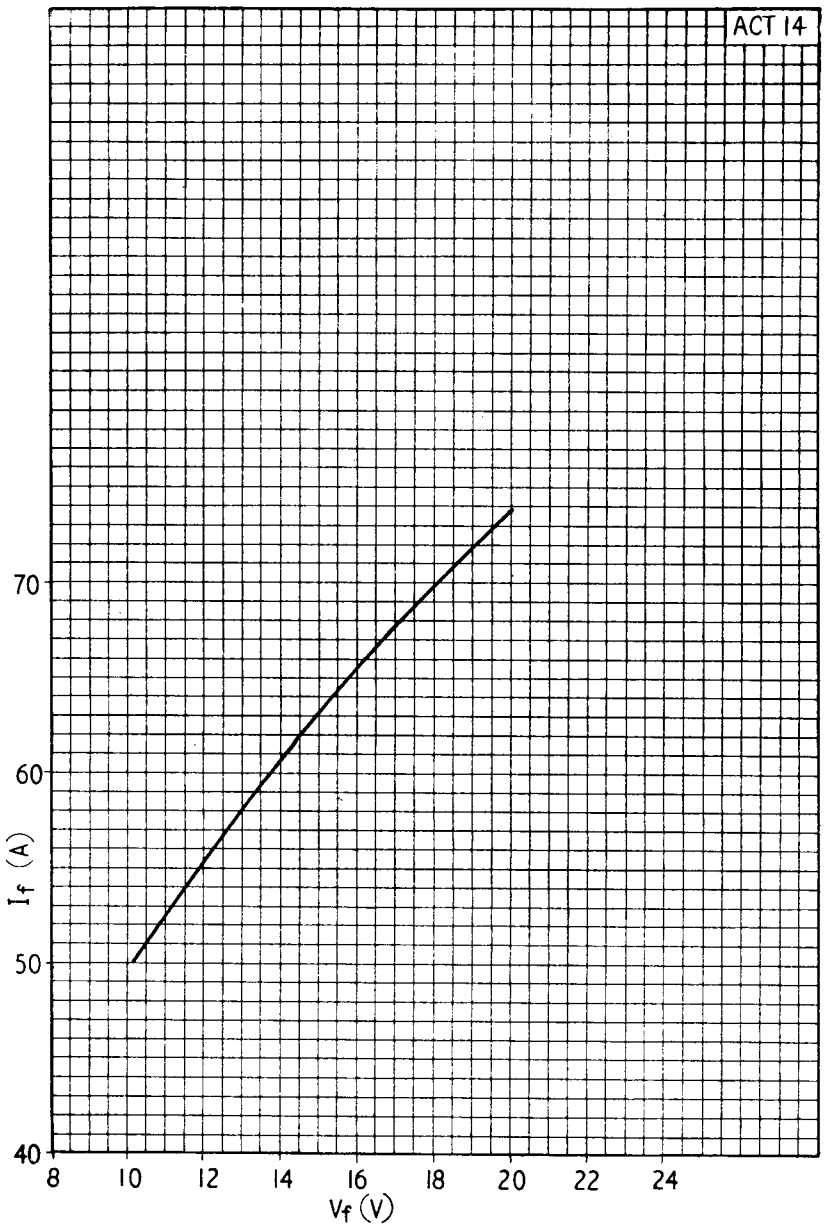
NOTES

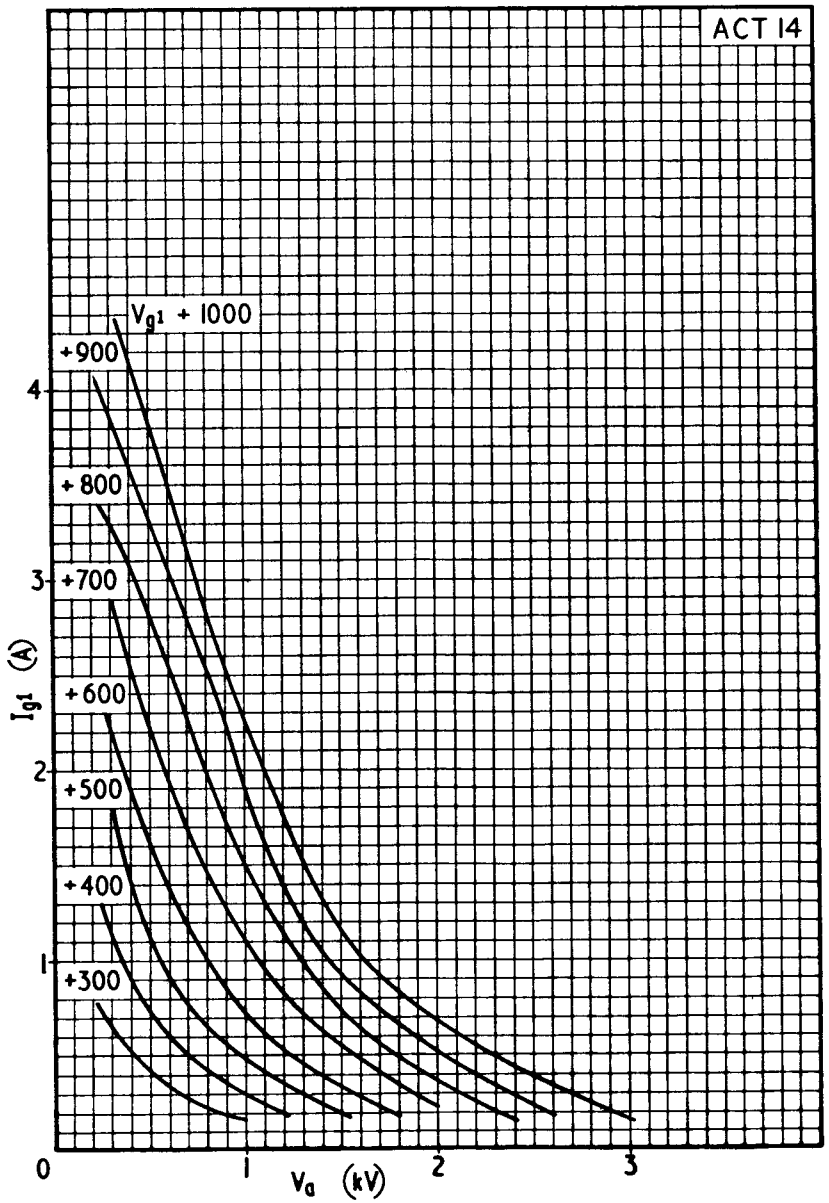
(a) Subject to wide variation. The figures are approximate only.
(b) At crest of audio cycle with 100% modulation.

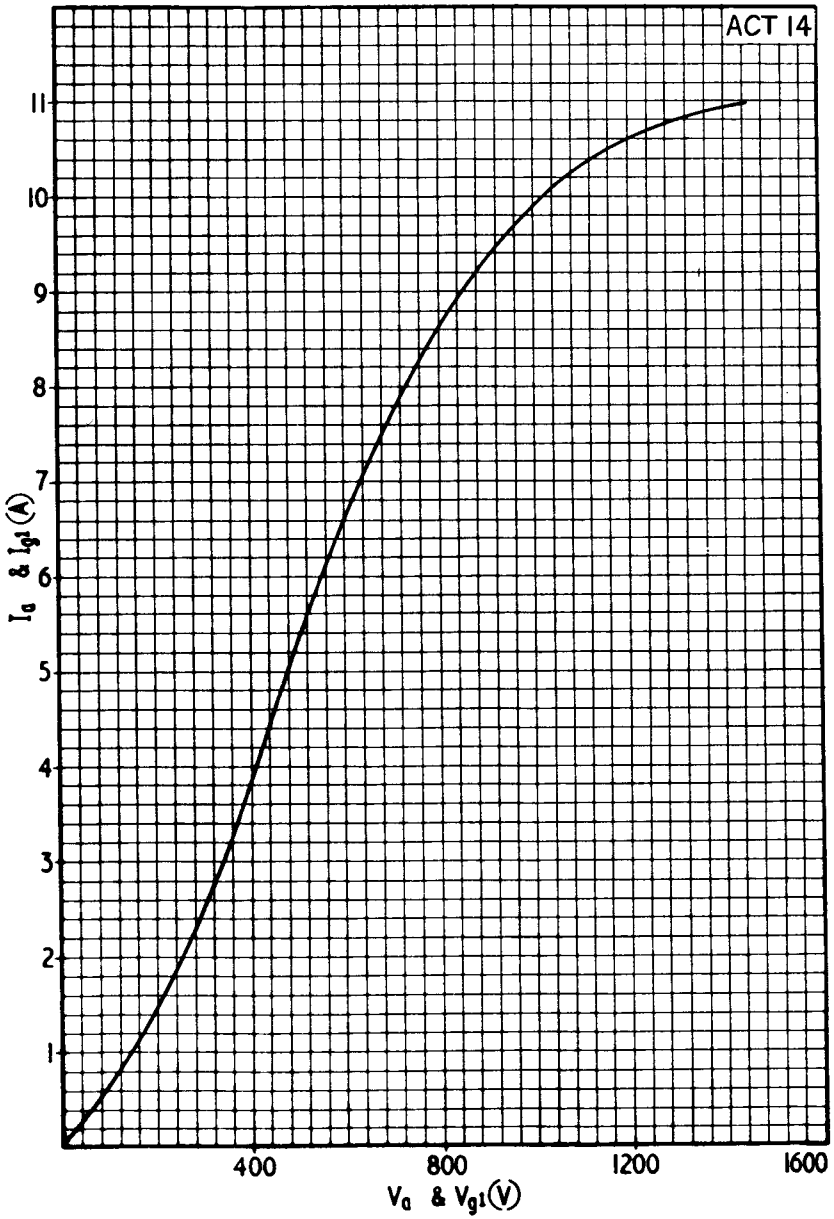

ACT 14
TAKEN AT V_f 18·5V V_a 3$_k$V
75
50
25
0
100
200
300
400
500
I_{g^1} (mA)
V_{g^1}(V)


ACT 14
100%
90%
80%
70%
60%
50%
DEGREE OF SATURATION
16
14
12
10
8
6
4
2
I_e (A)
4
3
2
1
0
1
DECREASE
V_f (MV)
INCREASE


ACT 14
V_{g1} + 1000
+900
+800
+700
+600
+500
+400
+300
+200
+100
0
−100
I_a (A)
V_a (kV)
0
2
4
6
8
10
12
14
1
2
3
4
5
6
7
8
9
10


ACT 14
I_f (A)
V_f (V)
40
50
60
70
8
10
12
14
16
18
20
22
24


ACT 14
V_{g1} + 1000
+900
+800
+700
+600
+500
+400
+300
I_{g1} (A)
0
1
2
3
4
V_a (kV)


ACT 14
I_a & I_{g1} (A)
1
2
3
4
5
6
7
8
9
10
11
400
800
1200
1600
V_a & V_{g1} (V)

PRINTED IN ENGLAND