Triode *Type CAT6*

HF POWER AMPLIFIER AND OSCILLATOR

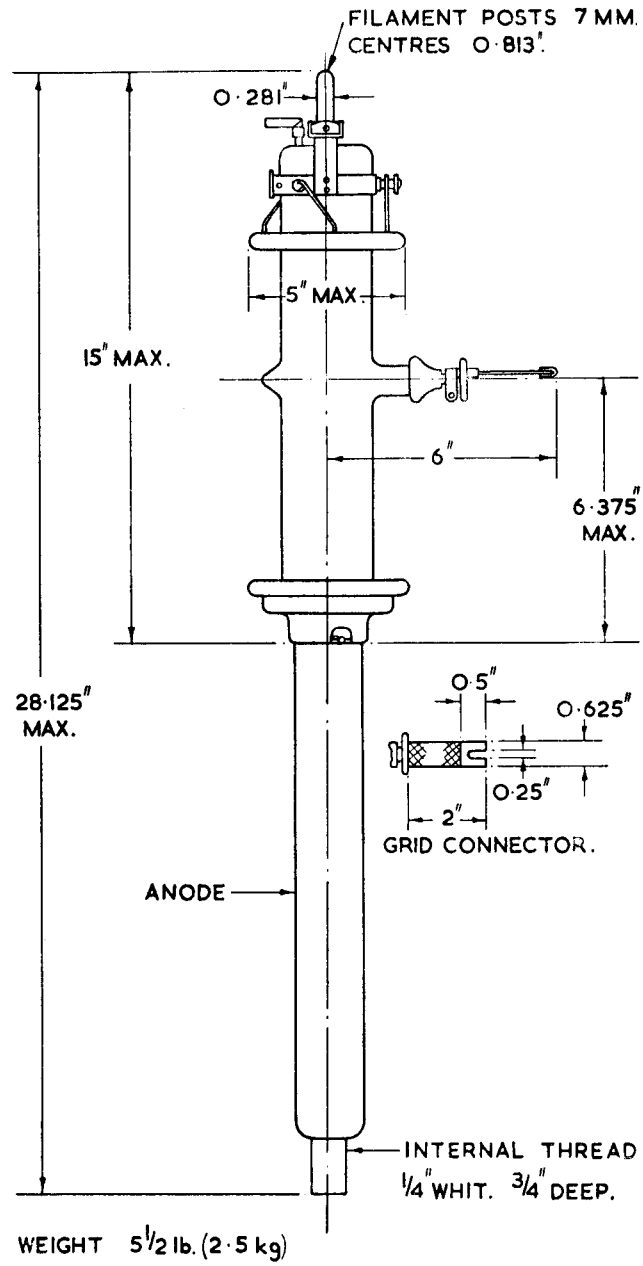
General. A water-cooled anode transmitting triode fitted with a tungsten filament.

Cooling. The anode forms part of the valve envelope and is designed for cooling by water circulated in direct contact with the anode. The rated flow must not be less than 3 gallons per minute. The temperature of the cooling water at the outlet must not be greater than 150°F (65°C). All cooling supplies must be started before the application of any supply voltage.

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 completely supported by its water jacket with its axis in a vertical position. Rigid connection must be made to 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
$p_{a(max)}$		12	kW
$p_{gl(max)}$		350	W
$I_{gl(pk)\ (RF)\ (max)}$		30	A
μ	taken at Va 10 kV, V_{gl} 0	45	
r_a		5,000	Ω
g_m		9·0	mA/V
$f_{(max)}$		40	Mc/s
$c_{a\text{-}gl}$		30	pF
$c_{a\text{-}k}$		2·2	pF
$c_{gl\text{-}k}$		25	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

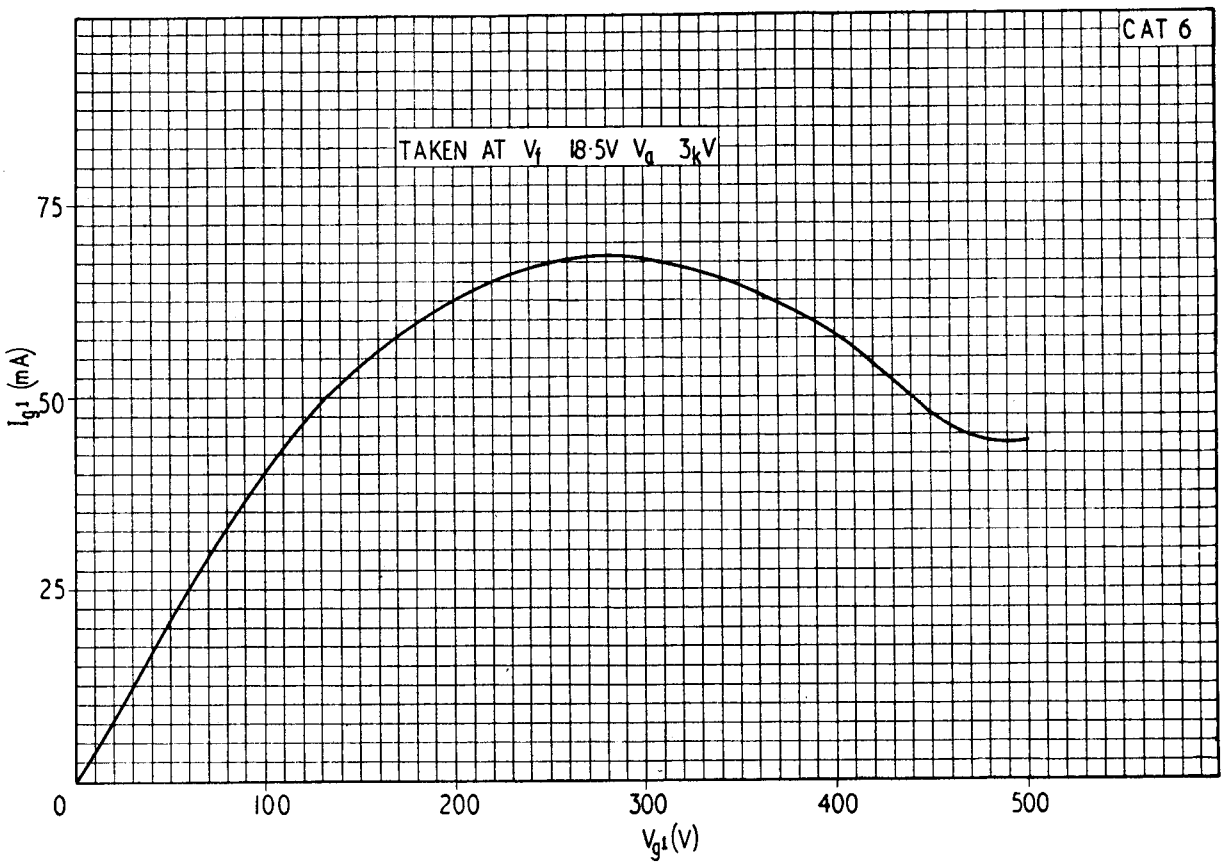
The figures quoted above are only applicable when operating at frequencies up to 15 Mc/s. At higher frequencies the anode voltage must be reduced according to the following table:

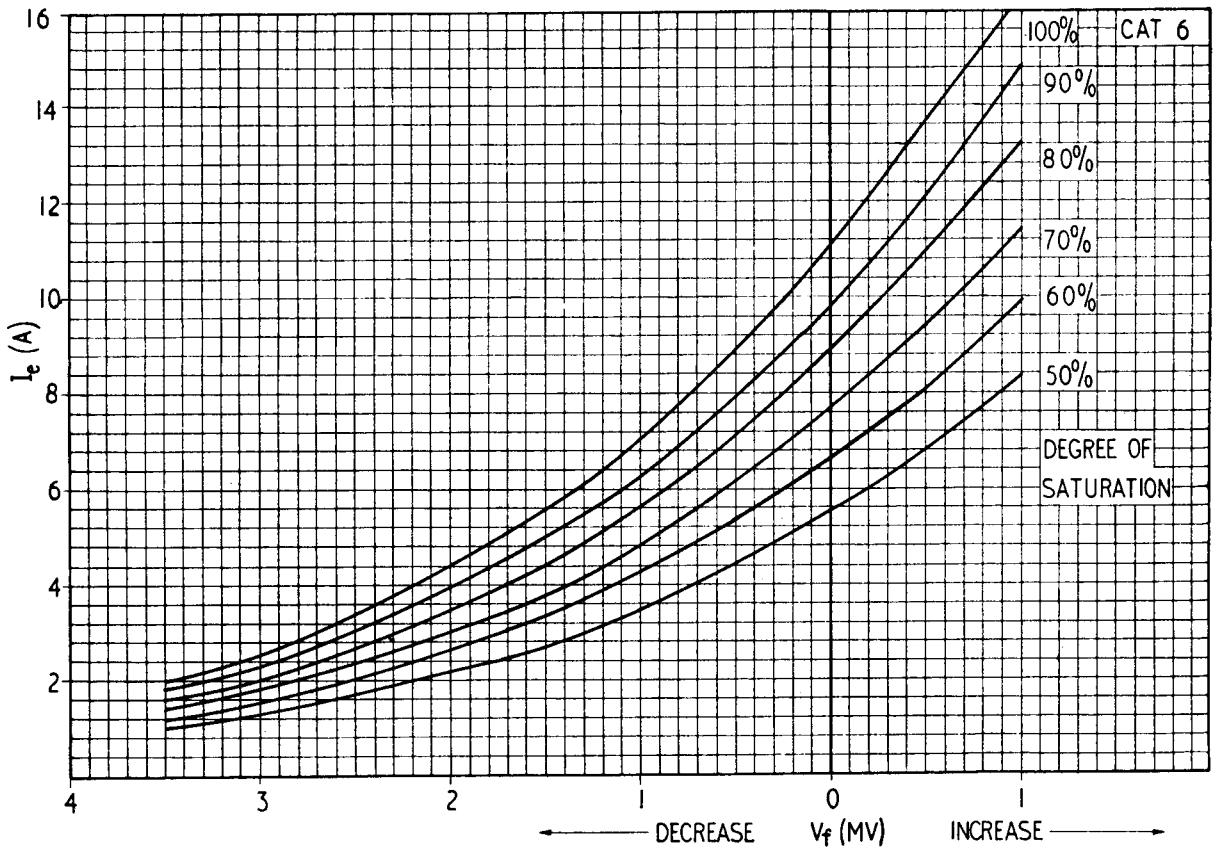
f (Mc/s)	15	20	25	40
$\%V_{a(max)}$	100	85	65	35

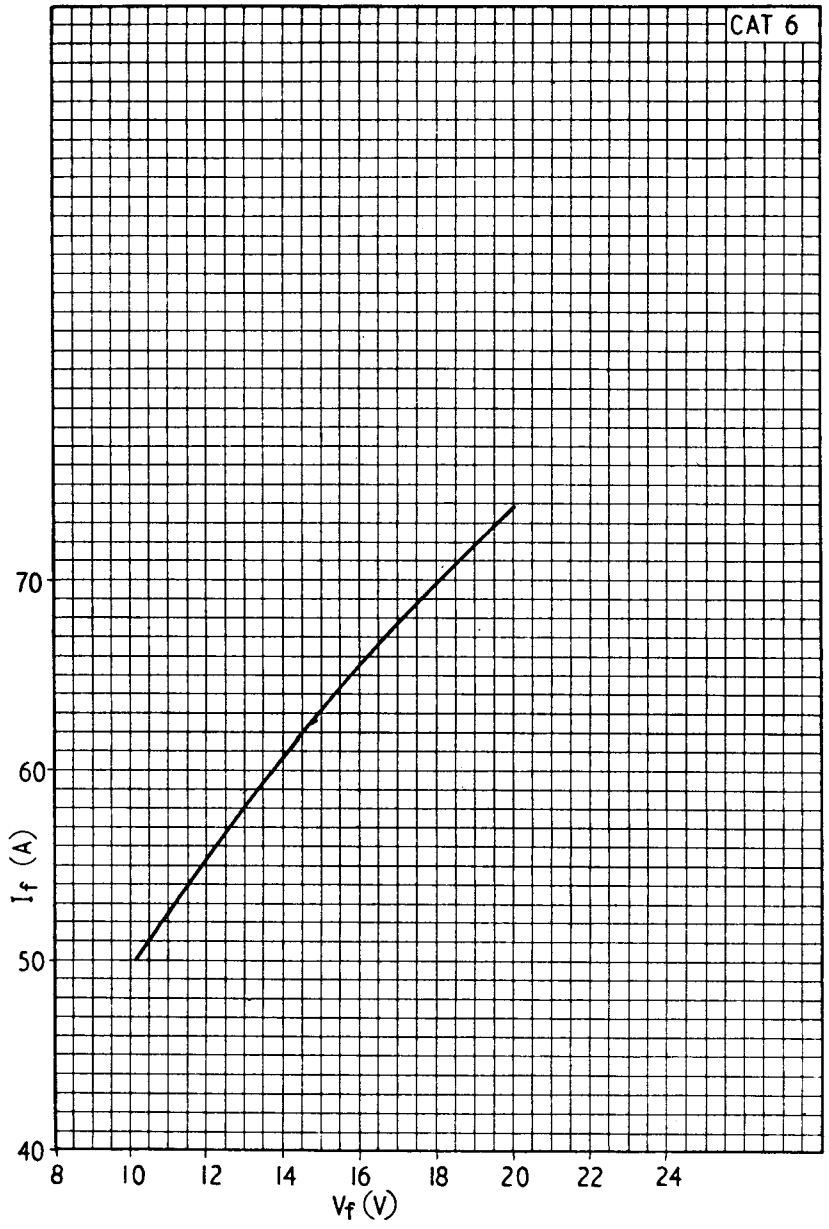
NOTES

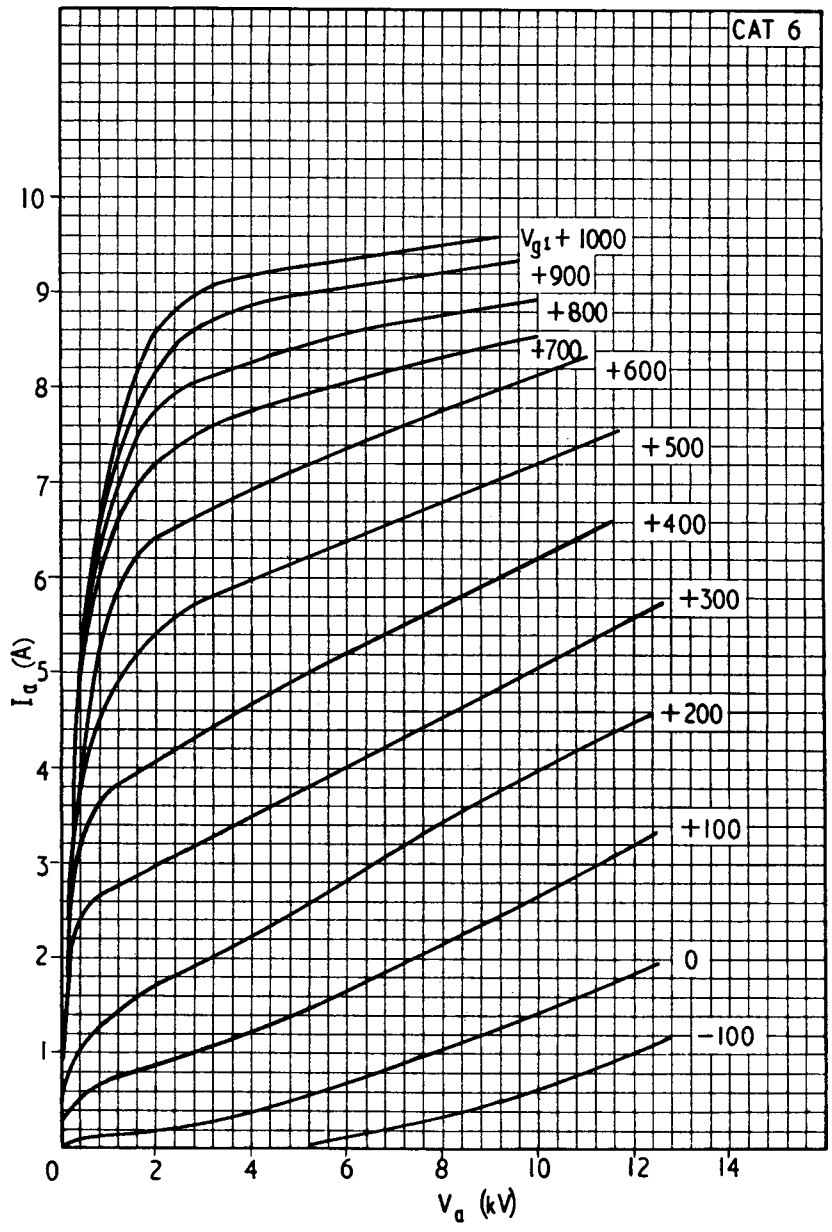
(a) Subject to wide variation. The figures are approximate only.

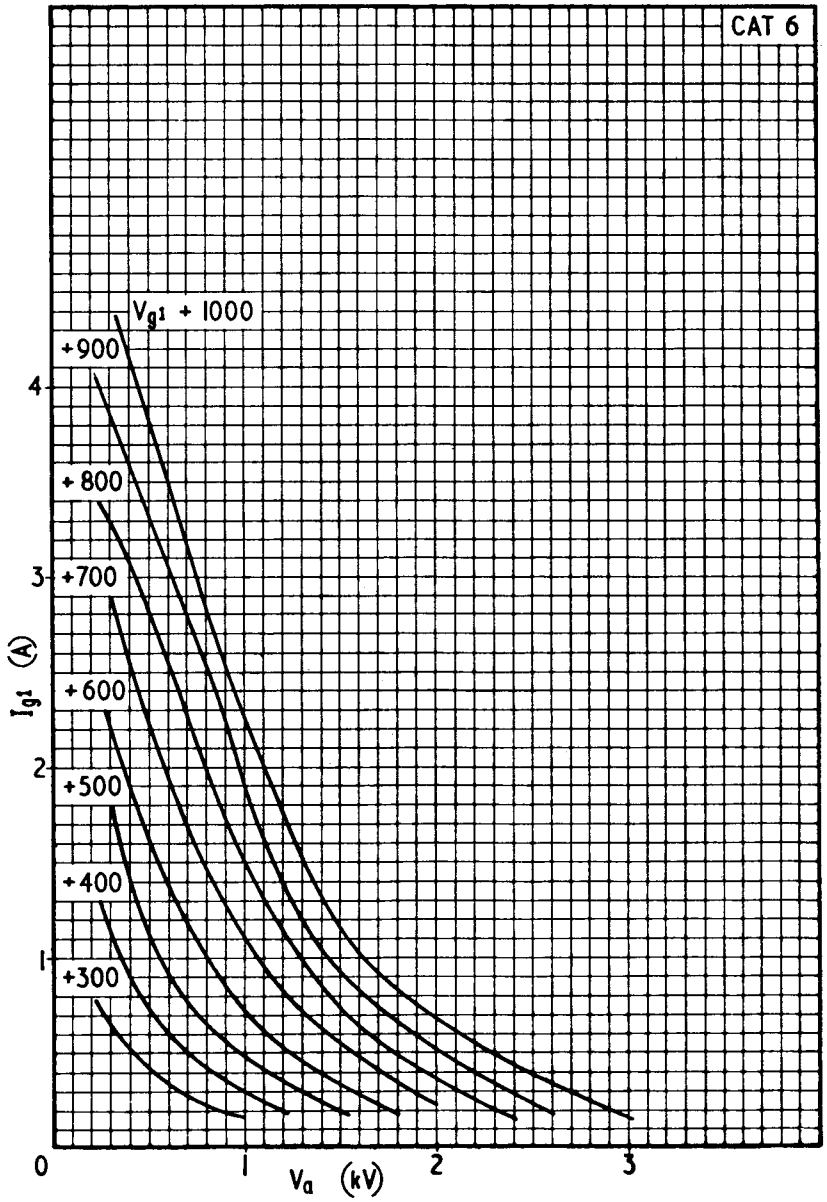
(b) At crest of audio cycle with 100% modulation.

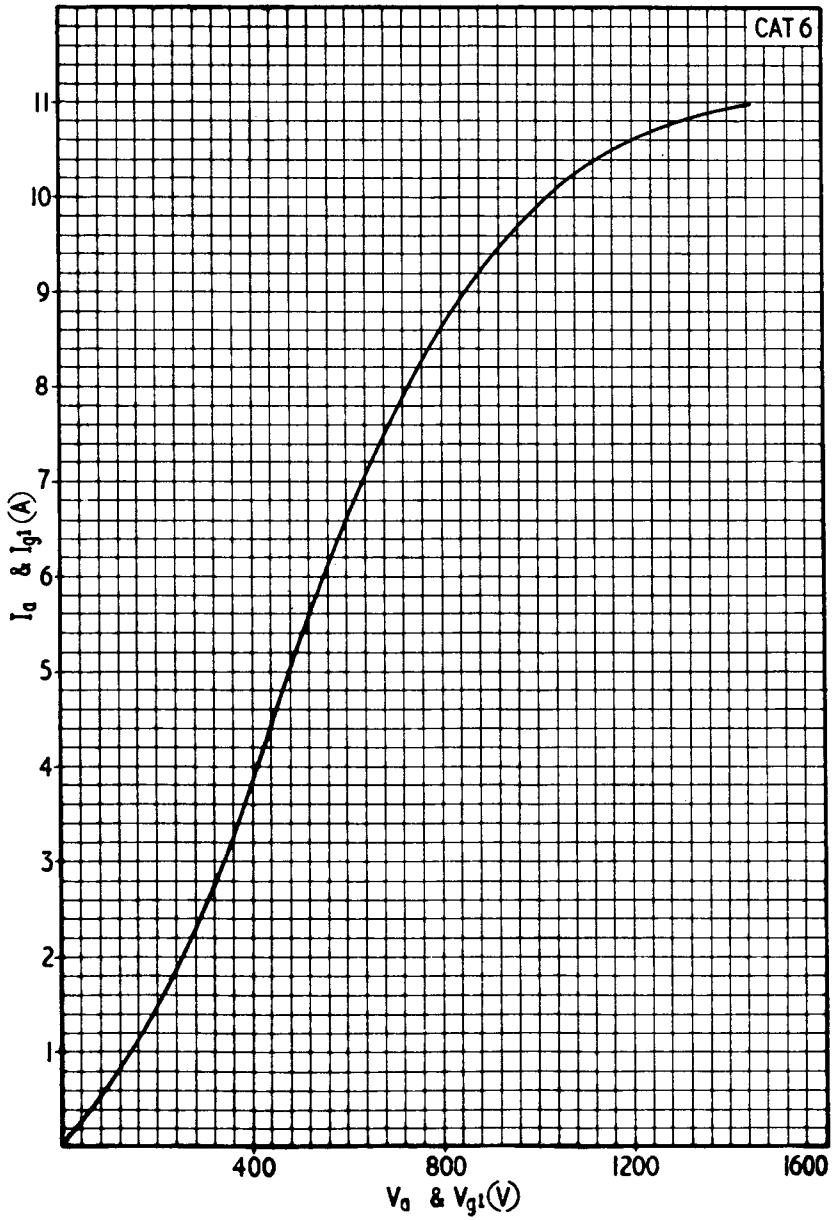

CAT 6
TAKEN AT V_f 18·5V V_a 3$_k$V
75
50
25
0
100
200
300
400
500
I_{g^1} (mA)
V_{g^1} (V)


CAT 6
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


CAT 6
70
60
50
40
I_f (A)
8
10
12
14
16
18
20
22
24
V_f (V)


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


CAT 6
V_{g1} + 1000
+900
+800
+700
+600
+500
+400
+300
I_{g1} (A)
0
1
2
3
4
V_a (kV)


CAT 6
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