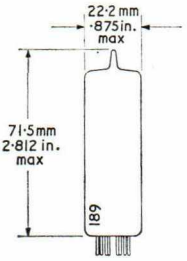
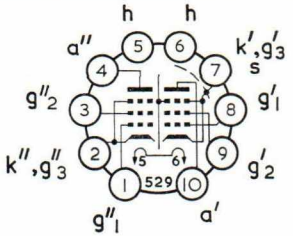


DOUBLE PENTODE



B10B Base

GENERAL

This double pentode, is intended for use in television receivers with the 'L' section as a high gain video output stage and the 'F' section as a sync separator, A.G.C. amplifier or I.F. amplifier. Particular care has been taken in the design of the valve to reduce coupling between sections to a minimum. The 'L' section is on pins 7, 8, 9 and 10.

Heater Current	I_h	0·3	A
Heater Voltage	V_h	17	V

RATINGS

		Output 'L' Section′	Amplifier 'F' Section″	
Maximum Anode Dissipation	$P_{a(max)}$	5·0	1·5	W
Maximum Screen Grid Dissipation	$P_{g2(max)}$	2·5	0·5	W
Intermittent rating, short duration		3·2	—	W
Maximum Anode Supply Voltage	$V_{a(b)max}$	—	550	V
Maximum Anode Voltage	$V_{a(max)}$	250	250	V
Maximum Screen Grid Supply Voltage	$V_{g2(b)max}$	—	550	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	250	250	V
Maximum Heater to Cathode Voltage	$V_{h-k(max)}$	200	200	V
Maximum Cathode Current	$I_{k(max)}$	60	15	mA
Intermittent rating, short duration		85	—	mA
Maximum Grid 1 to Cathode Resistance	$R_{g1-k(max)}$	1·0	1·0	MΩ

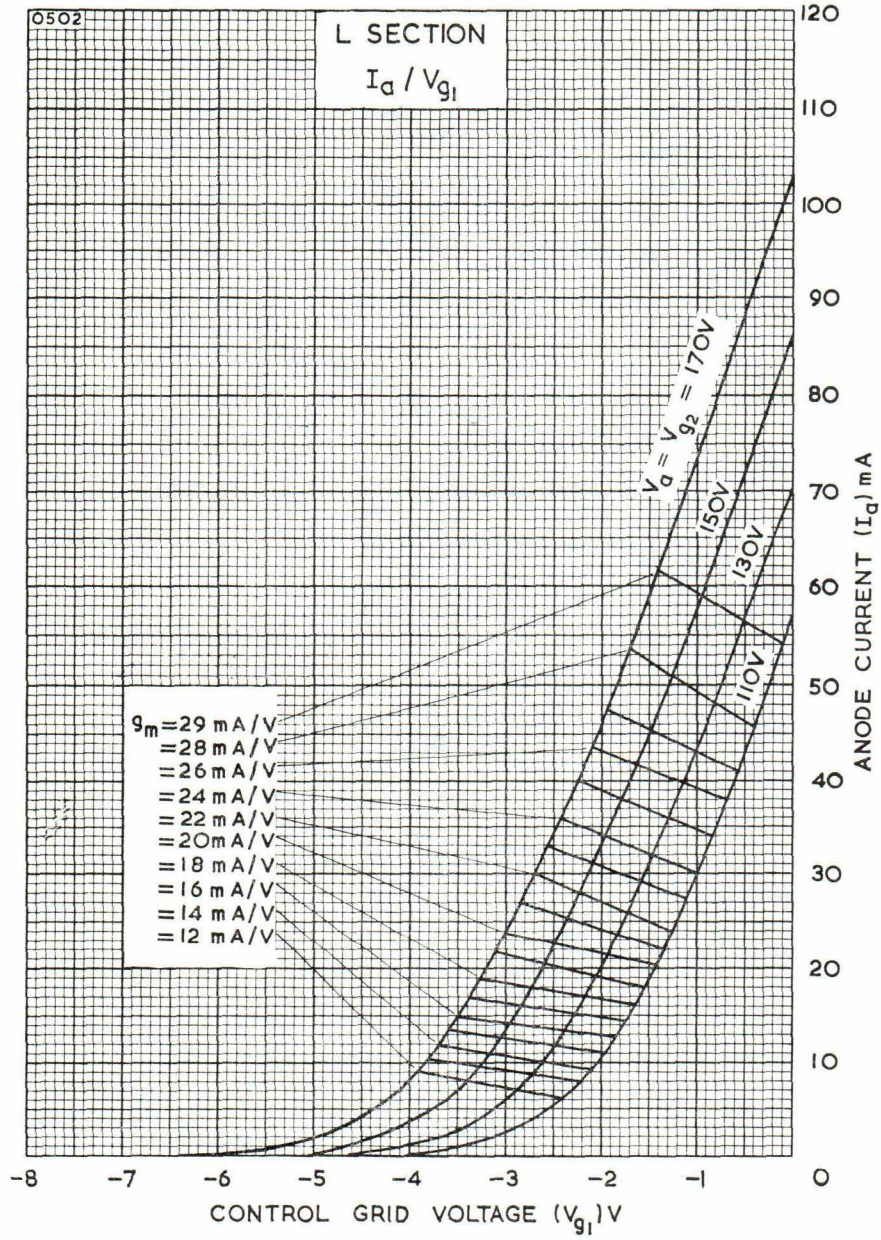
INTER-ELECTRODE CAPACITANCES*

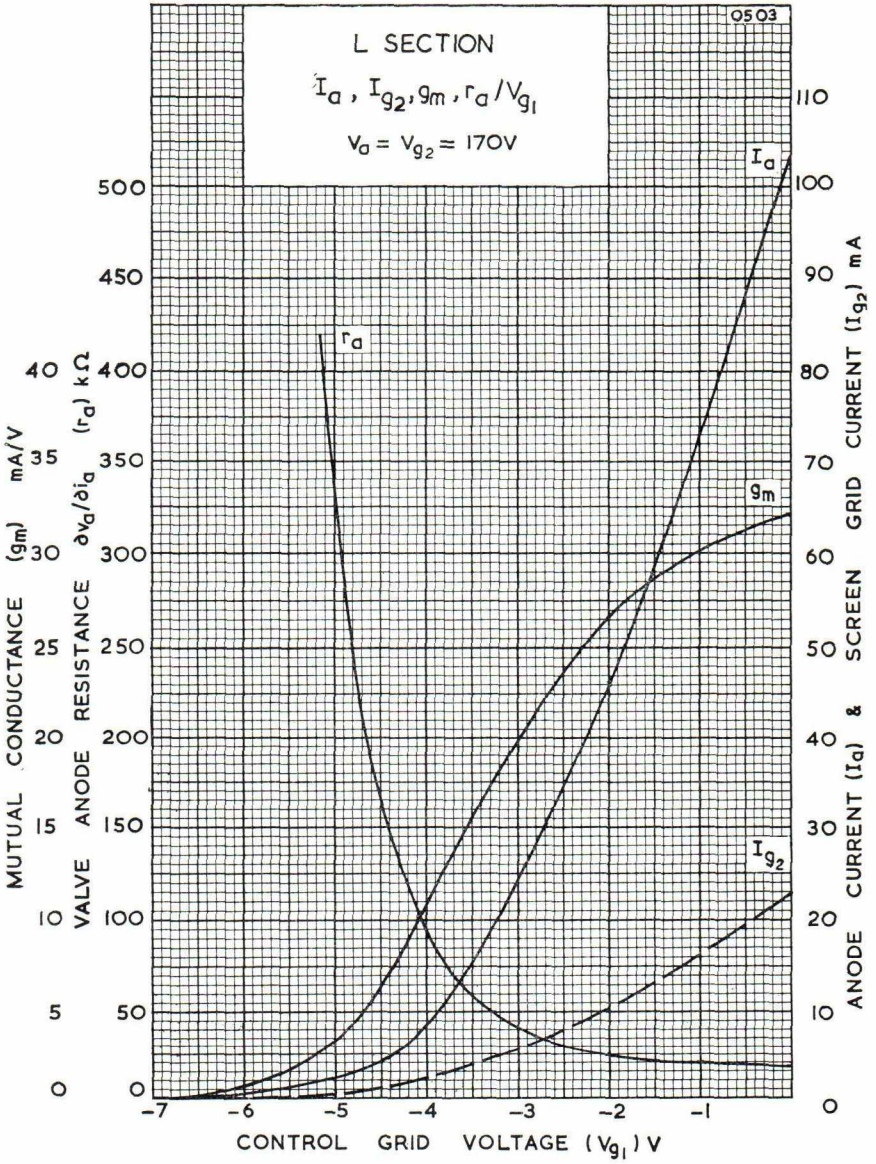
		Output 'L' Section′	Amplifier 'F' Section″	
Input	c_{in}	12·5	10·5	pF
Output	c_{out}	6·5	10·5	pF
Anode to Grid 1	c_{a-g1}	0·1	0·15	pF
Anode′ to Anode″	$c_{a'-a''}$		<0·15	pF
Grid′1 to Grid″1	$c_{g'1-g''1}$		<0·01	pF
Anode′ to Grid″1	$c_{a'-g''1}$		<0·10	pF
Grid′1 to Anode″	$c_{g'1-a''}$		<0·005	pF
Grid″1 to Heater	$c_{g''1-h}$		<0·15	pF

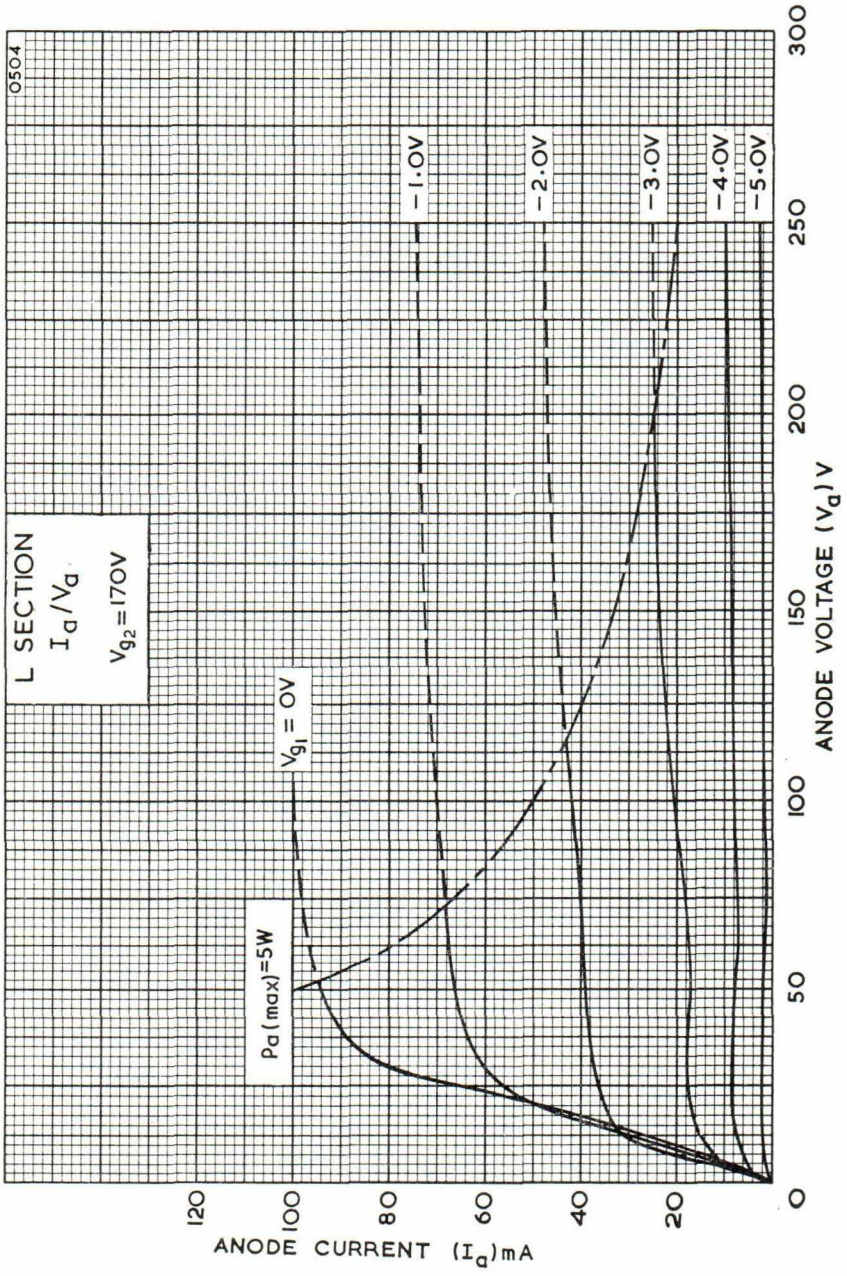
* Measured without an external shield.

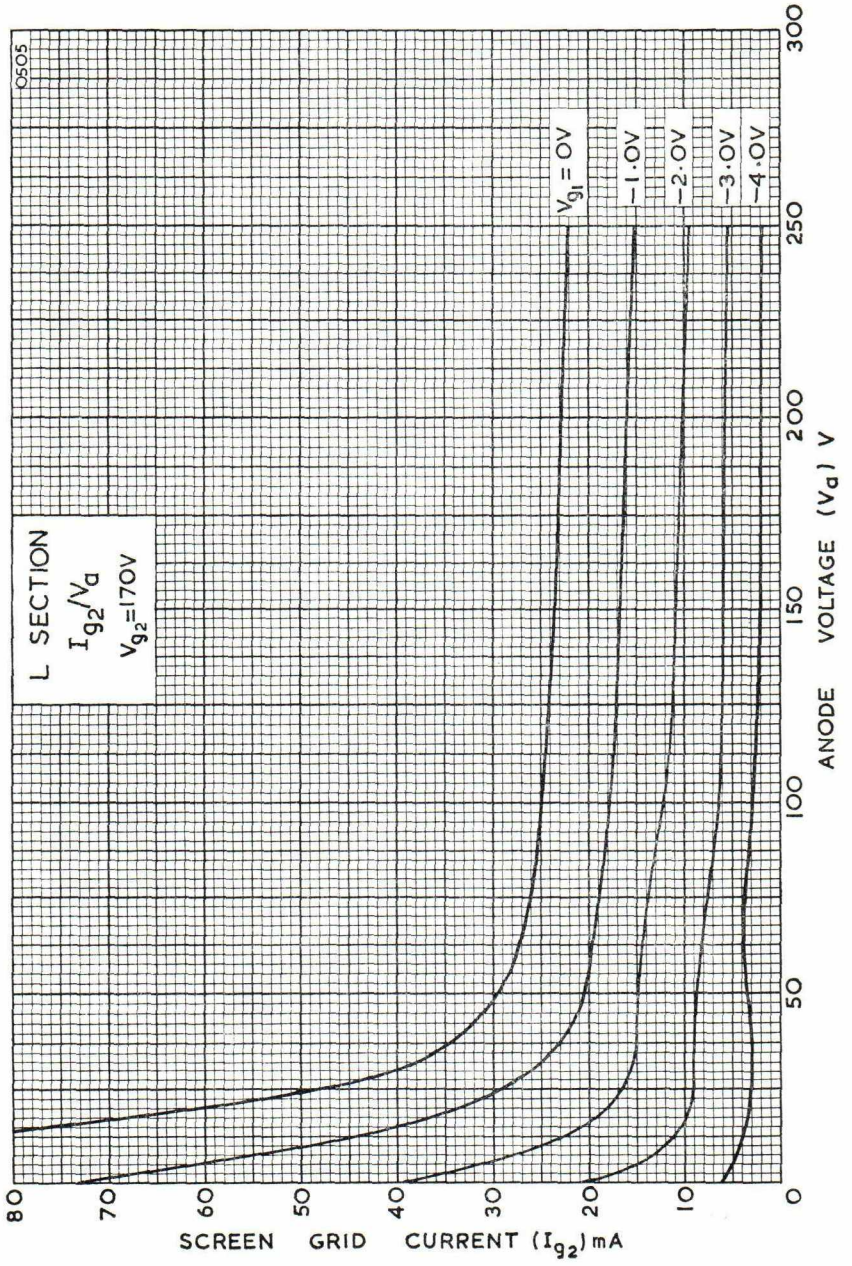
CHARACTERISTICS

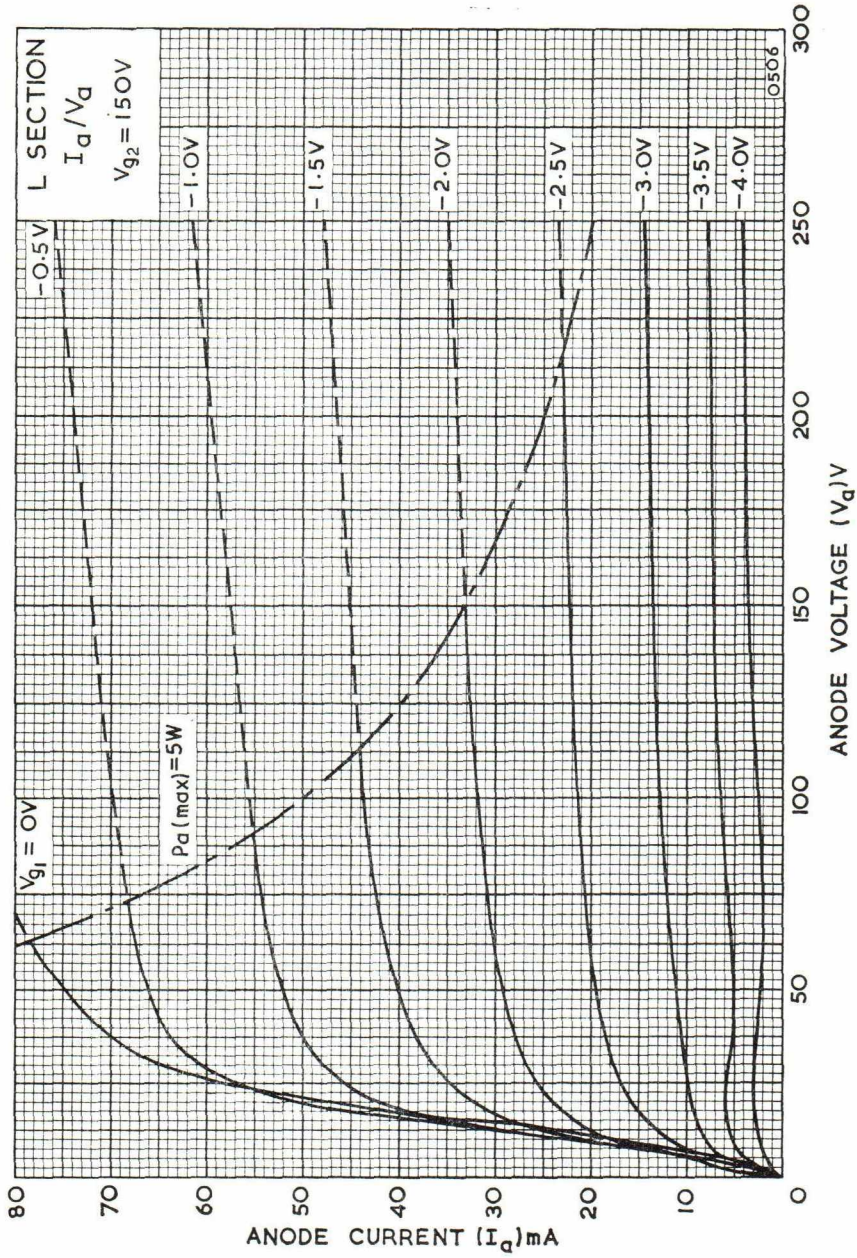
		Output 'L' Section′	Amplifier 'F' Section″		
Anode Voltage	V_a	170	150	50	V
Screen Grid Voltage	V_{g2}	170	150	75	V
Control Grid Voltage	V_{g1}	−2·7	−2·1	−0·65	V
Anode Current	I_a	30	10	5·0	mA
Screen Grid Current	I_{g2}	7·0	3·0	1·6	mA
Mutual Conductance	g_m	22	8·5	6·8	mA/V
Inner Amplification Factor	μ_{g1-g2}	38	38	34	
Valve Anode Resistance ($\delta v_a/\delta i_a$)	r_a	33	150	110	kΩ

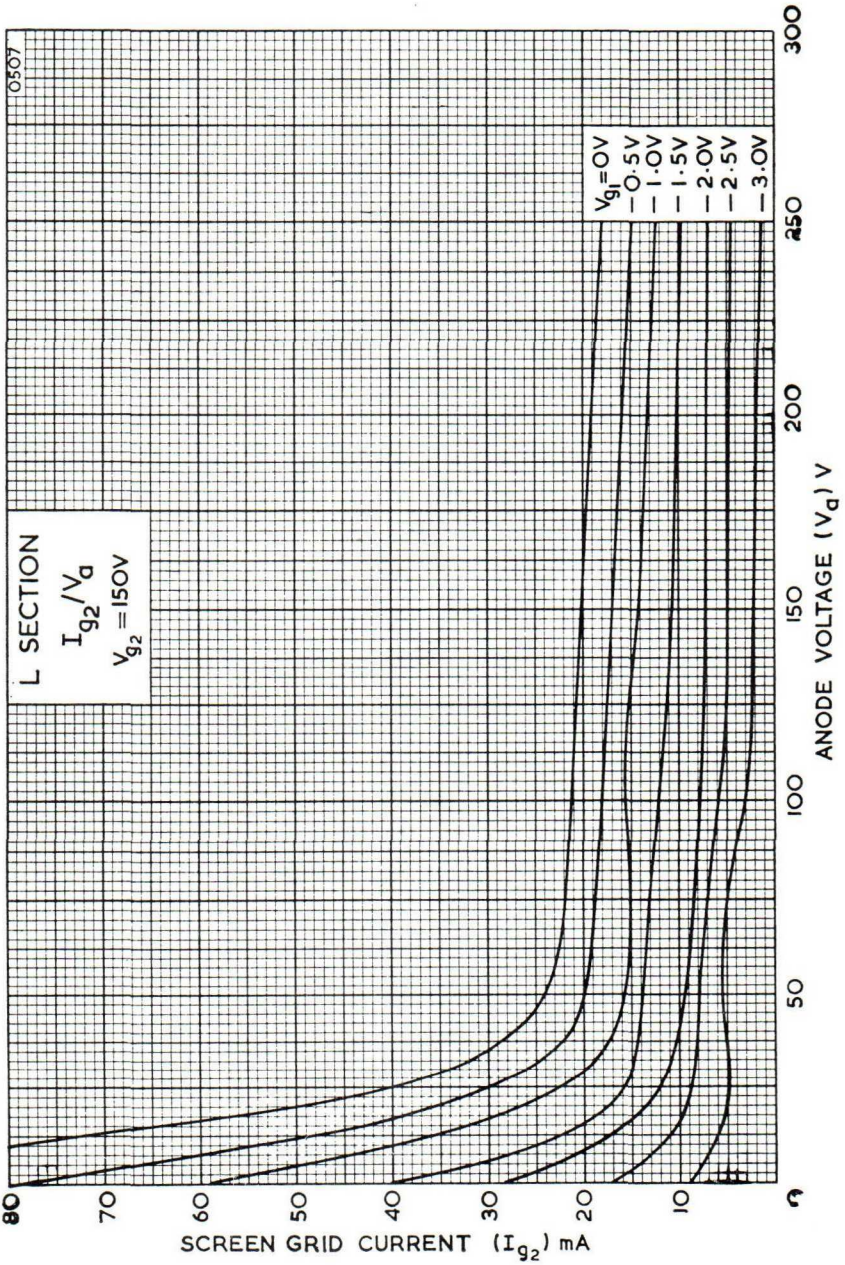

0502
L SECTION
I_a / V_{g1}
$V_a = V_{g2}$ = 170V
150V
130V
110V
g_m=29 mA/V
=28 mA/V
=26 mA/V
=24 mA/V
=22 mA/V
=20mA/V
=18 mA/V
=16 mA/V
=14 mA/V
=12 mA/V
120
110
100
90
80
70
60
50
40
30
20
10
0
ANODE CURRENT (I_a) mA
-8
-7
-6
-5
-4
-3
-2
-1
CONTROL GRID VOLTAGE (V_{g1}) V

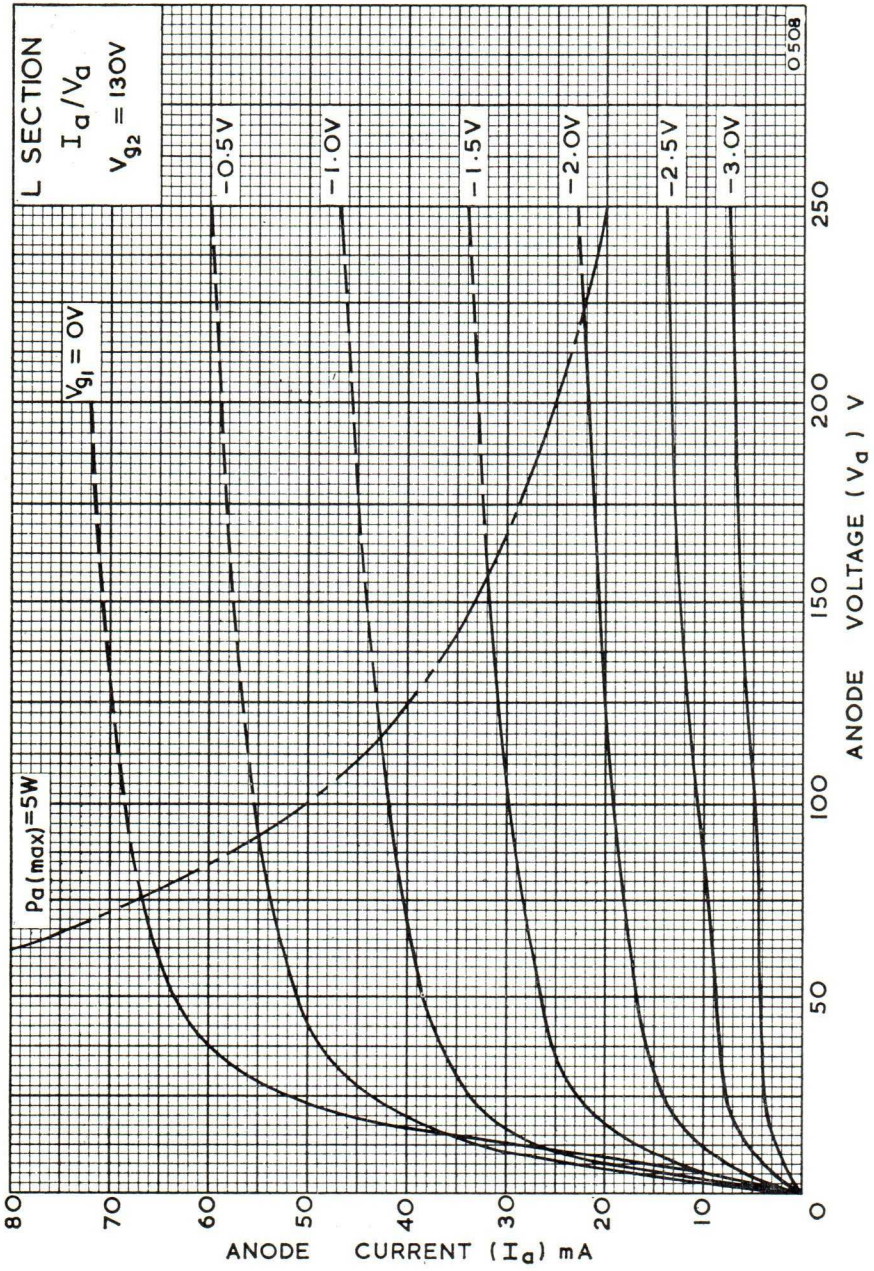

0503
L SECTION
I_a , I_{g_2}, g_m , r_a / V_{g_1}
$V_a = V_{g_2} = 170V$
I_a
r_a
g_m
I_{g_2}
MUTUAL CONDUCTANCE (g_m) mA/V
VALVE ANODE RESISTANCE $\partial v_a/\partial i_a$ (r_a) kΩ
ANODE CURRENT (I_a) & SCREEN GRID CURRENT (I_{g_2}) mA
CONTROL GRID VOLTAGE (V_{g_1}) V
0 5 10 15 20 25 30 35 40
0 50 100 150 200 250 300 350 400 450 500
0 10 20 30 40 50 60 70 80 90 100 110
−7 −6 −5 −4 −3 −2 −1 0

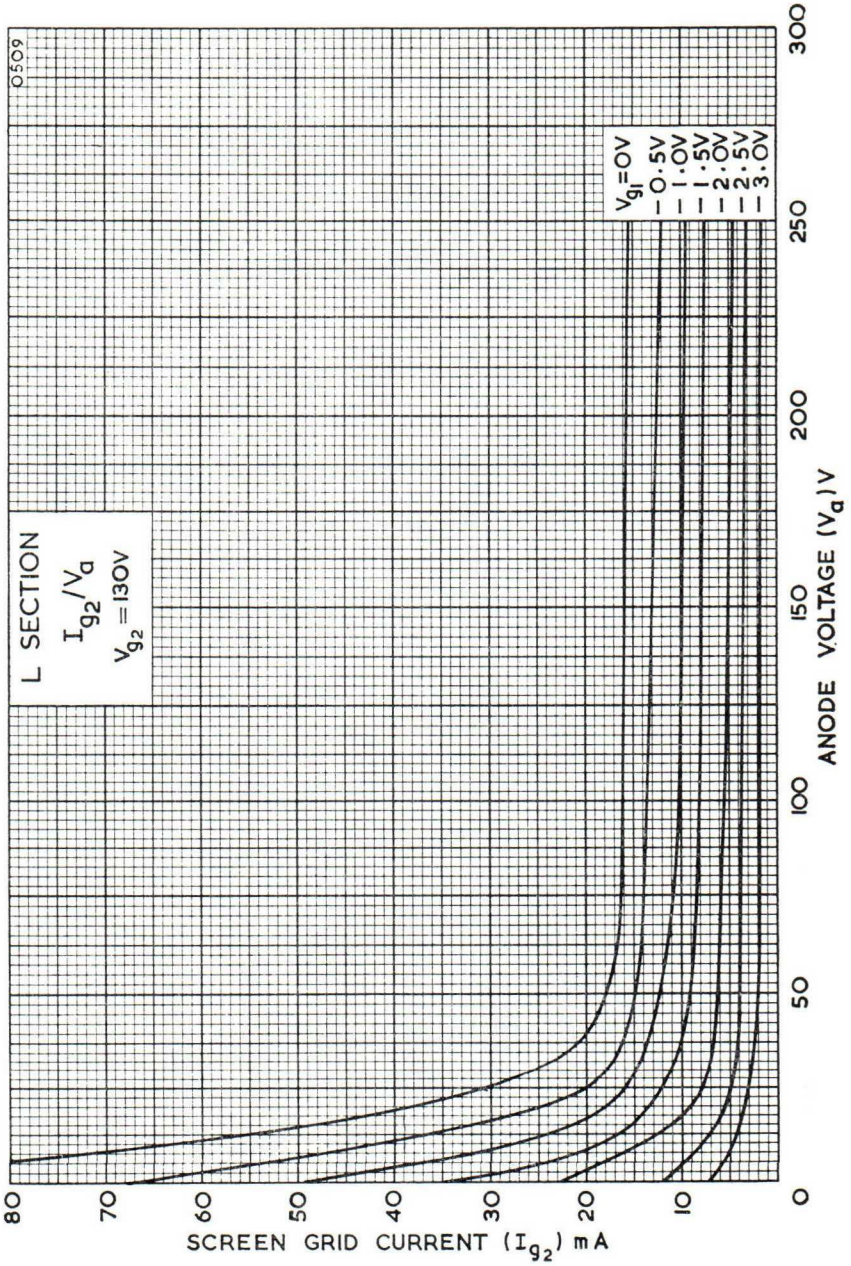

0504
L SECTION
I_a/V_a
V_{g_2}=170V
V_{g_1} = 0V
Pa (max)=5W
-1.0V
-2.0V
-3.0V
-4.0V
-5.0V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
300
ANODE CURRENT (I_a) mA
120
100
80
60
40
20

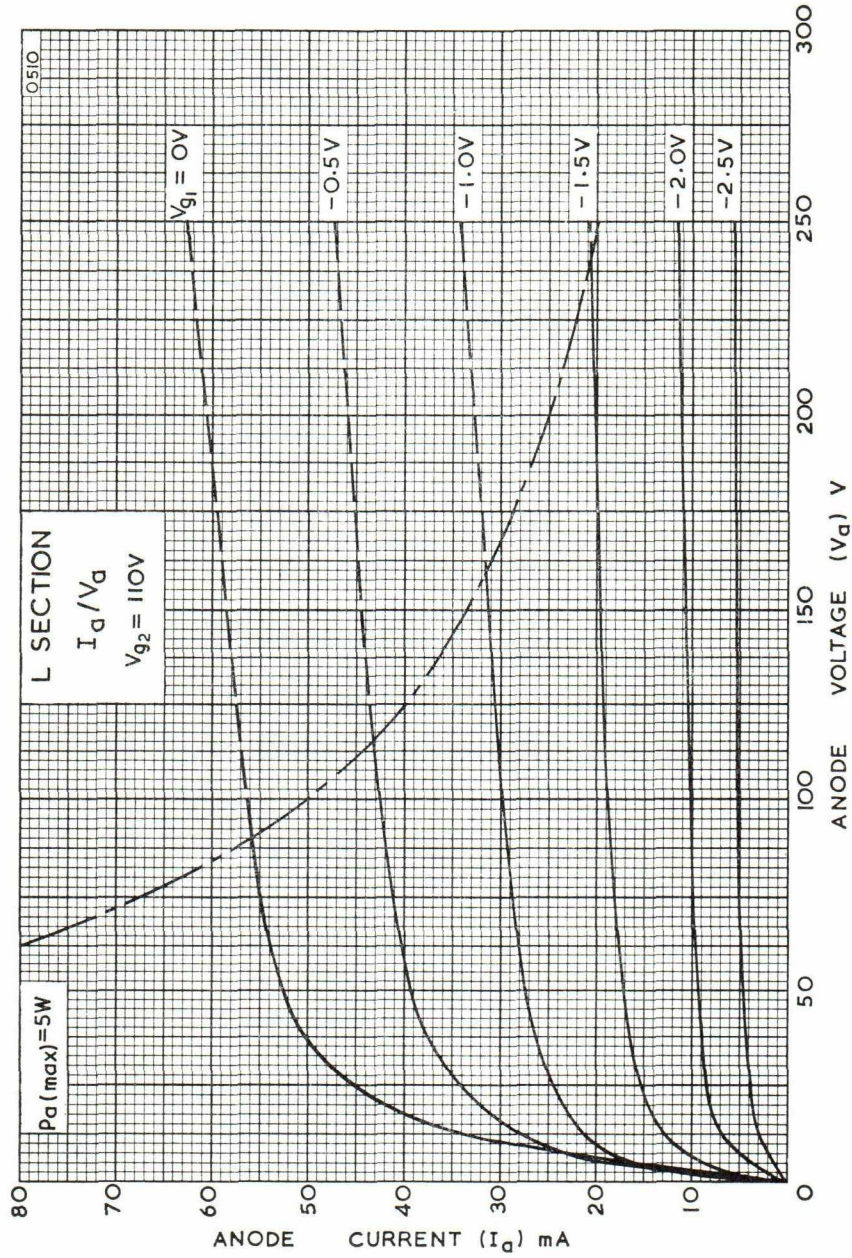

0505
L SECTION
I_{g2}/V_a
V_{g2}=170V
V_{g1} = 0V
-1·0V
-2·0V
-3·0V
-4·0V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
300
SCREEN GRID CURRENT (I_{g2}) mA
80
70
60
50
40
30
20
10

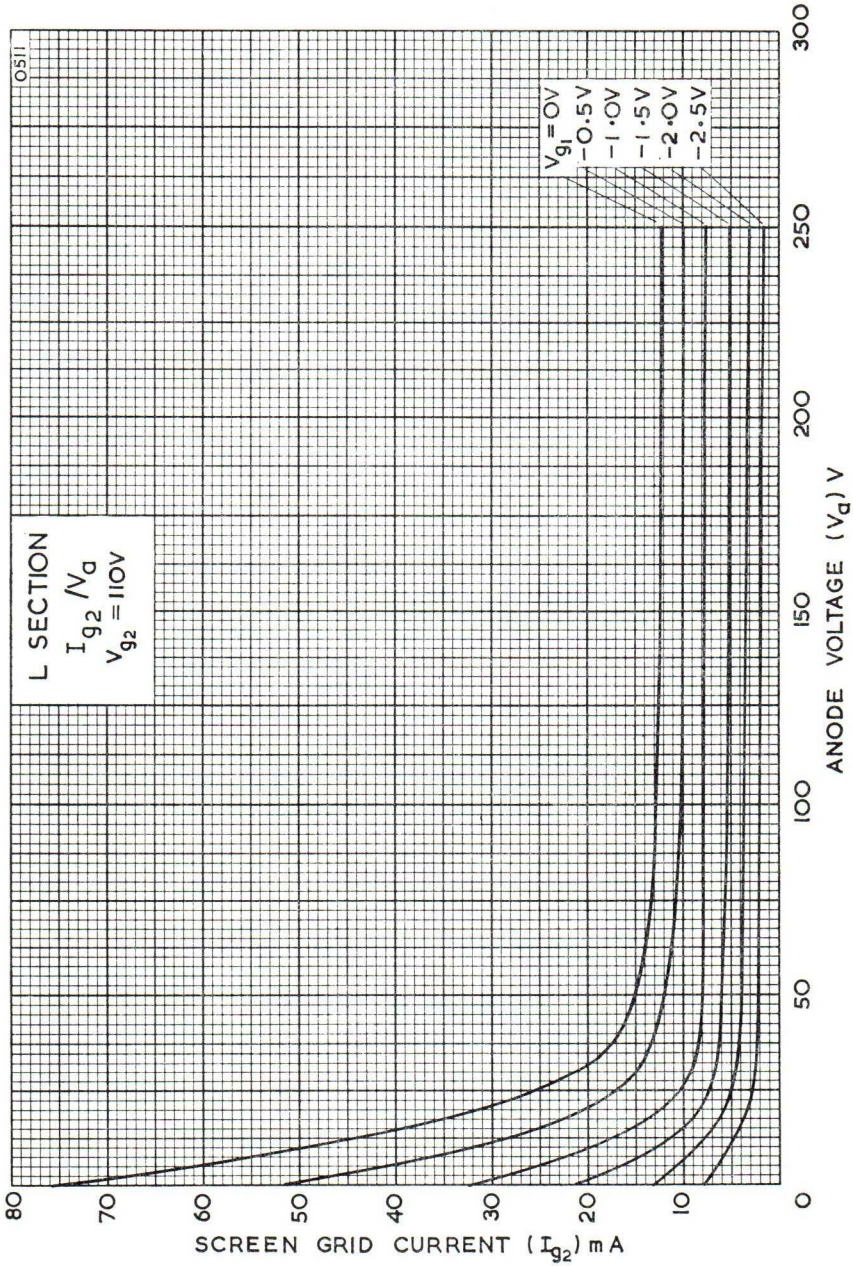

L SECTION
I_a/V_a
V_{g_2} = 150V
0506
-0.5V
-1.0V
-1.5V
-2.0V
-2.5V
-3.0V
-3.5V
-4.0V
V_{g_1} = 0V
Pa (max) = 5W
ANODE VOLTAGE (V_a) V
ANODE CURRENT (I_a) mA
0
50
100
150
200
250
300
10
20
30
40
50
60
70
80


0507
L SECTION
I_{g2}/V_a
$V_{g2}=150V$
V_{g1}=0V
−0·5V
−1·0V
−1·5V
−2·0V
−2·5V
−3·0V
ANODE VOLTAGE (V_a) V
300
250
200
150
100
50
0
SCREEN GRID CURRENT (I_{g2}) mA
80
70
60
50
40
30
20
10
0

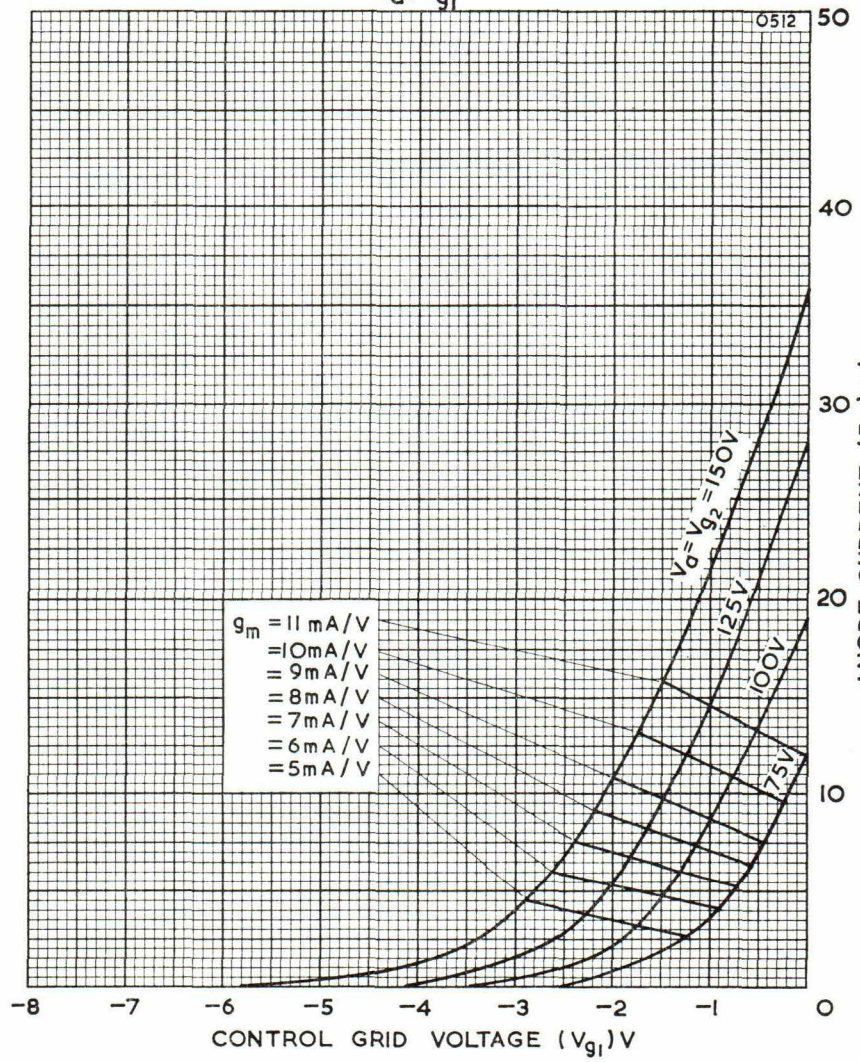

L SECTION
I_a/V_a
V_{g2} = 130V
V_{g1} = 0V
-0·5V
-1·0V
-1·5V
-2·0V
-2·5V
-3·0V
Pa(max)=5W
0508
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
ANODE CURRENT (I_a) mA
80
70
60
50
40
30
20
10
0


0509
L SECTION
I_{g_2}/V_a
V_{g_2} = 130V
V_{g_1}=0V
-0·5V
-1·0V
-1·5V
-2·0V
-2·5V
-3·0V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
300
SCREEN GRID CURRENT (I_{g_2}) mA
80
70
60
50
40
30
20
10


0510
L SECTION
I_a/V_a
V_{g2} = 110V
Pa (max)=5W
V_{g1} = 0V
-0.5V
-1.0V
-1.5V
-2.0V
-2.5V
ANODE CURRENT (I_a) mA
ANODE VOLTAGE (V_a) V
80
70
60
50
40
30
20
10
0
50
100
150
200
250
300


0511
L SECTION
I_{g2} / V_a
V_{g2} = 110V
V_{g1} = 0V
-0.5V
-1.0V
-1.5V
-2.0V
-2.5V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
300
SCREEN GRID CURRENT (I_{g2}) mA
80
70
60
50
40
30
20
10

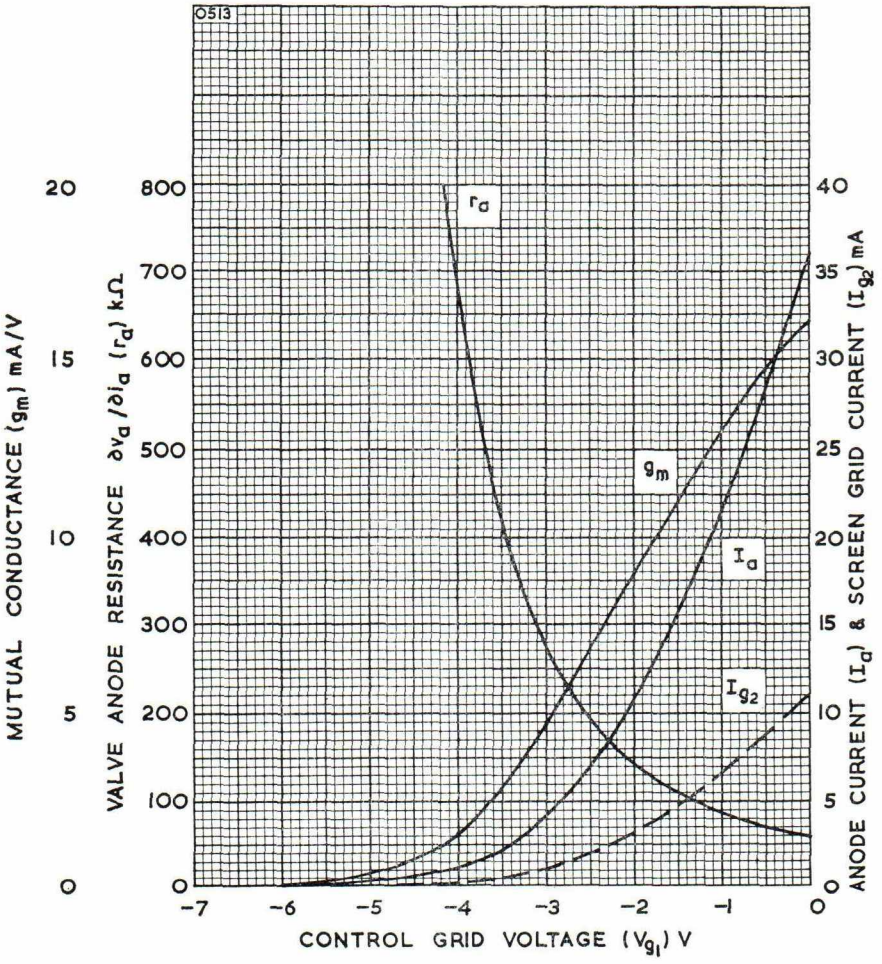
F SECTION
I_a/V_{g1}

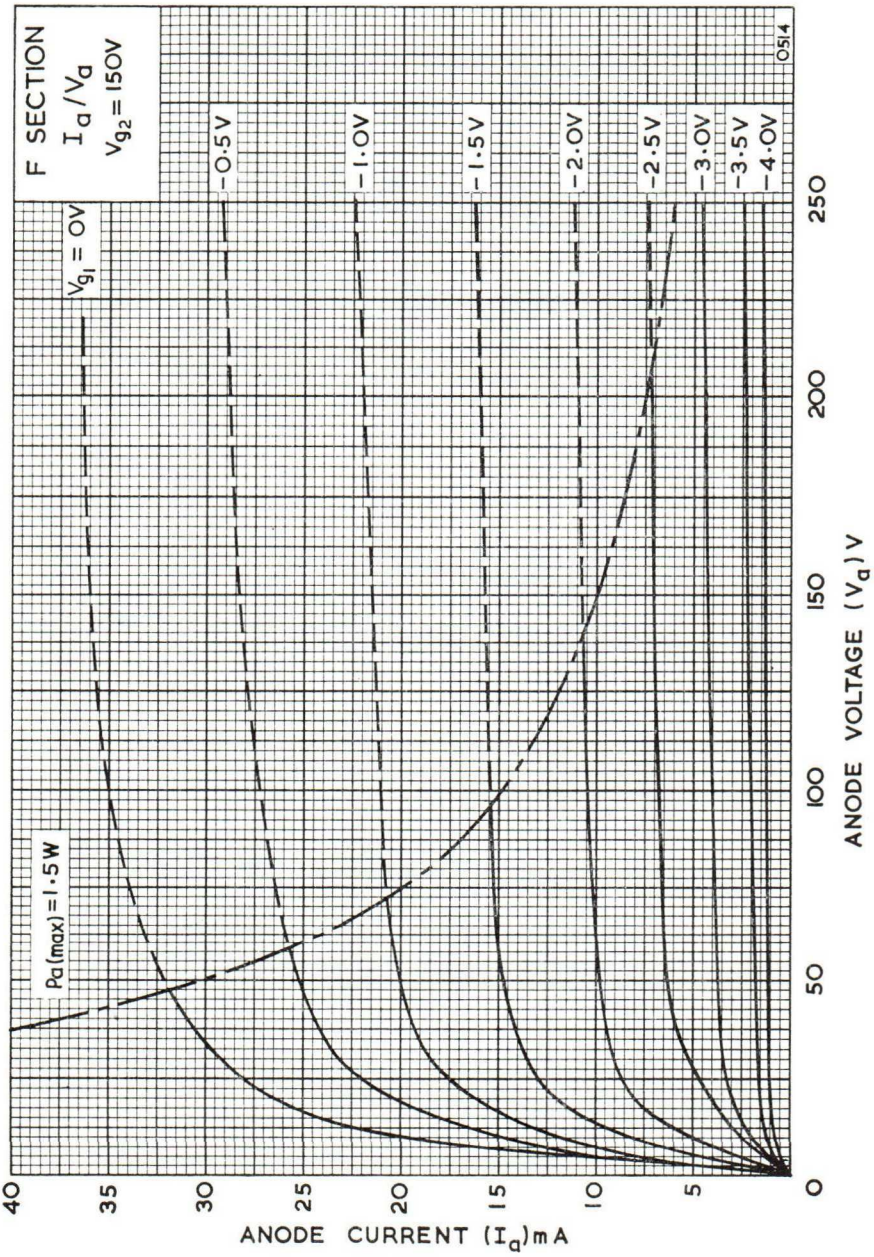


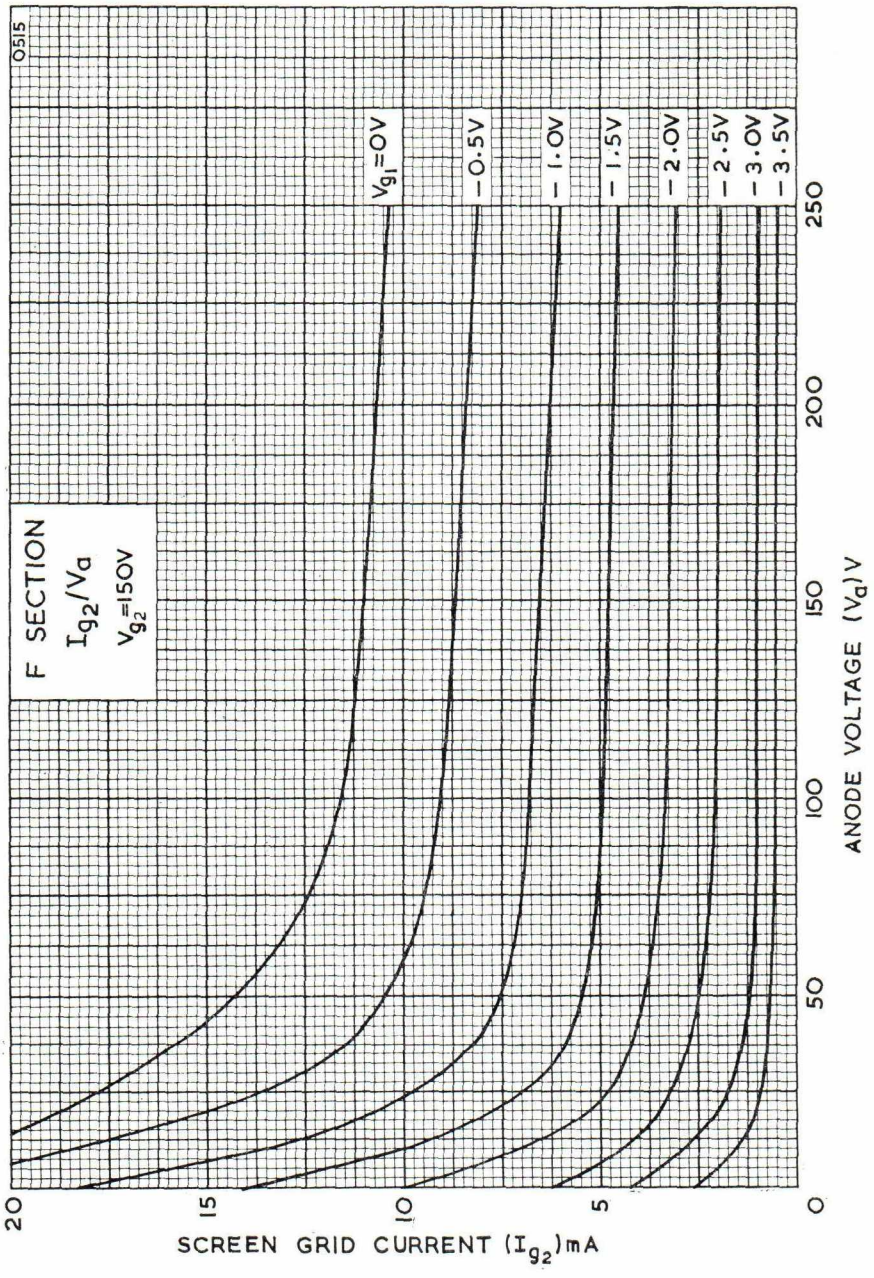
F SECTION

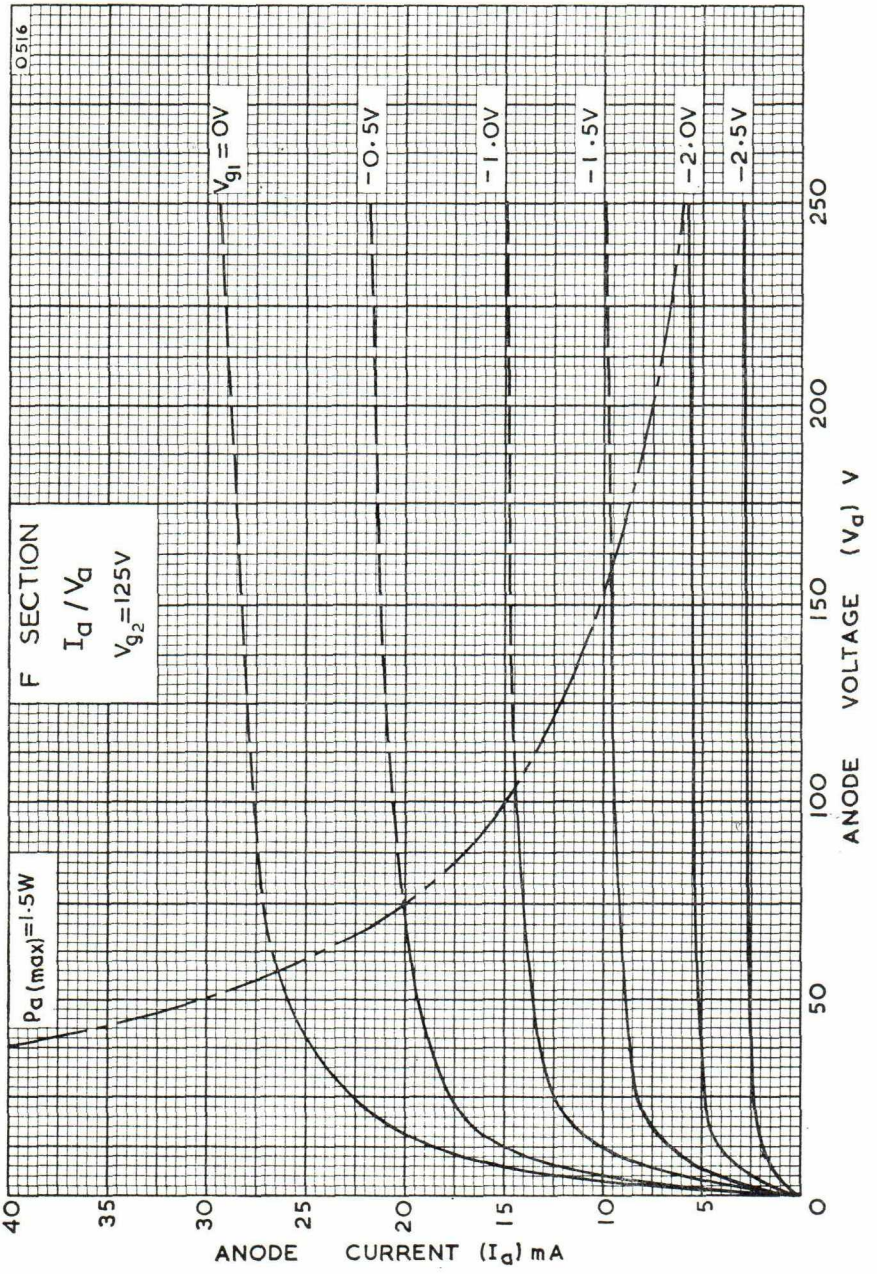
$I_a, I_{g_2}, r_a, g_m / V_{g_1}$

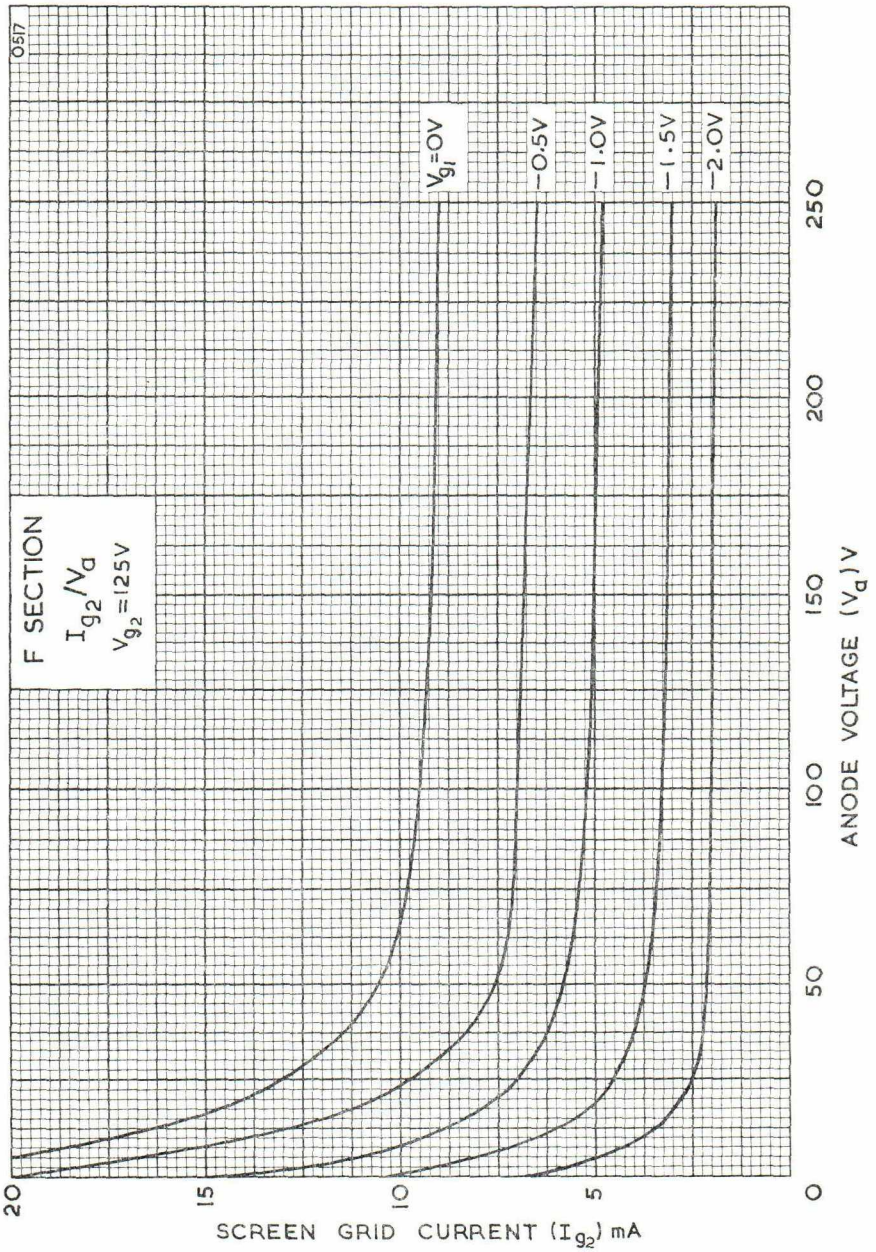
$V_a = V_{g_2} = 150V$

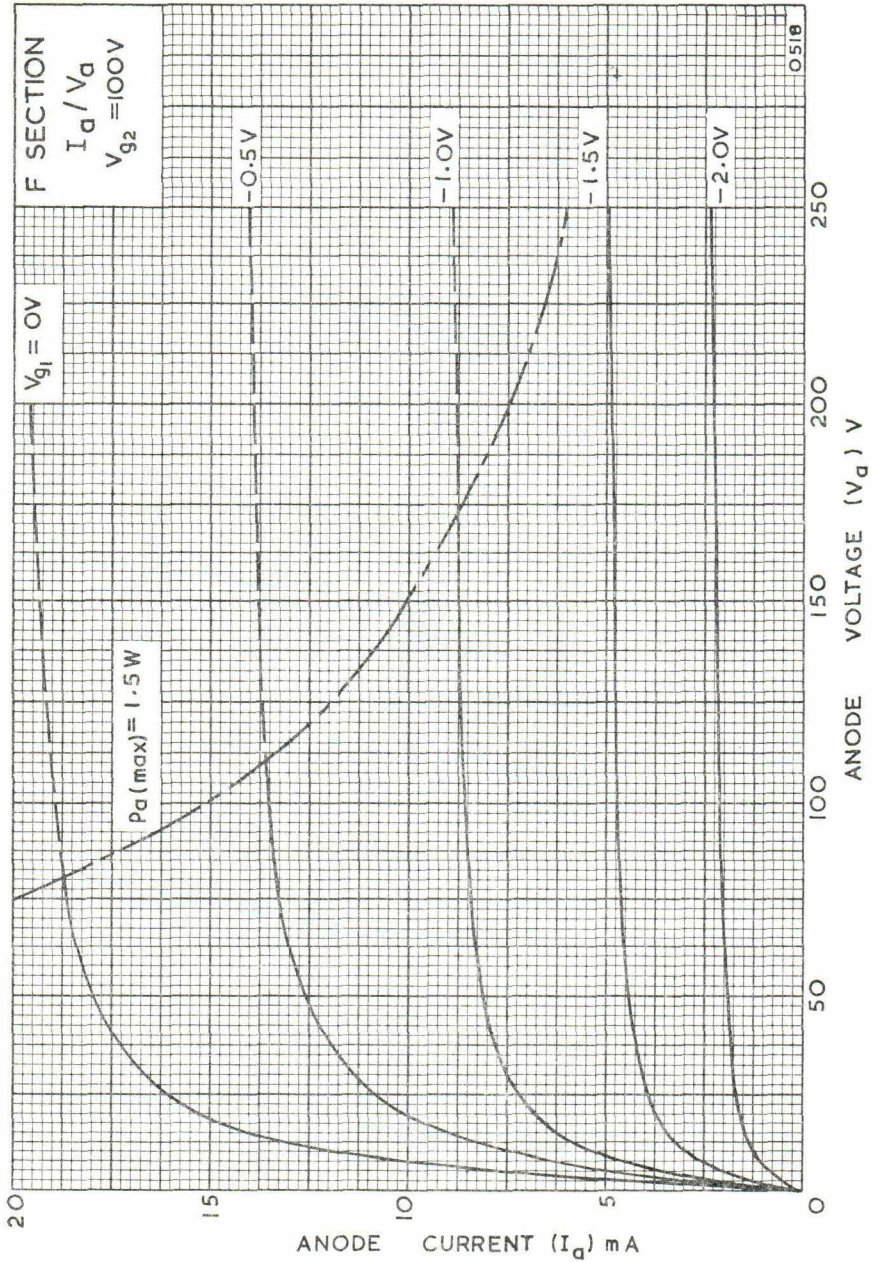


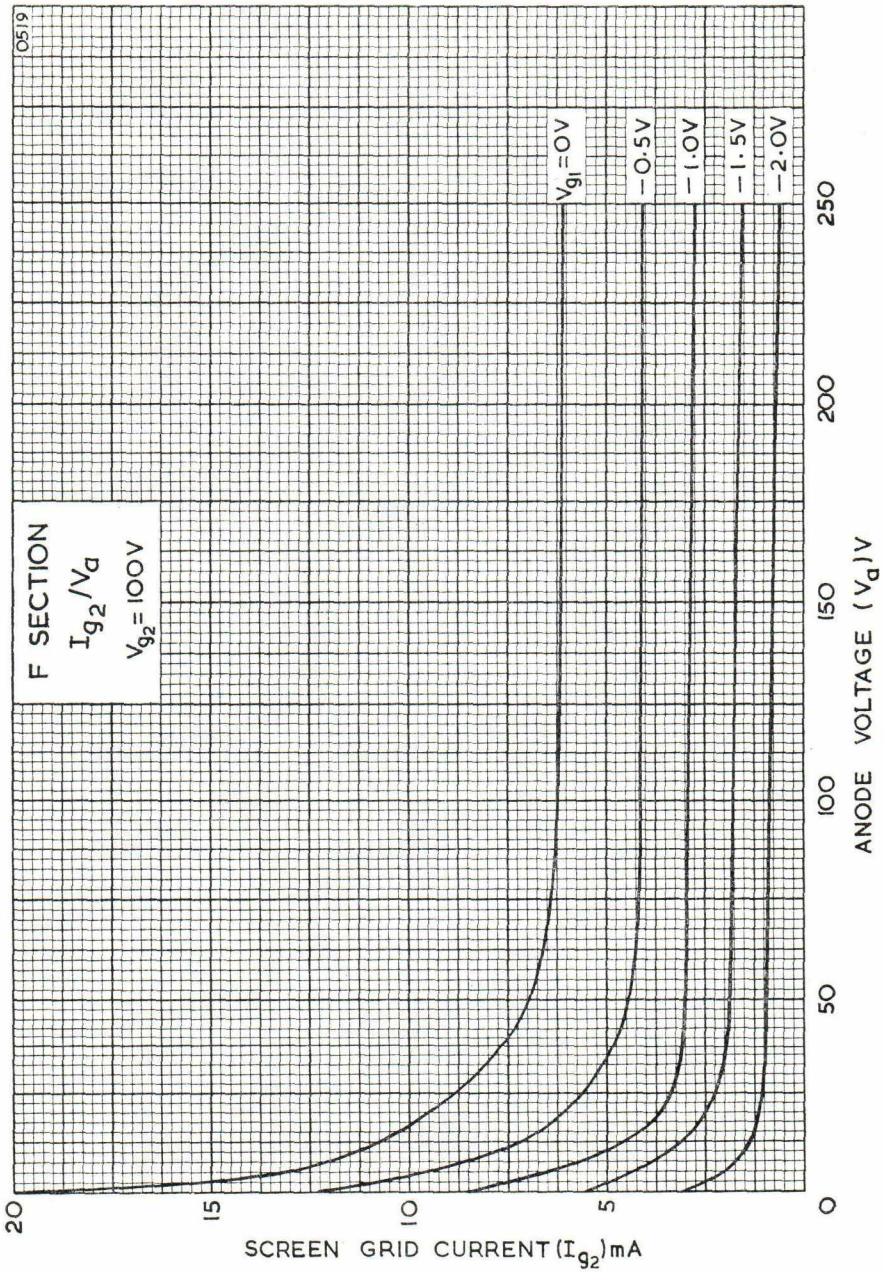

F SECTION
I_a / V_a
$V_{g2} = 150V$
$V_{g1} = 0V$
-0·5V
-1·0V
-1·5V
-2·0V
-2·5V
-3·0V
-3·5V
-4·0V
Pa(max) = 1·5W
0514
ANODE CURRENT (I_a) mA
ANODE VOLTAGE (V_a) V
40
35
30
25
20
15
10
5
0
50
100
150
200
250

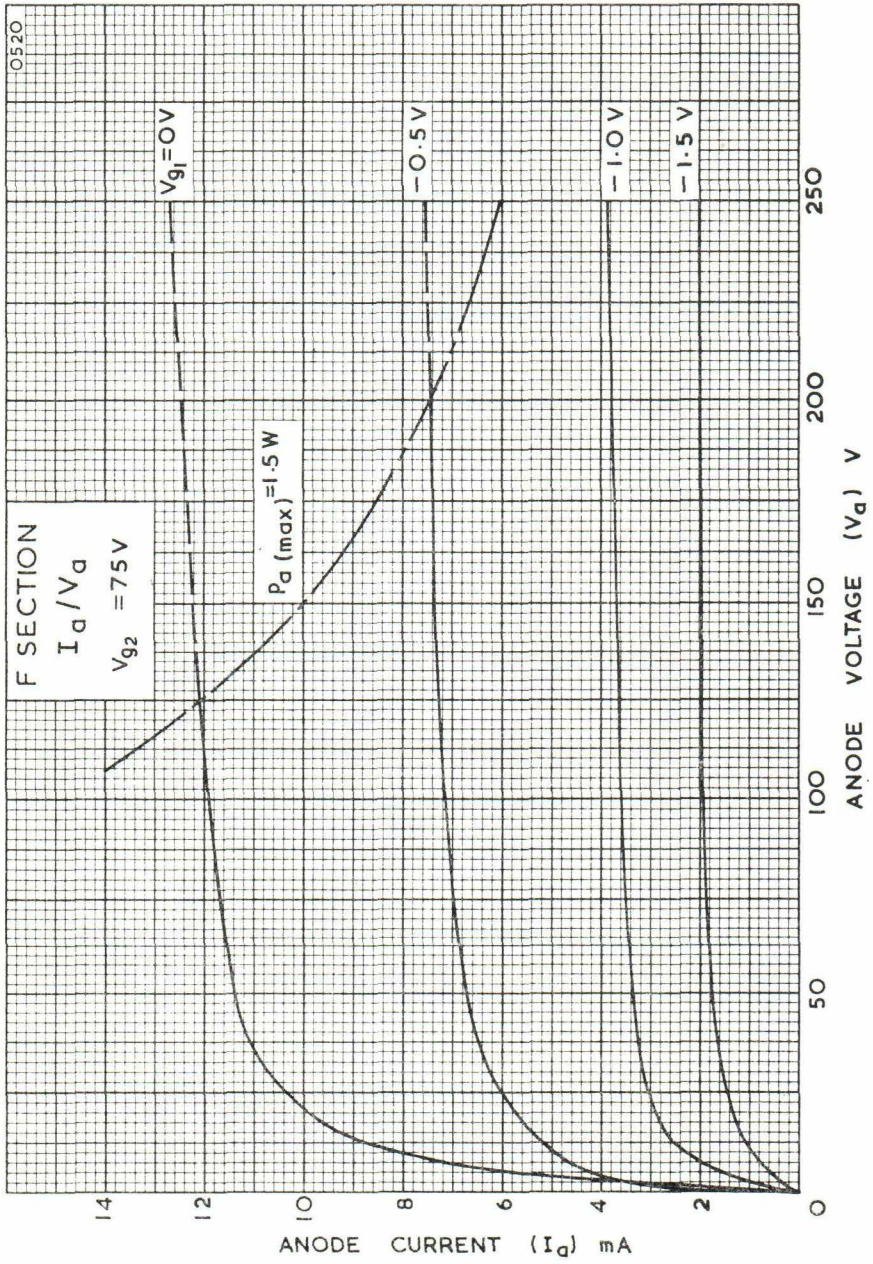

0515
F SECTION
I_{g2}/V_a
V_{g2}=150V
V_{g1}=0V
-0.5V
-1.0V
-1.5V
-2.0V
-2.5V
-3.0V
-3.5V
250
200
150
100
50
0
ANODE VOLTAGE (V_a) V
20
15
10
5
0
SCREEN GRID CURRENT (I_{g2}) mA

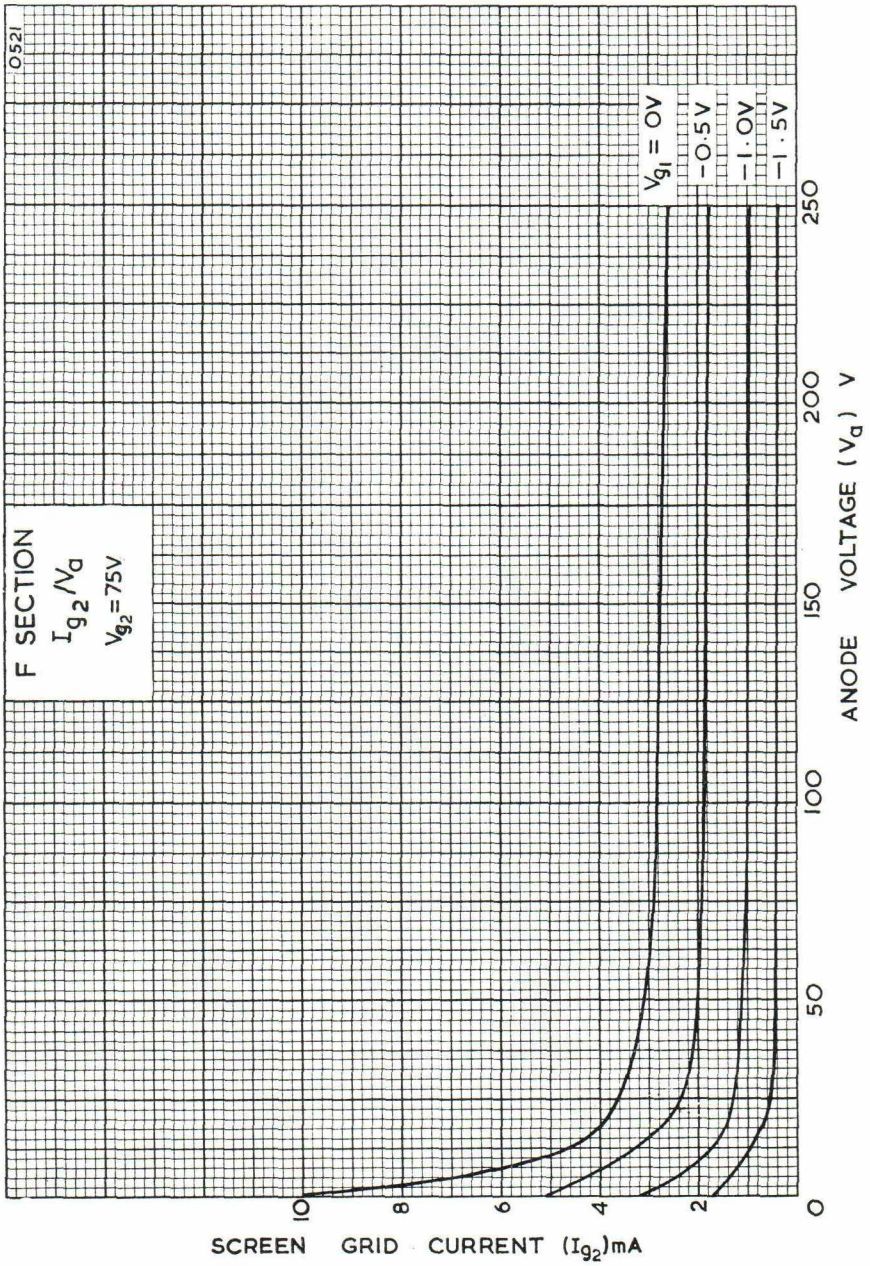

0516
F SECTION
I_a / V_a
V_{g_2}=125V
Pa (max)=1·5W
V_{g1}=0V
-0·5V
-1·0V
-1·5V
-2·0V
-2·5V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
ANODE CURRENT (I_a) mA
40
35
30
25
20
15
10
5
0


0517
F SECTION
I_{g_2}/V_a
V_{g_2}=125V
V_{g_1}=0V
-0.5V
-1.0V
-1.5V
-2.0V
20
15
10
5
0
SCREEN GRID CURRENT (I_{g_2}) mA
0
50
100
150
200
250
ANODE VOLTAGE (V_a) V


F SECTION
I_a / V_a
V_{g2} =100V
V_{g1} = 0V
Pa (max)= 1·5 W
-0·5 V
-1·0V
-1·5V
-2·0V
0518
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
ANODE CURRENT (I_a) mA
20
15
10
5
0


0519
F SECTION
I_{g_2}/V_a
V_{g_2} = 100V
V_{g_1}=0V
−0.5V
−1.0V
−1.5V
−2.0V
20
15
10
5
0
SCREEN GRID CURRENT (I_{g_2}) mA
0
50
100
150
200
250
ANODE VOLTAGE (V_a) V


0520
F SECTION
I_a / V_a
V_{g2} = 75 V
V_{g1}=0V
-0.5V
-1.0V
-1.5V
P_a (max)=1.5W
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
ANODE CURRENT (I_a) mA
2
4
6
8
10
12
14


0521
F SECTION
I_{g_2}/V_a
V_{g_2}=75V
V_{g_1} = 0V
-0·5V
-1·0V
-1·5V
ANODE VOLTAGE (V_a) V
0
50
100
150
200
250
SCREEN GRID CURRENT (I_{g_2})mA
2
4
6
8
10