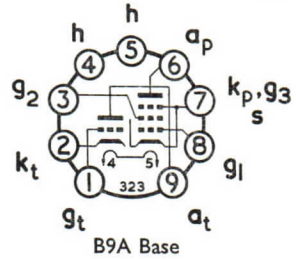


TRIODE PENTODE



GENERAL

This high- μ triode and output pentode is for use in the audio amplifier stage of television receivers.

Heater Current	I_h 0.3	A
Heater Voltage	V_h 13.6	V

RATINGS

	Triode	Pentode	
Maximum Anode Dissipation	$P_{a(max)}$ 0.5	9.0	W
Maximum Screen Grid Dissipation	$P_{g_2(max)}$ —	1.8	W
For speech and music	—	3.0	W
Maximum Anode Supply Voltage ($I_a = 0$)	$V_{a(b)max}$ 550	550	V
Maximum Anode Voltage	$V_{a(max)}$ 250	250	V
Maximum Screen Grid Supply Voltage ($I_{g_2} = 0$)	$V_{g_2(b)max}$ —	550	V
Maximum Screen Grid Voltage	$V_{g_2(max)}$ —	250	V
Maximum Heater to Cathode Voltage	$V_{h-k(max)}$ 100	100	V
Maximum Cathode Current	$I_{k(max)}$ 4.0	55	mA
Maximum Grid 1 to Cathode Resistance	$R_{g_1-k(max)}$ —	—	M Ω
Fixed Bias	1.0	1.0	M Ω
Self Bias	2.0	—	M Ω
Grid Current Bias	22	—	M Ω
Maximum Heater to Cathode Resistance	$R_{h-k(max)}$ 20*	20	k Ω

* When used as a phase inverter immediately preceding the output stage $R_{h-k(max)}$ may be 120k Ω .

INTER-ELECTRODE CAPACITANCES†

Pentode Input	$C_{in(p)}$	10	pF
Grid 1 to Anode Pentode	C_{g_1-ap}	<0.4	pF
Grid 1 to Heater	C_{g_1-h}	<0.24	pF
Triode Input	$C_{in(t)}$	2.3	pF
Triode Output	$C_{out(t)}$	2.5	pF
Grid Triode to Anode Triode	C_{g_t-at}	1.4	pF
Grid Triode to Heater	C_{g_t-h}	<0.006	pF
Grid Triode to Grid 1	$C_{g_t-g_1}$	<0.02	pF
Grid Triode to Anode Pentode	C_{g_t-ap}	<0.006	pF
Anode Triode to Anode Pentode	C_{at-ap}	<0.15	pF
Anode Triode to Grid 1	C_{at-g_1}	<0.2	pF

† In fully shielded socket without can (I.E.C. Publication 100).

CHARACTERISTICS

	Triode	Pentode	
Anode Voltage	V_a 230	230	V
Screen Grid Voltage	V_{g_2} —	230	V
Control Grid Voltage	V_{g_1} -1.7	-5.7	V
Anode Current	I_a 1.2	39	mA
Screen Grid Current	I_{g_2} —	6.5	mA
Mutual Conductance	g_m 1.6	10.5	mA/V
Valve Anode Resistance ($\delta v_a / \delta i_a$)	r_a 62	45	k Ω
Amplification Factor	μ 100	—	
Inner Amplification Factor	$\mu_{g_1-g_2}$ —	21	

TYPICAL OPERATION

Pentode as Class A Audio Output Stage

Anode Voltage	V_a	200	230	V
Screen Grid Voltage	V_{g2}	200	230	V
Cathode Resistor	R_k	115	125	Ω
Quiescent Anode Current	$I_{a(o)}$	35	39	mA
Quiescent Screen Grid Current	$I_{g2(o)}$	6.0	6.5	mA
Anode Load Resistor	R_a	5.6	5.1	k Ω
Input Voltage (R.M.S.)	$V_{in(r.m.s.)}$	3.2	3.6	V
Input Voltage (R.M.S.) for 50mW output		0.29	0.3	V
Power Output	P_{out}	3.1	4.1	W
Total Distortion	D_{tot}	10	10	%

Triode as Resistance Coupled A.F. Amplifier

Grid Current Bias ($R_g = 10M\Omega$)

Supply Voltage	V_b	170	170	170	230	230	230	V
Anode Load Resistance	R_a	47	100	220	47	100	220	k Ω
Grid Resistance of Following Valve		150	330	680	150	330	680	k Ω
Anode Current	I_a	0.82	0.58	0.37	1.37	0.9	0.57	mA

Signal Source Impedance, $Z_s = 0\Omega$

Voltage Amplification for $V_{in(r.m.s.)} = 100mV$	36	53	67	40	57	72	
R.M.S. Output Voltage for 5% total distortion	9	13	15	15	22	26	V

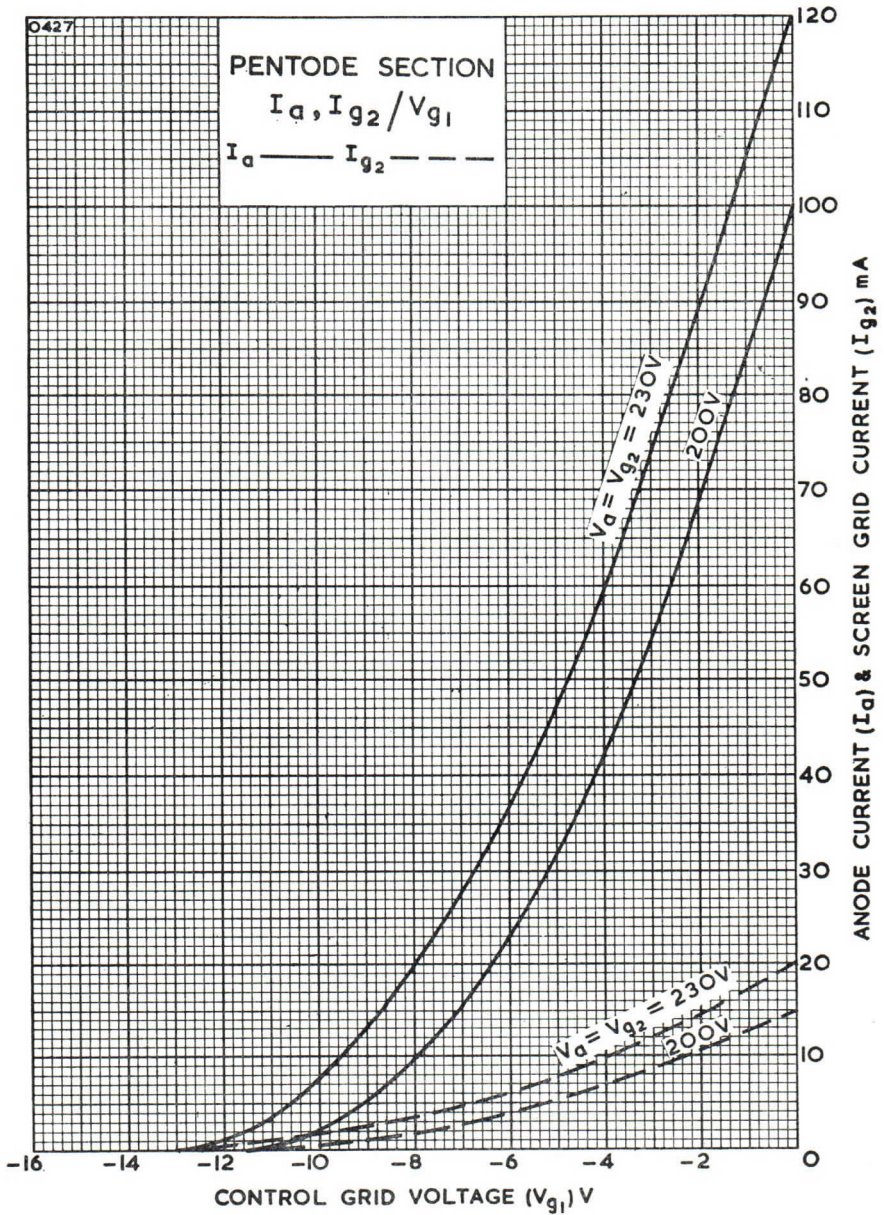
Signal Source Impedance, $Z_s = 220k\Omega$

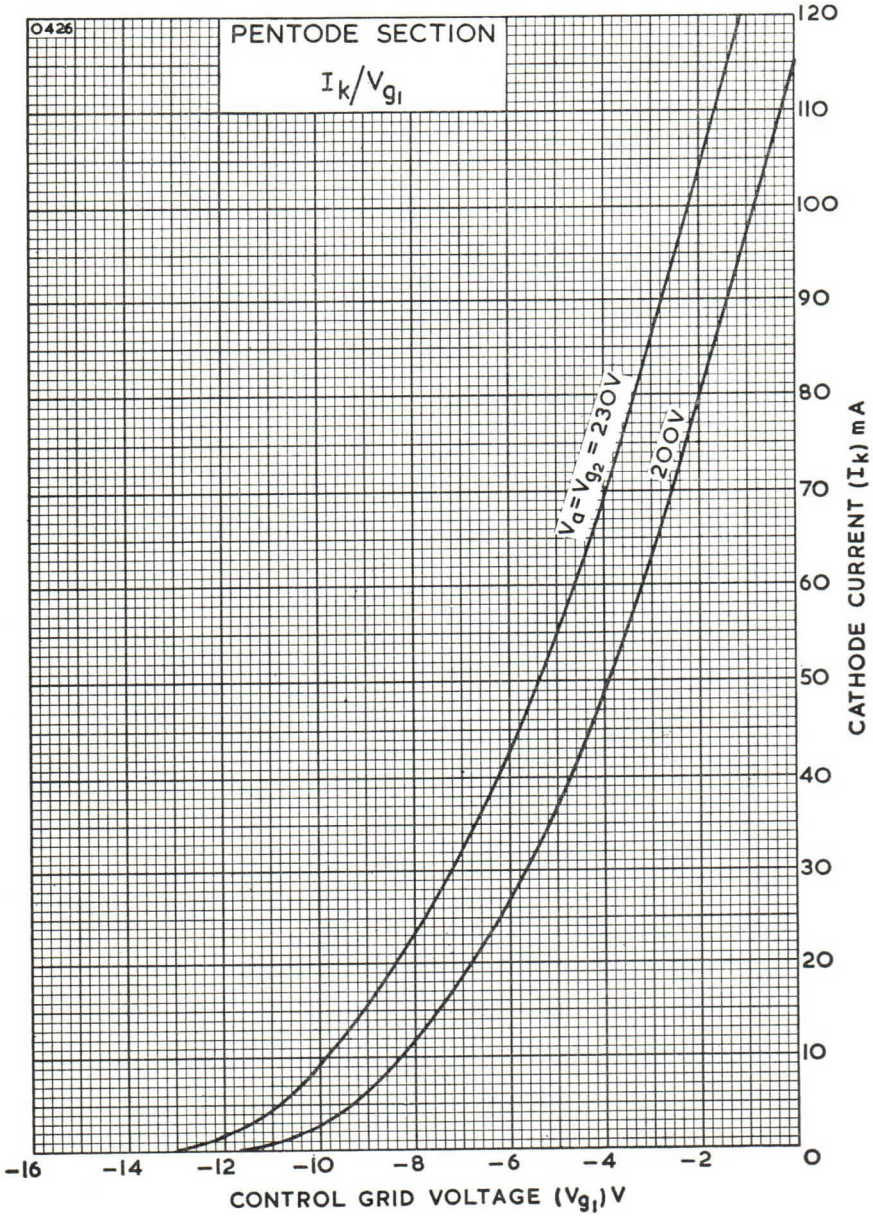
Voltage Amplification for $V_{in(r.m.s.)} = 100mV$	29	42	52	32	45	55	
R.M.S. Output Voltage for 5% total distortion*	11	16	21	18	26	33	V

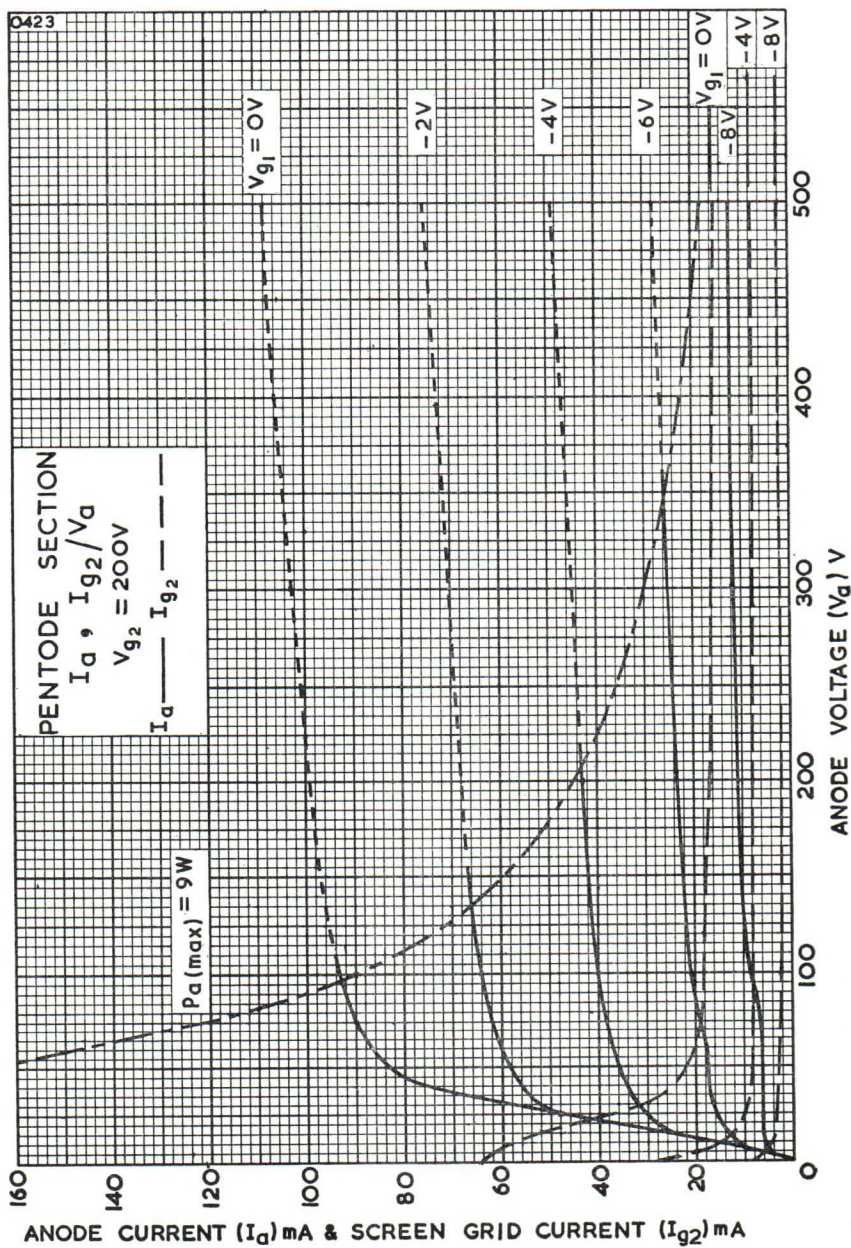
* When operating this valve with grid current bias and a high source impedance, the second harmonic distortion rises to a peak at quite low levels of output (about 10V r.m.s.) and then falls with increasing drive. The third harmonic then begins to rise, and D_{tot} finally reaches 5% at a much higher output level than with zero source impedance. The maximum value of this distortion peak varies inversely with the anode load, being about 5.5% with $R_a = 47k\Omega$, 4.5% with $R_a = 100k\Omega$ and 4% with $R_a = 220k\Omega$.

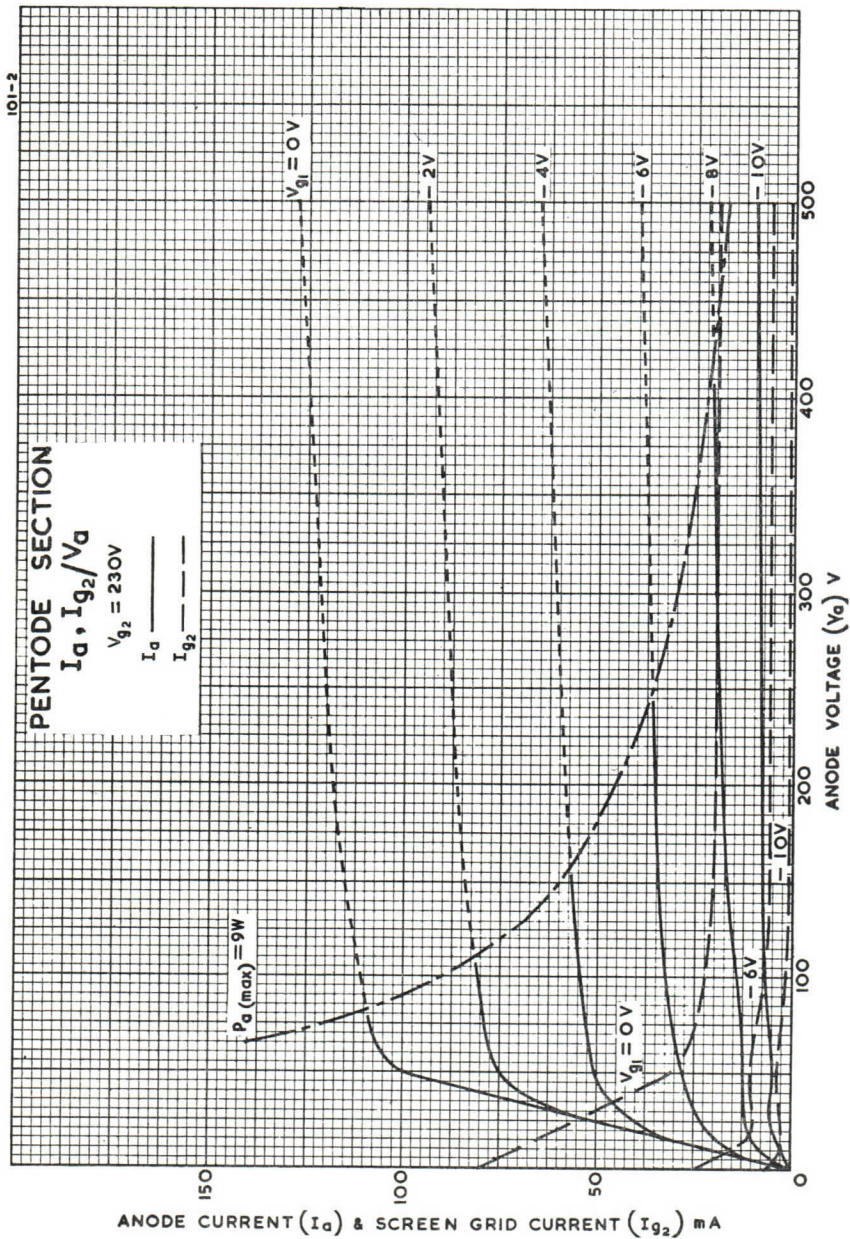
Note: Microphony. This valve may be used without special precautions against microphony in equipment where the input voltage is not less than 10mV for an output of 50 mW.

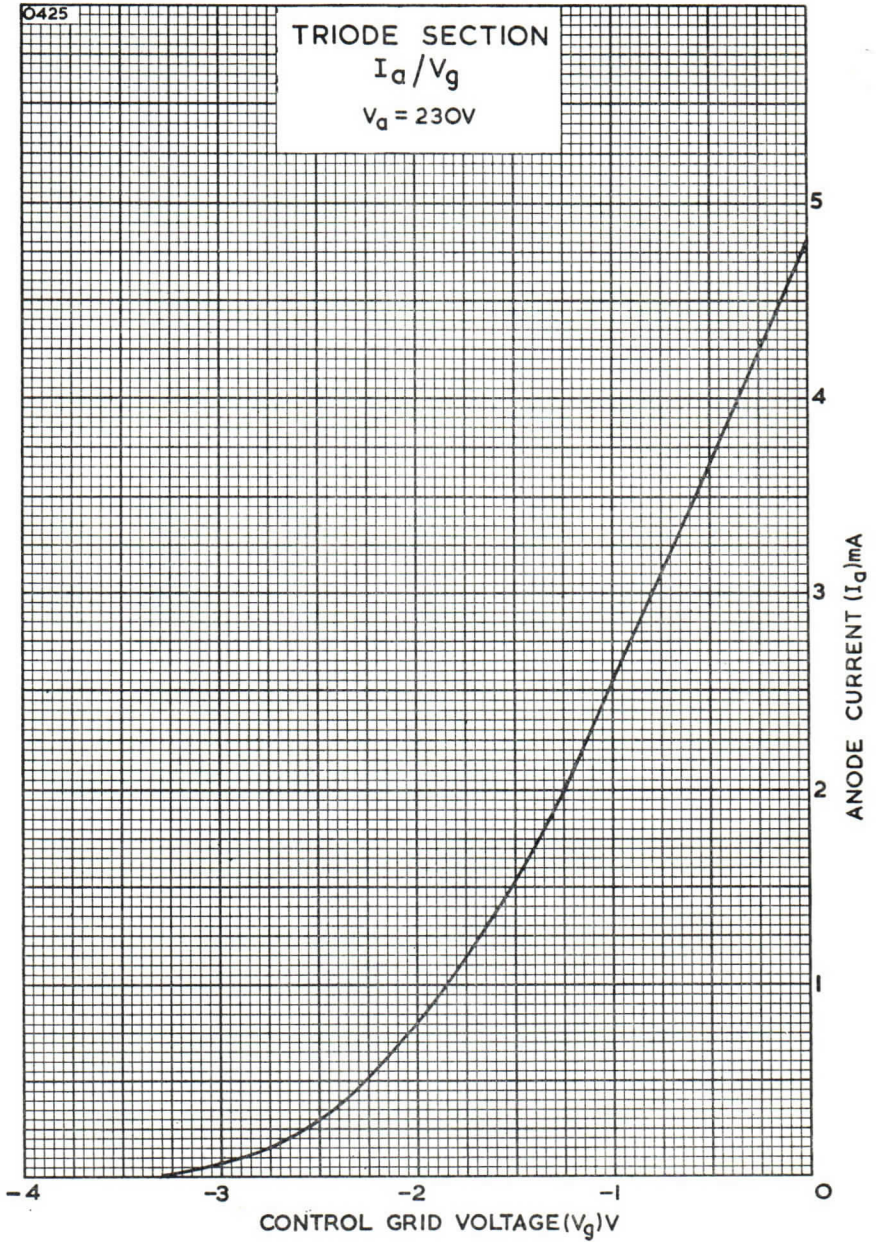
MOUNTING POSITION—Unrestricted.

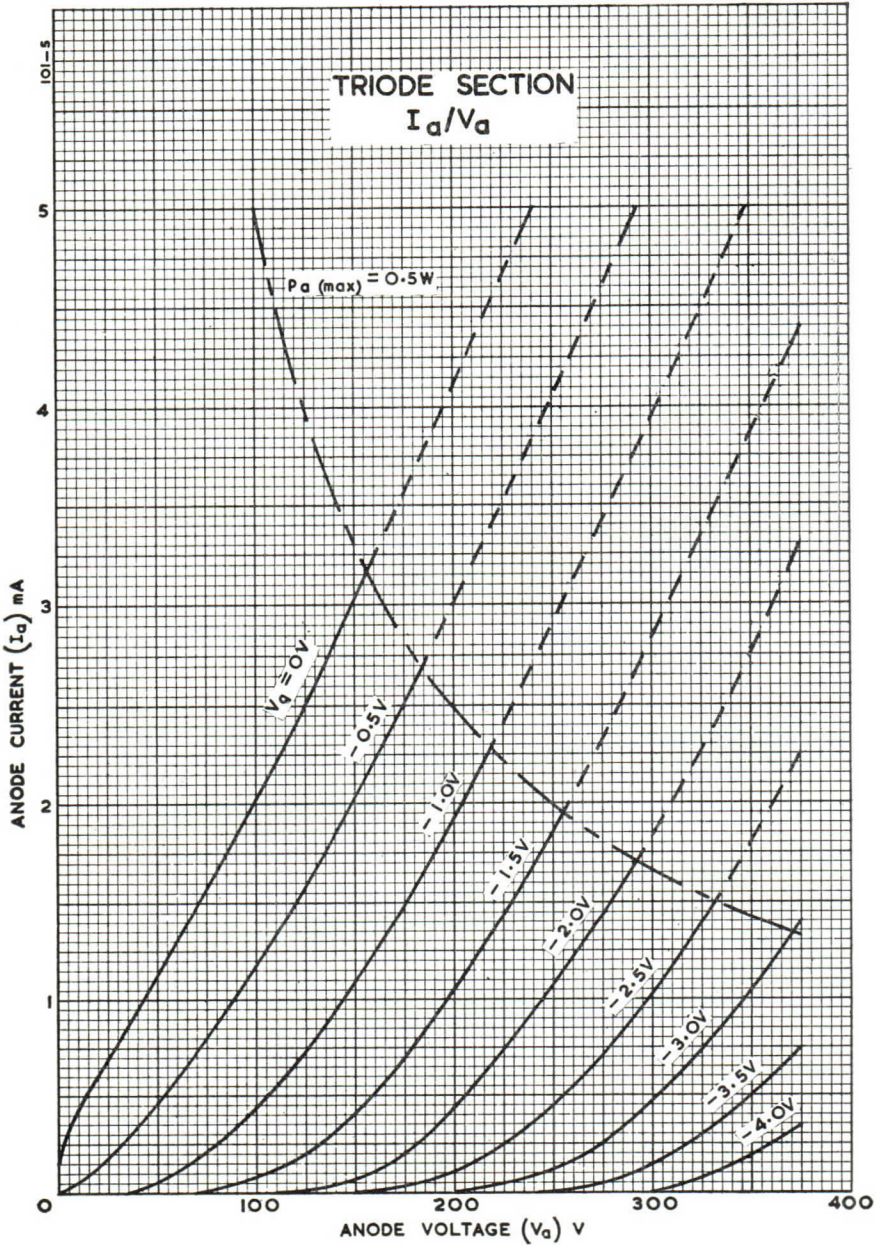












PENTODE SECTION — CLASS A OUTPUT

