

OUTPUT PENTODE

UL84

Output pentode rated for 12W anode dissipation and with 100mA heater for use in equipment with series connected heaters.

HEATER

I_h	100	mA
V_h	45	V

CAPACITANCES

C_{in}	12	pF
C_{out}	6.5	pF ←
C_{a-g1}	< 600	mpF
C_{g1-h}	< 250	mpF

CHARACTERISTICS

V_a	100	170	200	V
V_{g2}	100	170	*	V
I_a	43	70	60	mA
I_{g2}	3.0	5.0	4.1	mA
V_{g1}	-6.7	-12.5	-17.3	V
g_m	9.0	10	8.8	mA/V
r_a	23	23	28	kΩ
I_{g1-g2}	8.0	8.0	8.0	

* $V_{g2(b)} = 200V$, $R_{g2} = 470\Omega$

OPERATING CONDITIONS AS SINGLE VALVE AMPLIFIER

V_a	100	170	200	V
V_{g2}	100	170	*	V
R_k	145	170	270	Ω
R_a	2.4	2.4	2.4	kΩ
I_a	43	70	60	mA
$I_{g2(0)}$	3.0	5.0	4.1	mA
$V_{in(r.m.s.)}$ ($P_{out}=50mW$)	500	500	550	mV
$V_{in(r.m.s.)}$	4.3	7.0	7.8	V
P_{out}	1.9	5.6	5.2	W
D_{tot}	10	10	10	%
$I_{g2(max. sig.)}$	11	22	12.5	mA

* $V_{g2(b)} = 200V$, $R_{g2} = 470\Omega$ undecoupled.

P_{out} and D_{tot} are measured at fixed bias and therefore represent the power output available during the reproduction of speech and music. When a sustained sine wave is applied to the control grid the bias across the cathode resistor will readjust itself as a result of the increased anode and screen-grid currents. This will result in approximately 10% reduction in power output.

OPERATING CONDITIONS FOR TWO VALVES IN PUSH-PULL

Pentode connection

V_a	100	170	200	V
V_{g2}	100	170	200	V
R_k (per valve)	270	240	300	Ω
R_{a-a}	3.5	3.5	3.5	k Ω
$I_{a(o)}$	2×29	2×56.5	2×55	mA
$I_{g2(o)}$	2×1.6	2×3.0	2×2.8	mA
$V_{in(g1-g1)r.m.s.}$	14	26	29	V
P_{out}	3.6	13	15	W
D_{tot}	3.0	4.5	3.5	%
$I_{a(max. sig.)}$	2×31	2×57.5	2×60	mA
$I_{g2(max. sig.)}$	2×7.0	2×20.5	2×15	mA

Distributed load conditions with screen-grid tapping at 20% of primary turns

$V_a + V_{Rk}$	200	V
$V_{g2} + V_{Rk}$	200	V
R_k (per valve)	300	Ω
R_{a-a}	3.5	k Ω
$I_{k(o)}$	2×56.5	mA
$V_{in(g1-g1)r.m.s.}$	23	V
P_{out}	10	W
D_{tot}	0.8	%
$I_{k(max. sig.)}$	2×65	mA

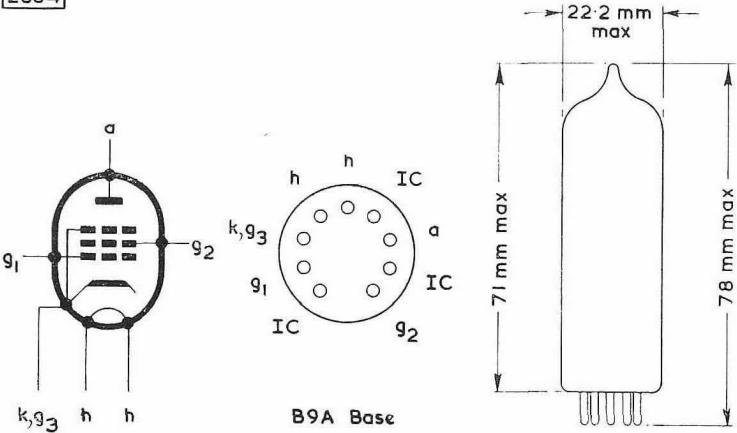
LIMITING VALUES

$V_{a(b)} \text{ max.}$	550	V
$V_a \text{ max.}$	250	V
$p_a \text{ max.}$	12	W
$V_{g2(b)} \text{ max.}$	550	V
$V_{g2} \text{ max.}$	200	V
$p_{g2} \text{ max.}$	1.75	W
$I_k \text{ max.}$	100	mA
$R_{g1-k} \text{ max.}$	300	k Ω
$V_{h-k} \text{ max.}$	200	V
$R_{h-k} \text{ max.}$	20	k Ω

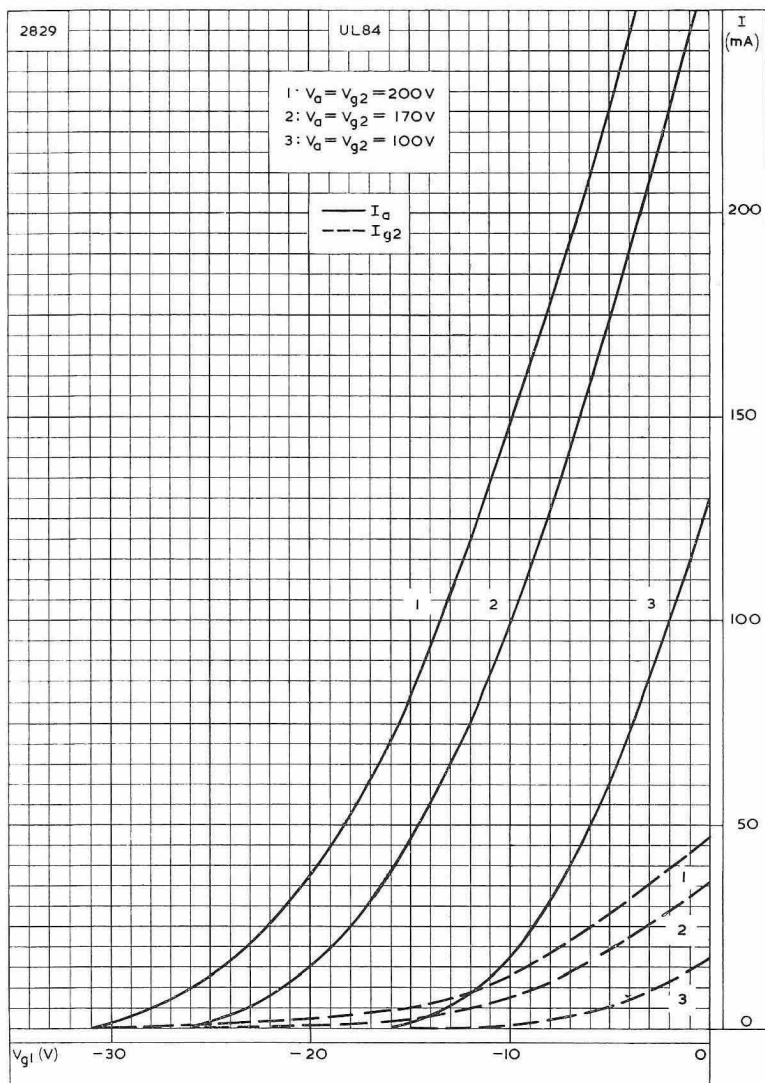
OUTPUT PENTODE

UL84

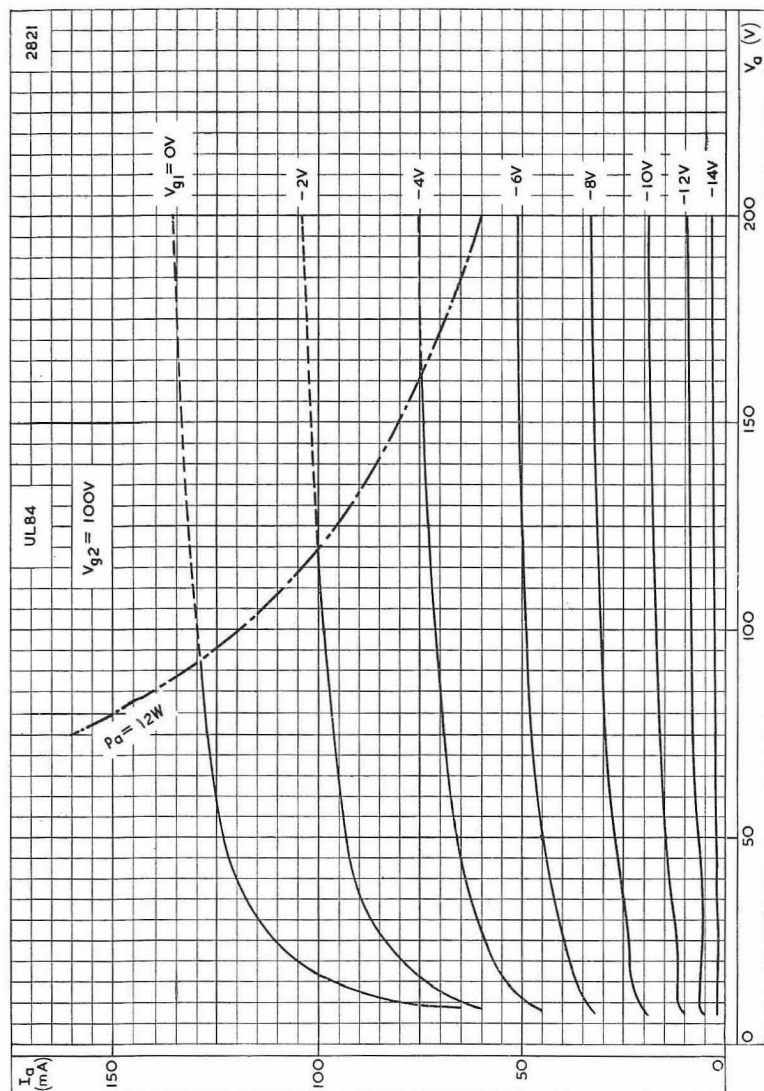
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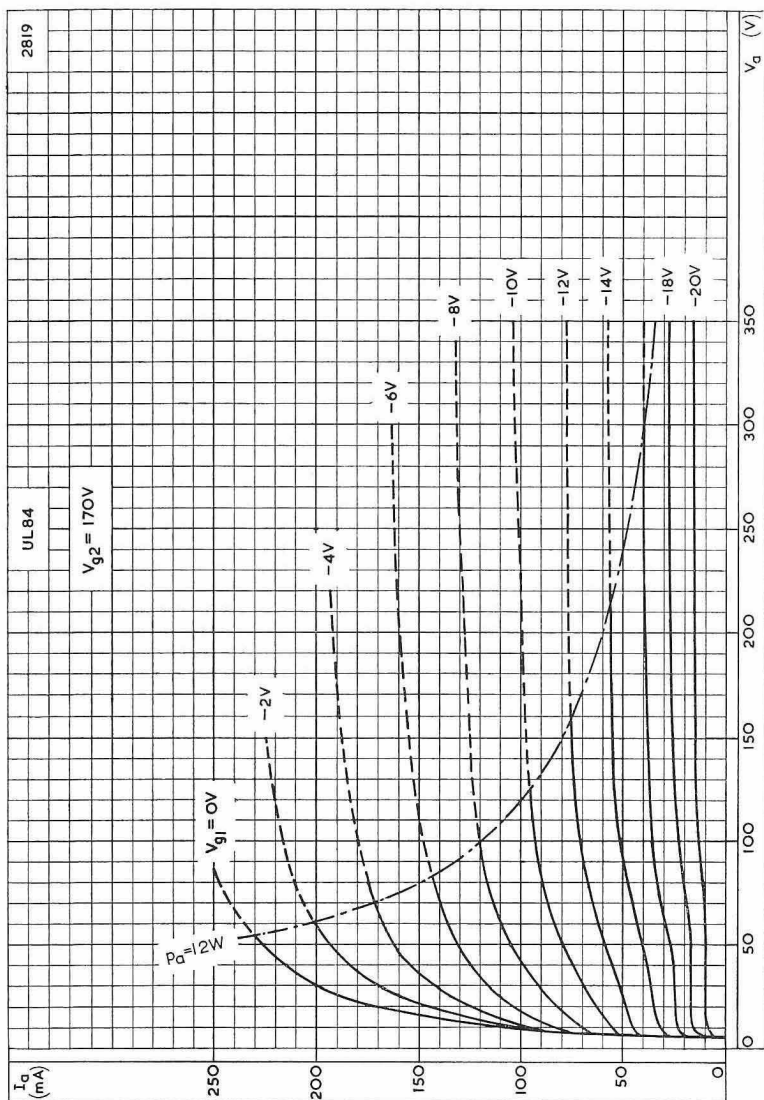




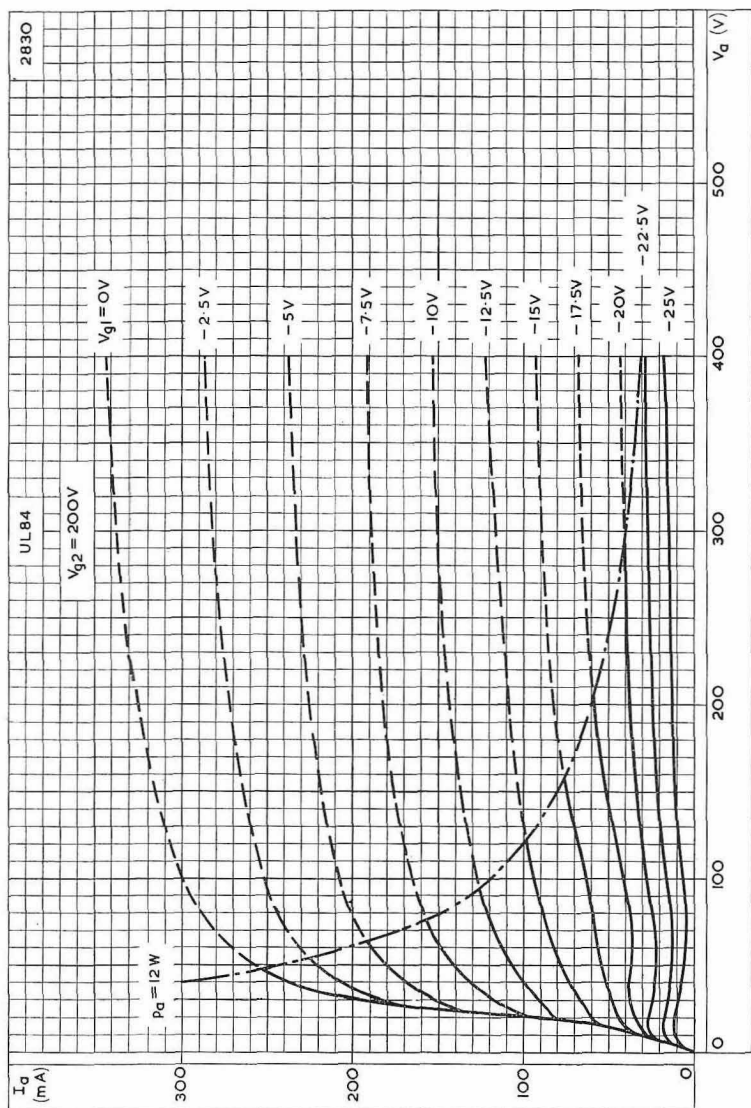
ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST CONTROL-GRID VOLTAGE FOR VARIOUS ANODE AND SCREEN-GRID VOLTAGES



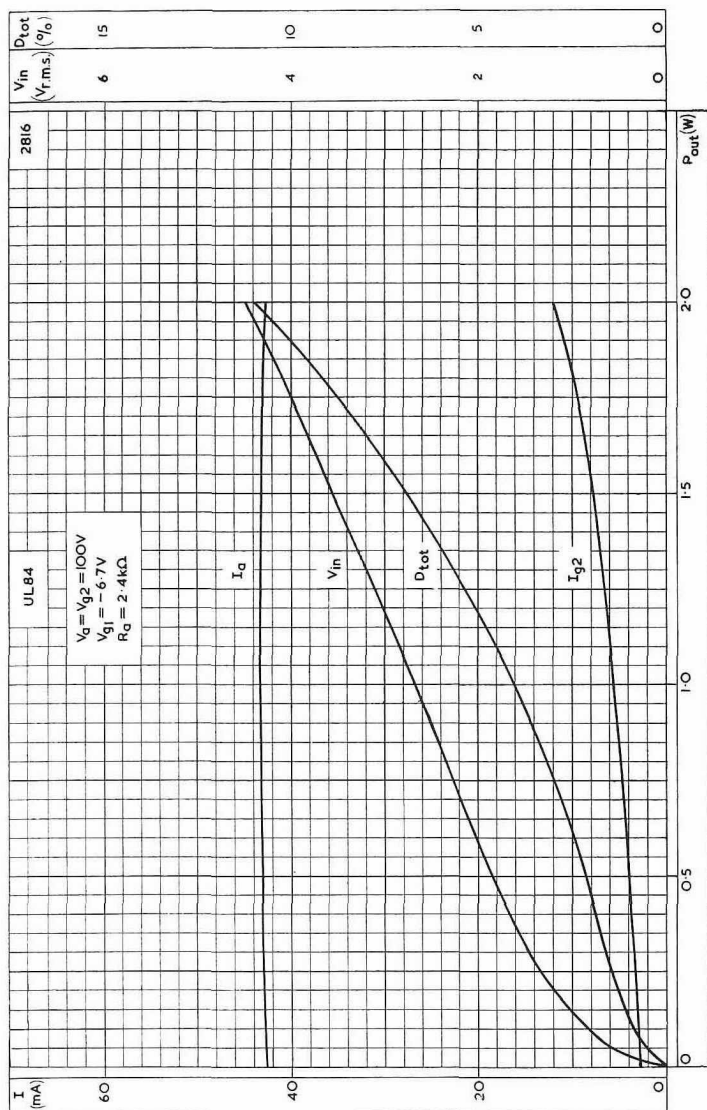
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 100V$



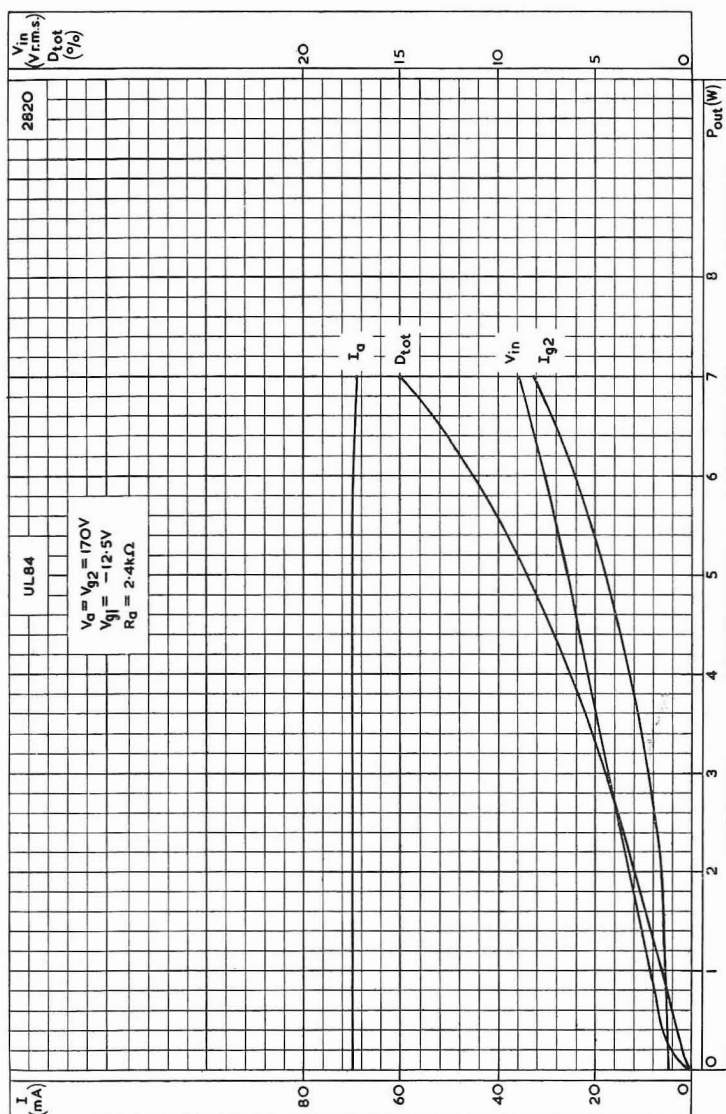
ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 170V$



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-GRID VOLTAGE AS PARAMETER. $V_{g2} = 200V$

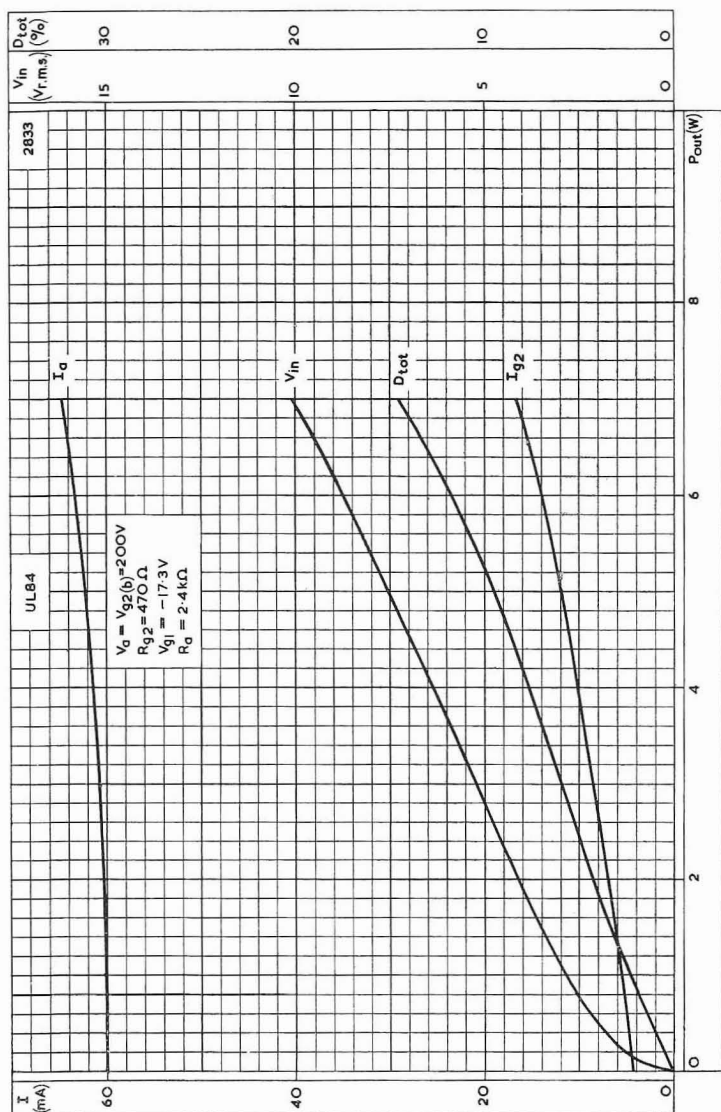


PERFORMANCE OF UL84 WHEN USED AS SINGLE VALVE AMPLIFIER
 $V_a = V_{g2} = 100V$

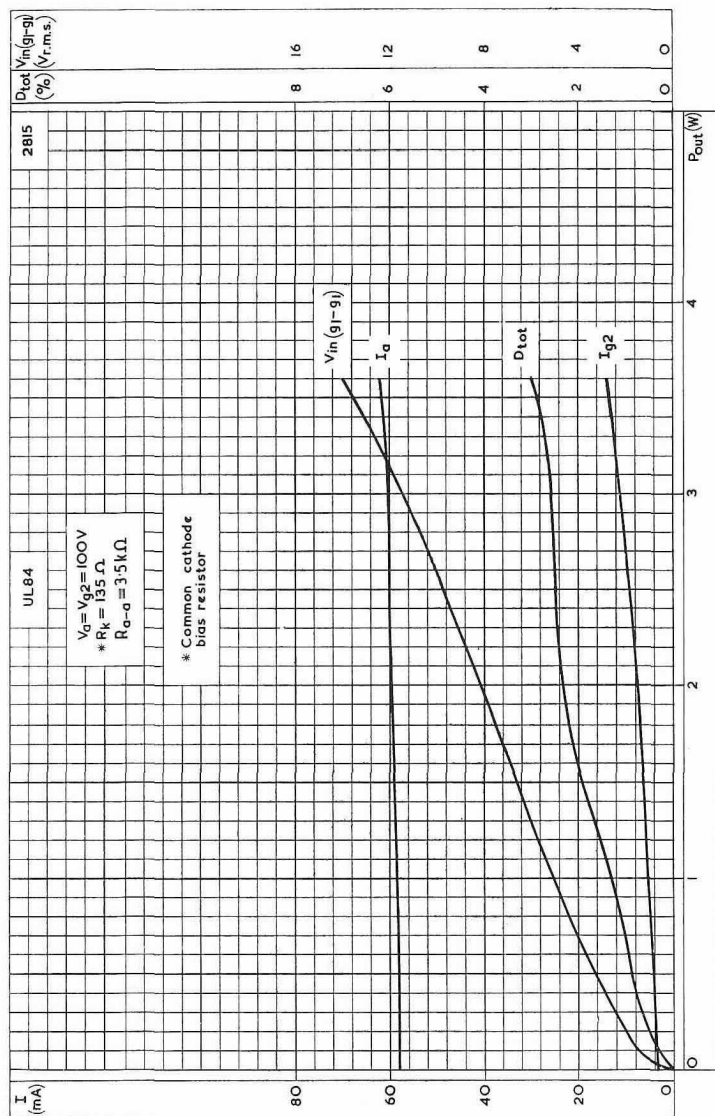


PERFORMANCE OF UL84 WHEN USED AS SINGLE VALVE AMPLIFIER
 $V_a = V_{g2} = 170V$

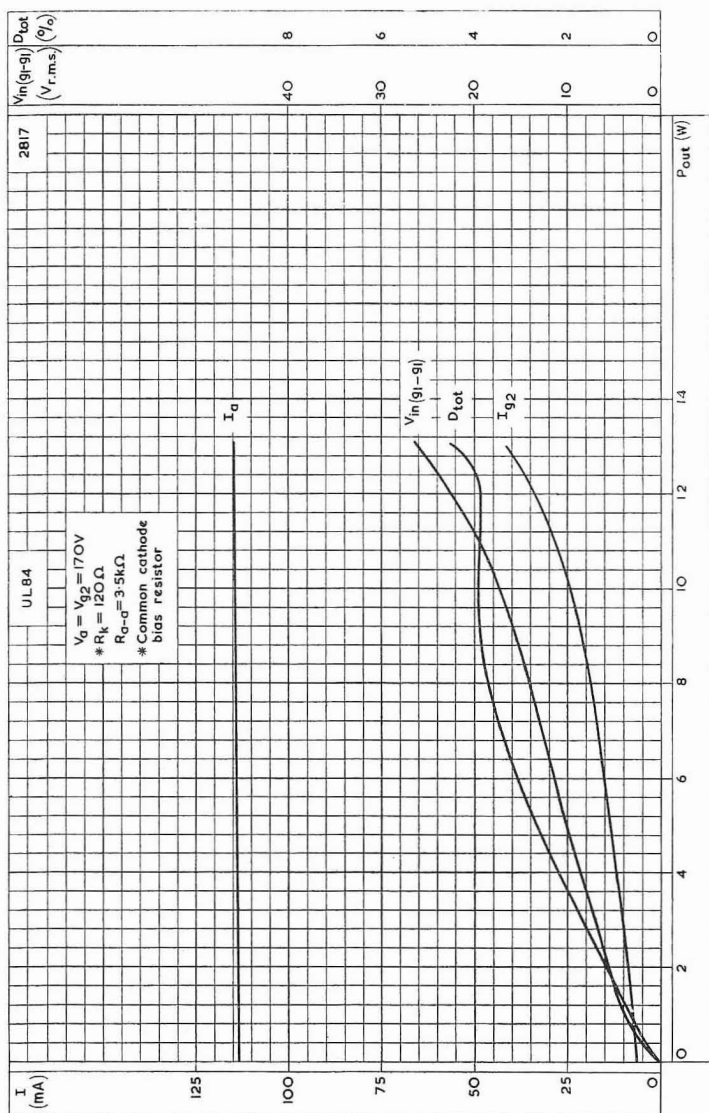




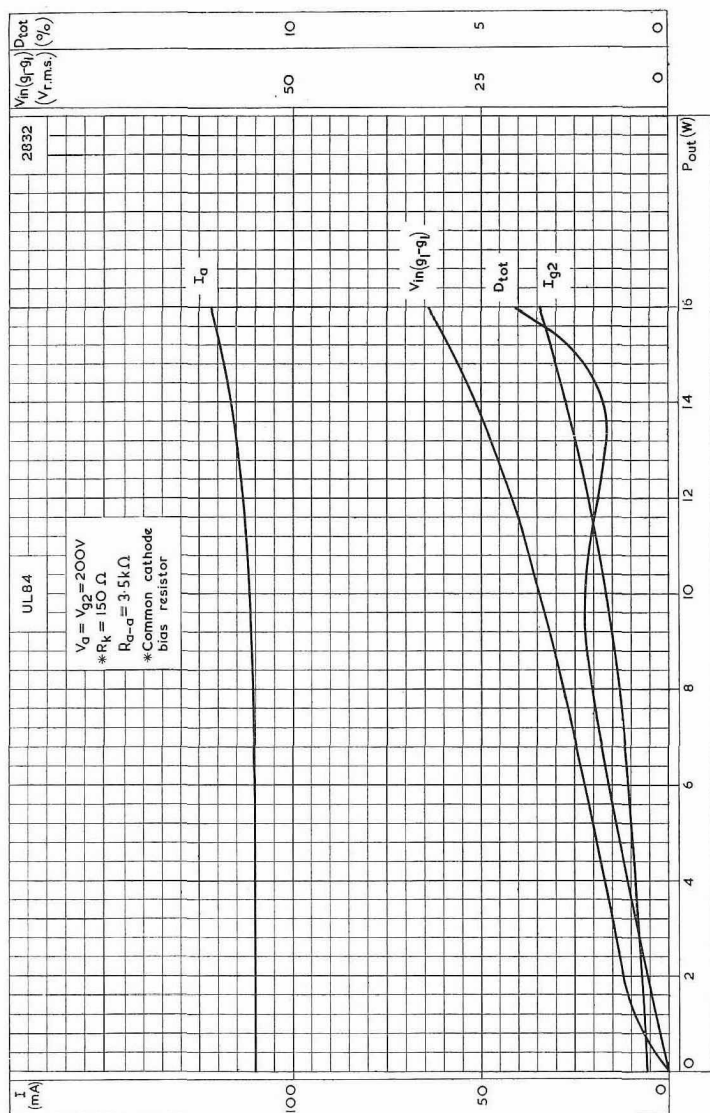
PERFORMANCE OF UL84 WHEN USED AS SINGLE VALVE AMPLIFIER
 $V_a = V_{g2(b)} = 200V$



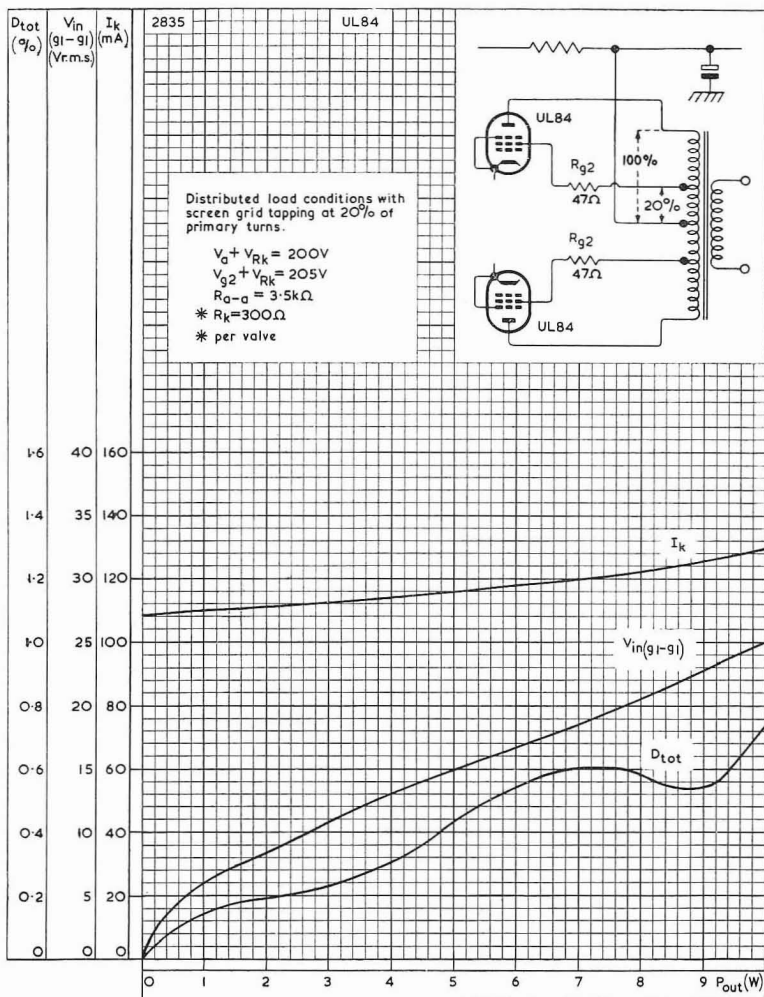
PERFORMANCE OF TWO UL84 IN PUSH-PULL. $V_a = V_{g2} = 100V$



PERFORMANCE OF TWO UL84 IN PUSH-PULL. $V_{a1} = V_{g2} = 170V$



PERFORMANCE OF TWO UL84 IN PUSH-PULL. $V_a = V_{g2} = 200V$



PERFORMANCE OF TWO UL84 IN PUSH-PULL WITH DISTRIBUTED LOAD CONDITIONS. SCREEN-GRID TAPPING AT 20% OF PRIMARY TURNS

