

6P15/EL84

OUTPUT PENTODE

Indirectly heated—for parallel operation



GENERAL

The 6P15/EL84 is a miniature based indirectly heated output pentode having a maximum anode dissipation of 12 watts. It is intended for use in a.c. mains operated equipment having parallel connected heaters.

RATING

Heater Voltage	V_h	6.3	V
Heater Current	I_h	0.76	A
Maximum Anode Voltage	$V_a(\text{max})$	300	V
Maximum Screen Voltage	$V_{g2}(\text{max})$	300	V
Maximum Anode Dissipation	$P_a(\text{max})$	12	W
Maximum Screen Dissipation (continuous)	$P_{g2}(\text{av})\text{max}$	2§	W
Mutual Conductance	g_m	11.3*	mA/V
Valve Anode Resistance ($\delta V_a / \delta I_a$)	r_a	38*	k Ω
Inner Mu	μ_{g1-g2}	19*	
Maximum Mean Cathode Current	$I_k(\text{av})\text{max}$	65	mA
Maximum Heater/Cathode Voltage d.c.	$V_{h-k}(\text{max})$	100	V

* At $V_a = V_{g2} = 250\text{V}$. $I_a = 48\text{mA}$. $V_{g1} = -7.3\text{V}$.

§ On speech and music the permissible rating at max. signal is 4 watts.

INTER-ELECTRODE CAPACITANCES (pF)



		*	†	‡
Anode/Earth	c_{out}	5.7	6.8	7.9
Anode/Grid 1	c_{a-g1}	0.35	0.4	0.4
Grid 1/Earth	c_{in}	10.9	11.5	13.2
Heater/Grid 1	c_{h-g1}	0.1	0.15	0.15

"Earth" denotes all remaining earth potential electrodes including heater, shields and cathode.

† Inter-electrode capacity with holder balanced out.

‡ Total inter-electrode capacity including B9A nylon phenolic holder without skirt or radial shield (Clix Holder VH19/902).

* Inter electrode capacity in fully shielded jig, without can.

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DIMENSIONS

Maximum Overall Length	78 mm
Maximum Diameter	22.2 mm
Maximum Seated Height	71 mm
Approximate Net Weight	$\frac{1}{2}$ ozs
Approximate Packed Weight	$\frac{3}{4}$ ozs

MOUNTING POSITION

Unrestricted but adequate ventilation should be provided.

TYPICAL OPERATION

Single Valve Class A Audio Amplifier. Fixed Bias.



Anode Supply Voltage	$V_{a(b)}$	250	V
Screen Voltage (screen to earth)	V_{g2}	250	V
Anode Current (quiescent)	$I_{a(o)}$	48	mA
Screen Current (quiescent)	$I_{g2(o)}$	5.5	mA
Grid Bias	V_{g1}	-7.3	V
Power Output	P_{out}	4.4† 5.4*	W
Anode Load	RL	4,600† 4,000*	Ω
Input Swing (r.m.s.) (approx.)		3.5† 4.2*	V
Anode Current with Input Swing	I_a	50† 52*	mA
Screen Current with Input Swing	I_{g2}	8.9† 10.2*	mA
Input Swing for 50mW (r.m.s.)		0.25 0.34	V
Input Swing for 250mW (r.m.s.)		0.57 0.75	V

† For 5% third harmonic and second harmonic not exceeding 5%.

* For 7% third harmonic and second harmonic not exceeding 7%.

Taken with constant anode and screen supply voltages and no screen resistance. A voltage drop of 10 volts is assumed across the primary of the output transformer.

Indicates a change ←

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TYPICAL OPERATION

Single Valve Class A Audio Amplifier. Self Bias.

Anode Supply Voltage	$V_{a(b)}$	257	V
Screen Voltage (screen to earth)	V_{g2}	257	V
Anode Current (quiescent)	$I_{a(o)}$	49.5	mA
Screen Current (quiescent)	$I_{g2(o)}$	5.7	mA
Cathode Bias Resistance	R_k	130	Ω
Power Output	P_{out}	4.1†	5.1* W
Anode Load	R_L	4,600†	4,000* Ω
Input Swing (approx) (r.m.s.)	$V_{in(r.m.s.)}$	3.4†	4.3* V
Anode Current with Input Swing	I_a	49†	49* mA
Screen Current with Input Swing	I_{g2}	8.5†	9.8* mA
Input Swing for 50mW (r.m.s.)		0.25	0.34 V
Input Swing for 250mW (r.m.s.)		0.57	0.75 V

† For 5% third harmonic and second harmonic not exceeding 5%.

* For 7% third harmonic and second harmonic not exceeding 7%.

Taken with constant anode and screen supply voltages and no screen resistance. A voltage drop of 10 volts is assumed across the primary of the output transformer.

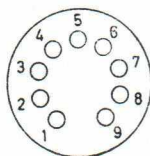
BULB—Clear

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BASE—Noval (B9A)

Viewed from Free End of Pins

CONNECTIONS

Pin 1	Internal Connection	IC
Pin 2	Control Grid	g1
Pin 3	Cathode, Suppressor Grid	k,g3
Pin 4	Heater	h
Pin 5	Heater	h
Pin 6	Internal Connection	IC
Pin 7	Anode	a
Pin 8	Internal Connection	IC
Pin 9	Screen Grid	g2

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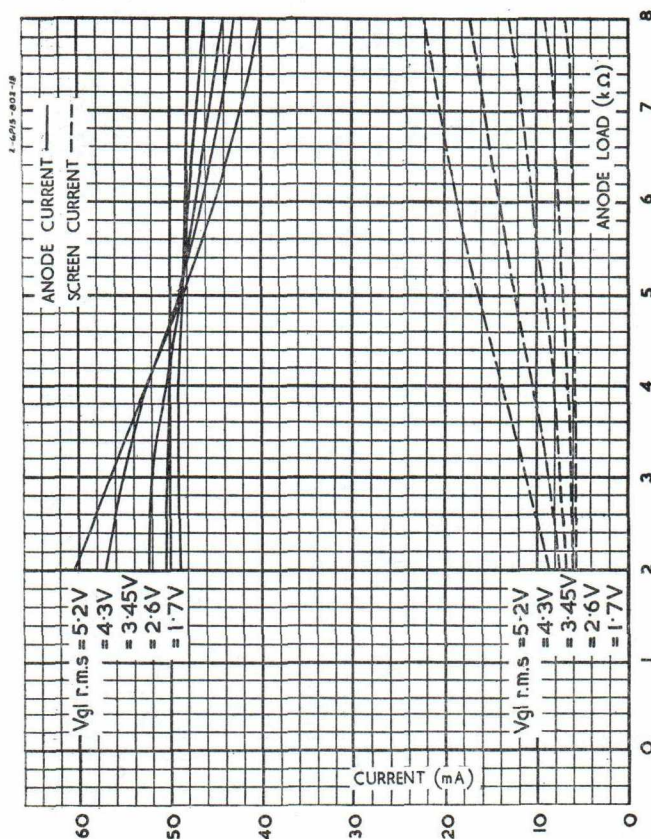
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AVERAGE CHARACTERISTIC CURVES

Working Anode and Screen Current
(fixed bias)

V_a (V)	V_{g2} (V)	$I_{a(o)}$ (mA)	$I_{g2(o)}$ (mA)	V_{g1} (V)
240	250	48	5.5	-7.3

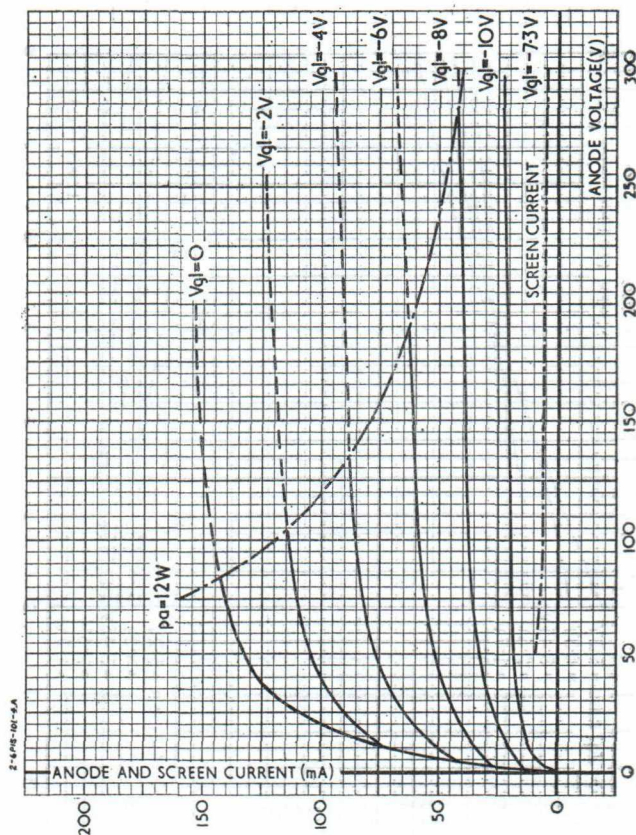


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AVERAGE CHARACTERISTIC CURVES : $I_a, I_{g2}/V_a$
 ($V_h = 6.3V$, $V_{g2} = 250V$)

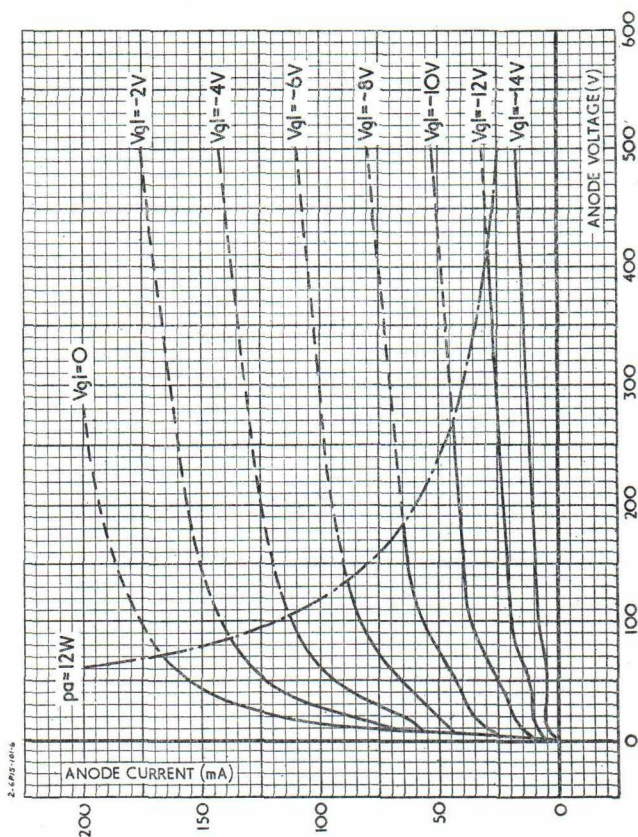


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AVERAGE CHARACTERISTIC CURVES : I_a/V_a
($V_{g2} = 300V$)



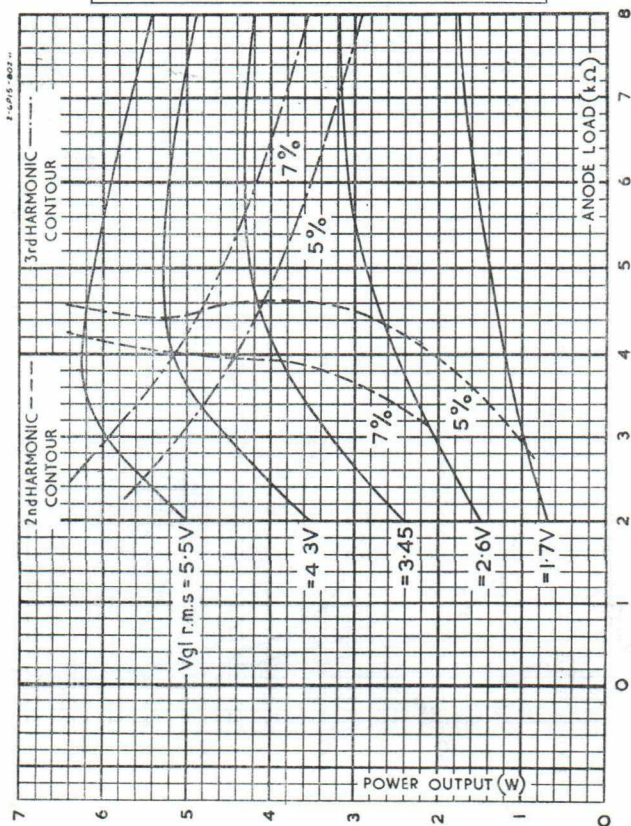
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AVERAGE CHARACTERISTIC CURVES :
Power Output and Harmonic Contours (Self bias)

V_{a-E} (V)	V_{g2-E} (V)	$I_{a(o)}$ (mA)	$I_{g2(o)}$ (mA)	R_k (Ω)
247	257	49.5	5.7	130
R _k bypassed by a condenser				



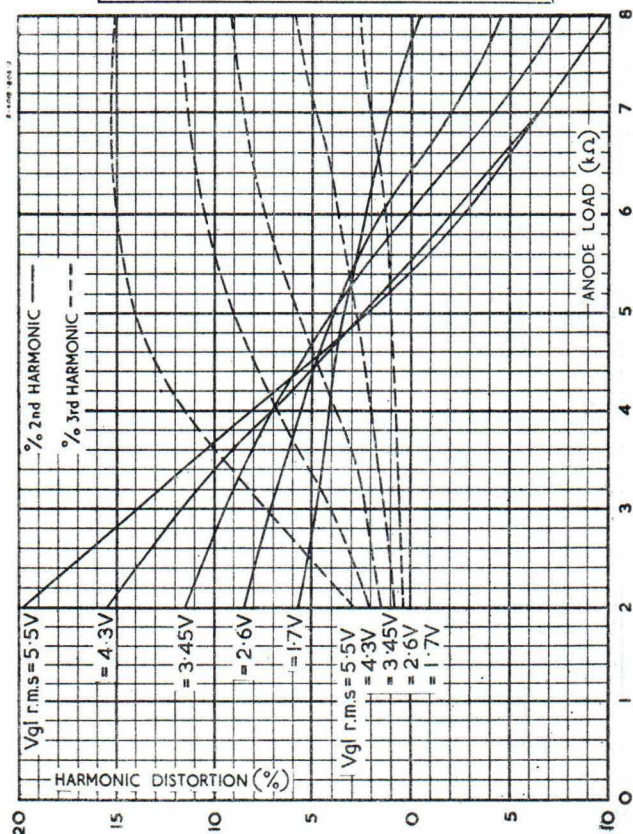
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AVERAGE CHARACTERISTIC CURVES : Harmonic Distortion Curves (self bias)

V_{a-E}	V_{g2-E}	$I_{a(o)}$	$I_{g2(o)}$	R_k
(V)	(V)	(mA)	(mA)	(Ω)
247	257	49.5	5.7	130
R_k bypassed by a condenser				



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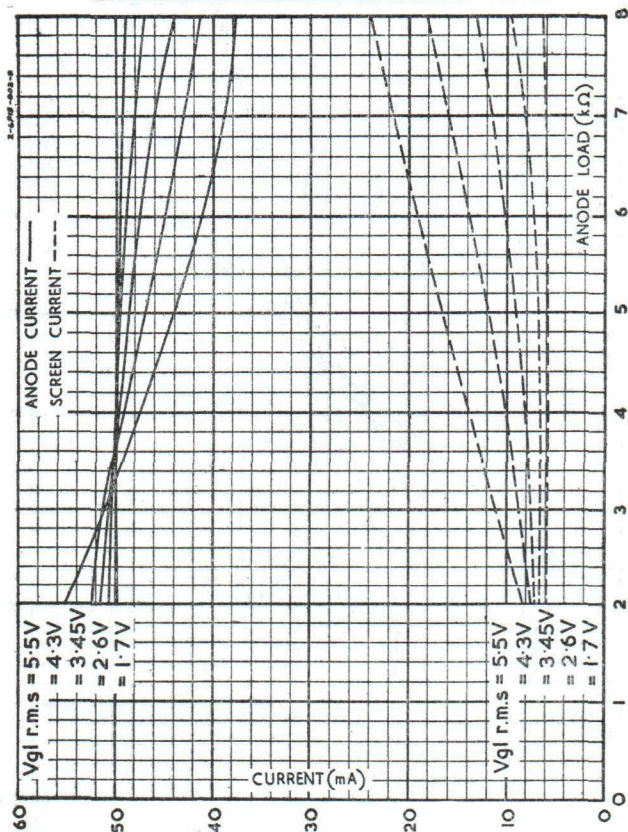
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AVERAGE CHARACTERISTIC CURVES

Working Anode and Screen Current (self bias)

V_{a-E}	V_{g2-E}	$I_{a(o)}$	$I_{g2(o)}$	R_k
(V)	(V)	(mA)	(mA)	(Ω)
247	257	49.5	5.7	130

R_k bypassed by a condenser



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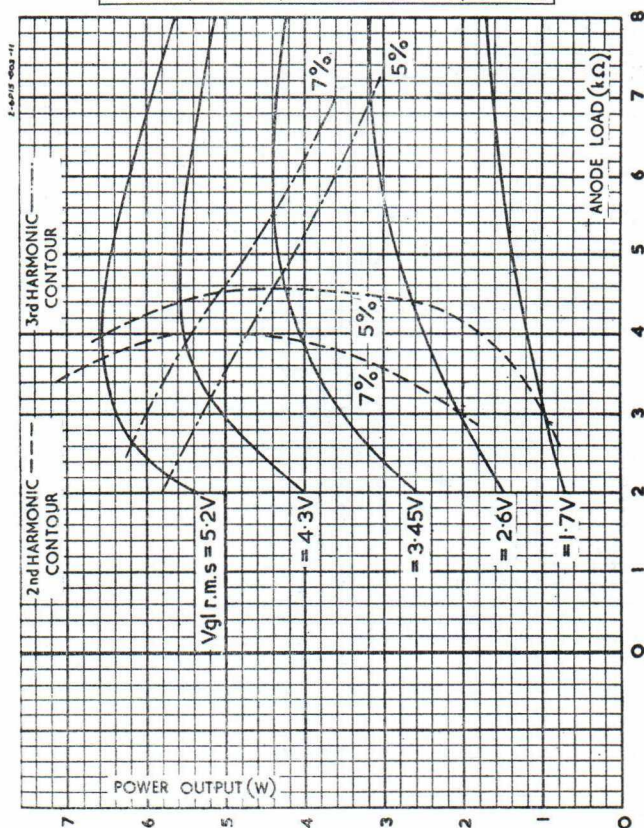
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AVERAGE CHARACTERISTIC CURVES :

Power Output and Harmonic Contours with
Constant D.C. Supply Voltages (fixed bias)

V_a	V_{g2}	$I_{a(o)}$	$I_{g2(o)}$	V_{g1}
(V)	(V)	(mA)	(mA)	(V)
240	250	48	5.5	-7.3



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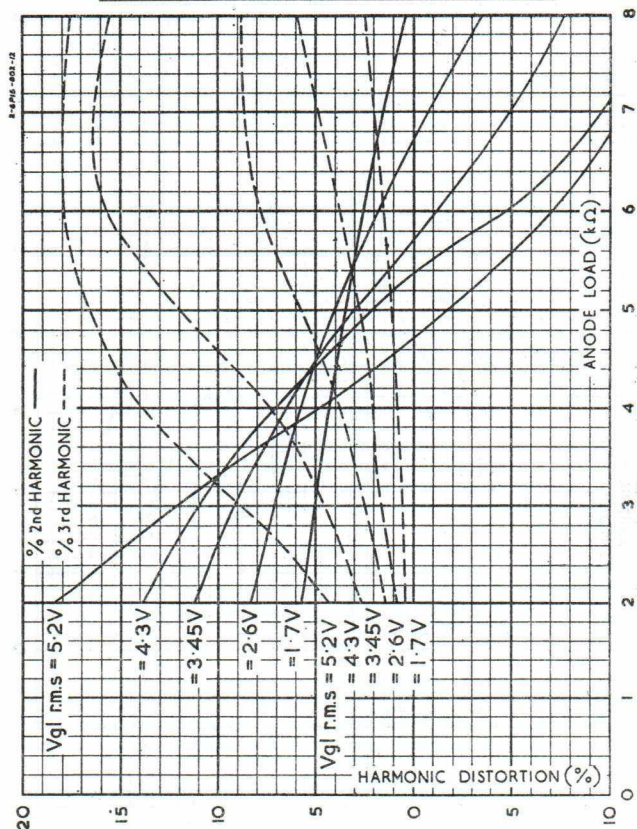
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AVERAGE CHARACTERISTIC CURVES :

Harmonic Distortion Curves
(fixed bias)

V_a	V_{g2}	$I_{a(o)}$	$I_{g2(o)}$	V_{g1}
(V)	(V)	(mA)	(mA)	(V)
240	250	48	5.5	-7.3



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AVERAGE CHARACTERISTIC CURVES : $I_a, I_g/V_{g1}$

