BRIMAR

VALVES

EL506

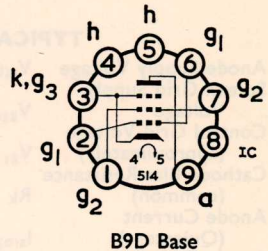## POWER PENTODE

B9D Base

GENERAL

This power pentode is primarily intended for use in the output stages of high-fidelity audio amplifiers.

Heater Voltage	V_h	6·3	V
Heater Current	I_h	0·8	A

RATINGS
(Design Maximum Values)

Maximum Anode Dissipation	$P_{a(max)}$	19	W
Maximum Screen Grid Dissipation	$P_{g2(max)}$	3·3	W
For Speech and Music		6·0	W
Maximum Anode Voltage	$V_{a(max)}$	550	V
Maximum Screen Grid Voltage	$V_{g2(max)}$	440	V
Maximum Peak Heater to Cathode Voltage,	$V_{h-k(pk)max}$		
Heater Negative		200	V
Heater Positive		200*	V
Maximum Mean Cathode Current	$I_{k(av)max}$	85	mA
Maximum Control Grid to Cathode Resistance,	$R_{g1-k(max)}$		
Fixed Bias		0·1	MΩ
Self Bias		0·33	MΩ

* D.C. component must not exceed 100 V.

INTER-ELECTRODE CAPACITANCES (approximately)†

Grid 1 to Anode	c_{g1-a}	<0·4	pF
Grid 1 to Cathode, Grid 3, Grid 2 and Heater	$c_{g1-k,g3,g2,h}$	9·0	pF
Anode to Cathode, Grid 3, Grid 2 and Heater	$c_{a-k,g3,g2,h}$	4·0	pF

† Measured without an external shield.

TYPICAL OPERATION—Class A Single-ended

Anode Voltage	V_a	300	V
Screen Grid Voltage	V_{g2}	300	V
Control Grid Voltage (approximate)	V_{g1}	−10‡	V
Anode Current (Quiescent)	$I_{a(o)}$	60	mA
Anode Current (max. sig.: speech and music)	$I_{a(max.sig.)}$	75	mA
Screen Grid Current (Quiescent)	$I_{g2(o)}$	8·0	mA
Screen Grid Current (max. sig.: speech and music)	$I_{g2(max.sig.)}$	15	mA
Peak A.F. Control Grid Voltage	$V_{g1(pk)}$	10	V
Mutual Conductance	g_m	10·2	mA/V
Valve Anode Resistance ($\delta v_a / \delta i_a$)	r_a	25	kΩ
Anode Load Resistance	R_a	3·0	kΩ
Power Output	P_{out}	10	W
Total Harmonic Distortion	D_{tot}	13	%

‡ The control grid voltage should be adjusted in each case to give $I_{a(o)} = 60$ mA when other voltages are at their nominal values.

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TYPICAL OPERATION—Class AB₁ Push-Pull

Anode Supply Voltage	$V_{a(b)}$	300	350	400	450	450	450	V
Screen Grid Supply Voltage	$V_{g2(b)}$	300	350	350	350	400	400	V
Control Grid Voltage (approximately)	V_{g1}	−12·5‡	−15·5‡	−16‡	−16·5‡	−21‡	—	V
Cathode Bias Resistance (common)	R_k	—	—	—	—	—	170	Ω
Anode Current (Quiescent)	$I_{a(o)}$	2×43	2×46	2×42·5	2×38·5	2×33	2×41	mA
Anode Current (maximum signal)	$I_{a(max\ sig)}$	2×58	2×65	2×71·5	2×76·5	2×72	2×47	mA
Screen Grid Current (Quiescent)	$I_{g2(o)}$	2×6·3	2×6·5	2×5·5	2×4·8	2×4·7	2×5·8	mA
Screen Grid Current (max sig)	$I_{g2(max\ sig)}$	2×13	2×14·3	2×13·5	2×13·5	2×15	2×11	mA
Peak A.F. Grid to Grid Voltage	$v_{g1\text{-}g1(pk)}$	25	31	32	33	42	31	V
Anode to Anode Load Resistance	$R_{a\text{-}a}$	6·6	6·6	6·6	6·6	6·6	9·0	kΩ
Power Output	P_{out}	23	30	37	43	45	28	W
Total Harmonic Distortion	D_{tot}	2·5	2·0	1·5	1·5	1·5	2·0	%

‡ The control grid voltage should be adjusted in each valve to give the stated quiescent anode current when other voltages are at their nominal values.

ANODE CURRENT (I_a) mA

CONTROL GRID VOLTAGE (V_{g_1}) V

I_a / V_{g_1}
$V_a = 500V$

$V_{g_2} = 400V$

350V

I_a/V_a

$V_{g_2} = 350V$

$P_{a (max)} = 19W$

$V_{g_1} = 0V$, $-2V$, $-4V$, $-6V$, $-8V$, $-10V$, $-12V$, $-14V$

ANODE VOLTAGE (V_a) V

ANODE CURRENT (I_a) mA

I_a / V_a

$V_{g_2} = 400V$

$P_a (max) = 19W$

$V_{g_1} = 0V$

$-2V$
$-4V$
$-6V$
$-8V$
$-10V$
$-12V$
$-14V$
$-16V$

ANODE VOLTAGE (V_a) V

ANODE CURRENT (I_a) mA

CLASS AB1 PUSH PULL

$I_{a(tot)}$, $I_{g_2(tot)}$, $V_{in(rms)}$, $D_{tot.}/P_{out}$

$V_a = 450V$ $V_{g_2} = 400V$

$V_{g_1} = -21V$ $R_{a-a} = 6·6k\Omega$

TOTAL HARMONIC DISTORTION (D_{tot}) %

R.M.S. INPUT VOLTAGE EACH VALVE $(V_{in(rms)})$ V

POWER OUTPUT (P_{out}) W

TOTAL ANODE $(I_{a(tot)})$ & SCREEN GRID CURRENT $(I_{g_2(tot)})$ mA