A.F. OUTPUT PENTODE

Pentode intended for use as A.F. power amplifier.

QUICK REFERENCE DATA			
Anode current	I_a	100	mA
Transconductance	S	12.5	mA/V
Amplification factor	$\mu_{g_2g_1}$	11	
Output power, class B		100	W

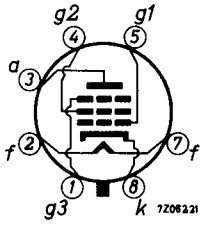
HEATING: Indirect by A.C. or D.C.; parallel supply

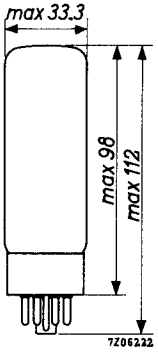
Heater voltage	V_f	6.3	V
Heater current	I_f	1.5	A

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Octal

Socket: 5903/13





CAPACITANCES

Anode to all except grid No.1	$C_{a(g_1)}$	8.4	pF
Grid No.1 to all except anode	$C_{g_1(a)}$	15.2	pF
Anode to grid No.1	C_{ag_1}	max. 1.1	pF
Grid No.1 to heater	C_{g_1f}	max. 1.0	pF
Cathode to heater	C_{kf}	10	pF

OPERATING CHARACTERISTICS

Class A

Supply voltage	V_b	265	265	V
Anode voltage	V_a	250	250	V
Grid No.2 series resistor	R_{g_2}	2	0	kΩ
Grid No.3 voltage	V_{g_3}	0	0	V
Grid No.1 voltage	V_{g_1}	-14.5	-13.5	V
Anode current	I_a	70	100	mA
Grid No.2 current	I_{g_2}	10	14.9	mA
Transconductance	S	11	12.5	mA/V
Amplification factor	$\mu_{g_2g_1}$	11	11	
Internal resistance	R_i	20	17	kΩ
Load resistance	$R_{a\sim}$	3.0	2.0	kΩ
Grid No.1 driving voltage	V_i	9.3	8.7	V_{RMS}
Output power	W_o	8	11	W
Distortion	d_{tot}	10	10	%
Grid No.1 driving voltage for W_o = 50 mW	V_i	0.65	0.5	V_{RMS}

OPERATING CHARACTERISTICS

Class B, two tubes in push-pull

Common grid No.2 series resistor (non decoupled)	R_{g_2}		1000			470		Ω
Grid No.1 voltage	V_{g_1}		−38			−32		V
Grid No.3 voltage	V_{g_3}		0			0		V
Grid No.1 driving voltage	V_i	0	27	27	0	22.7	22.7	V_{RMS}
Load resistance	$R_{aa\sim}$	–	3.4	4.0	–	2.8	3.8	kΩ
Supply voltage	V_b	425	425	400	375	375	350	V
Anode voltage	V_a	420	400	375	370	350	325	V
Anode current	I_a	2x30	2x120	2x100	2x35	2x120	2x93	mA
Grid No.2 current	I_{g_2}	2x4.4	2x25	2x25	2x4.7	2x25	2x25	mA
Output power	W_o	0	55	45	0	44	36	W
Distortion	d_{tot}	–	5	6	–	5	6	%

Common grid No.2 series resistor (non decoupled)	R_{g_2}		750			750		Ω
Grid No.1 voltage	V_{g_1}		−36			−39		V
Grid No.3 voltage	V_{g_3}		0			0		V
Grid No.1 driving voltage	V_i	0	25.8	25.8	0	23.4	23.4	V_{RMS}
Load resistance	$R_{aa\sim}$	–	4	5	–	11	11	kΩ
Anode supply voltage	V_{ba}	500	500	475	800	800	750	V
Anode voltage	V_a	495	475	450	795	775	725	V
Grid No.2 supply voltage	V_{bg_2}	400	400	375	400	400	375	V
Anode current	I_a	2x30	2x125	2x102	2x25	2x91	2x84	mA
Grid No.2 current	I_{g_2}	2x4	2x25	2x25	2x3	2x19	2x19	mA
Output power	W_o	0	70	58	0	100	90	W
Distortion	d_{tot}	–	5	6	–	5	6	%

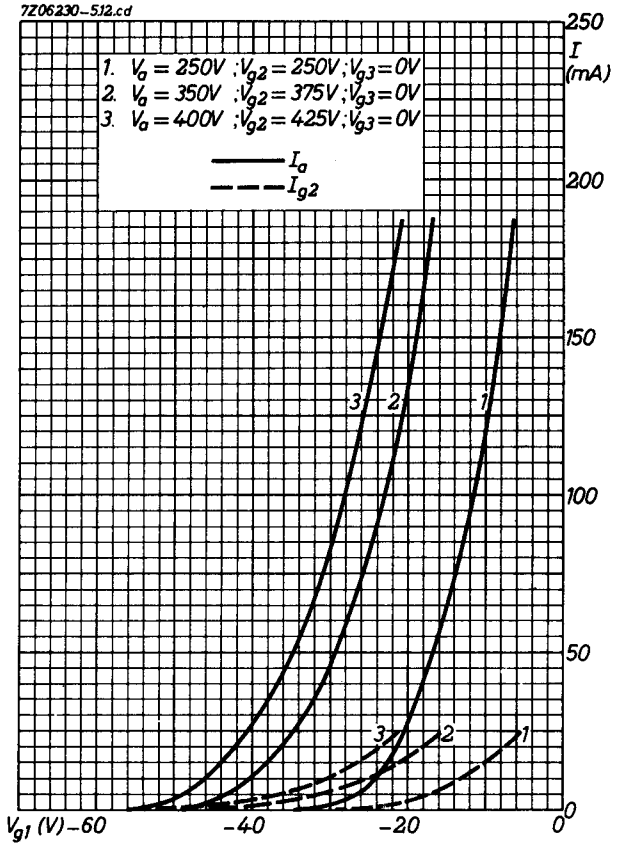
OPERATING CHARACTERISTICS

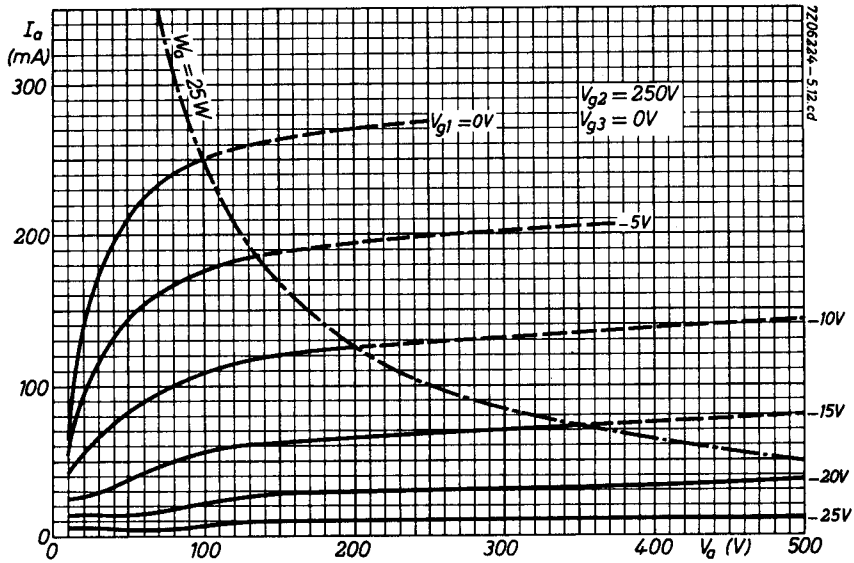
Class AB, two tubes in push-pull

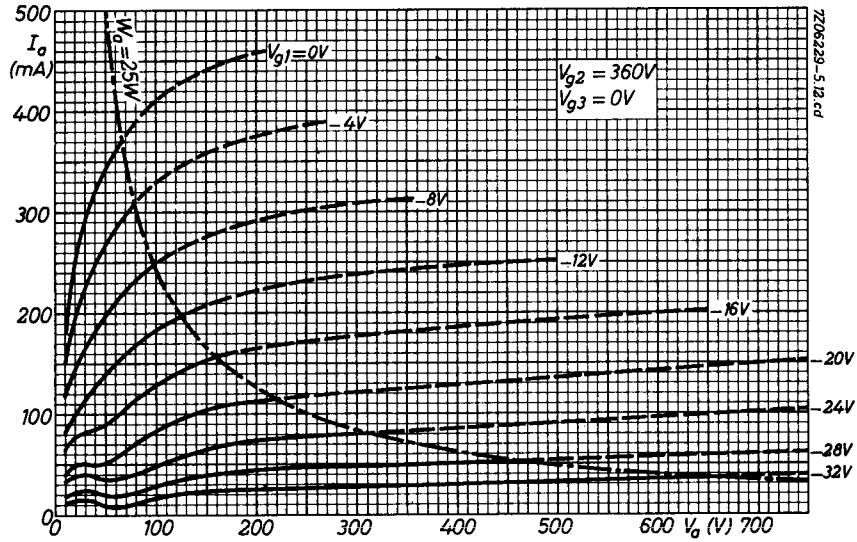
Load resistance	$R_{aa\sim}$	3.4		kΩ
Common grid No.2 series resistor (non decoupled)	R_{g_2}	470		Ω
Common cathode resistor	R_k	130		Ω
Grid No.3 voltage	V_{g_3}	0		V
Grid No.1 driving voltage	V_i	0	21	V_{RMS}
Supply voltage	V_b	375	375	V
Anode to earth voltage	V_a+V_{Rk}	355	350	V
Anode current	I_a	2x75	2x95	mA
Grid No.2 current	I_{g_2}	2x11.5	2x22.5	mA
Output power	W_o	0	35	W
Distortion	d_{tot}	-	5	%

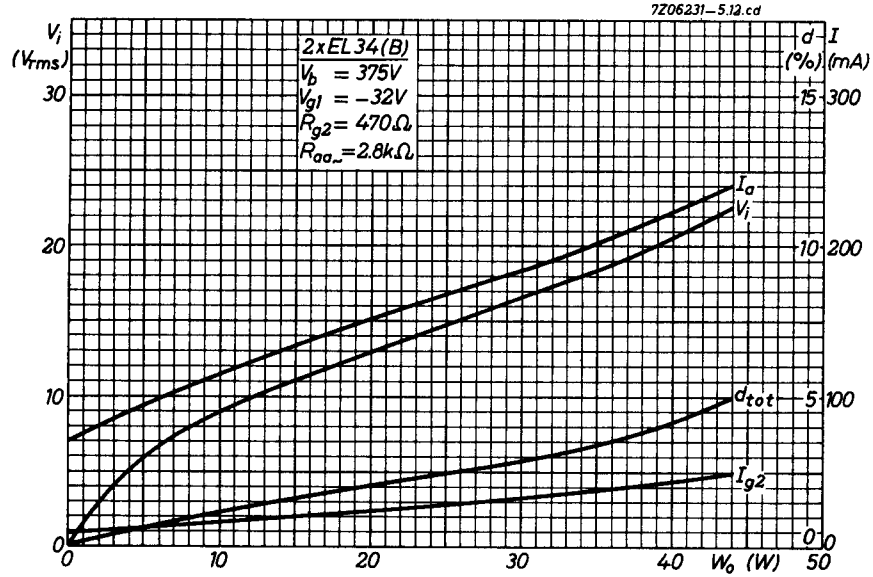
LIMITING VALUES (Design centre rating system)

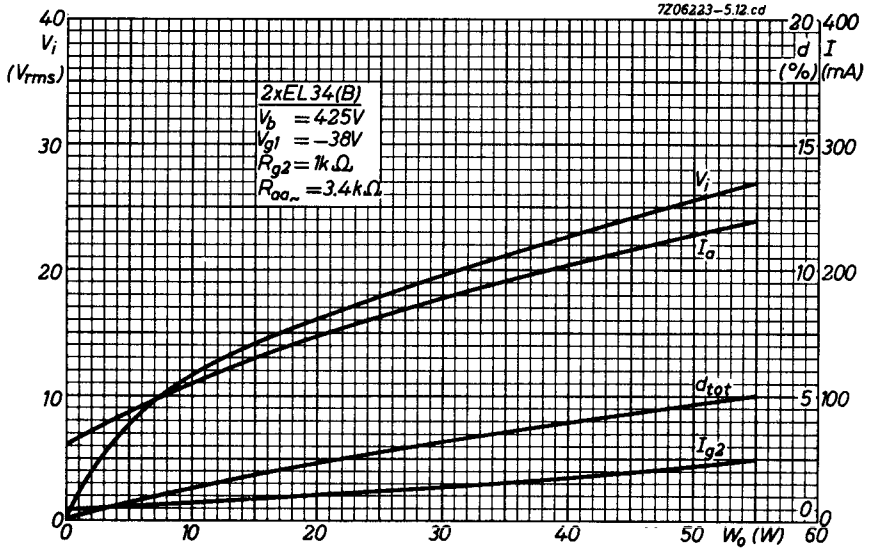
Anode voltage	V_{a_o}	max.	2000	V
	V_a	max.	800	V
Grid No.2 voltage	V_{g2_o}	max.	800	V
	V_{g_2}	max.	500	V
Anode dissipation				
at $V_i = 0$	W_a	max.	25	W
at $V_i > 0$	W_a	max.	27.5	W
Grid No.2 dissipation	W_{g_2}	max.	8	W
Cathode current	I_k	max.	150	mA
Grid No.1 resistor				
for class A and AB	R_{g_1}	max.	0.7	MΩ
for class B	R_{g_1}	max.	0.5	MΩ
Cathode to heater voltage	V_{kf}	max.	100	V

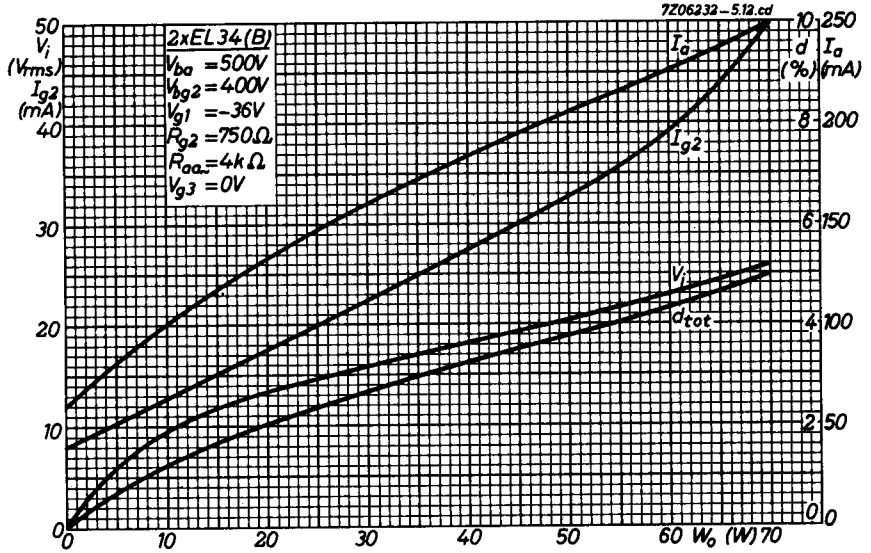

7Z06230-512.cd
1. V_a = 250V ; V_{g2} = 250V ; V_{g3} = 0V
2. V_a = 350V ; V_{g2} = 375V ; V_{g3} = 0V
3. V_a = 400V ; V_{g2} = 425V ; V_{g3} = 0V
I_a
I_{g2}
I (mA)
250
200
150
100
50
0
3
2
1
3
2
1
V_{g1} (V) -60
-40
-20
0

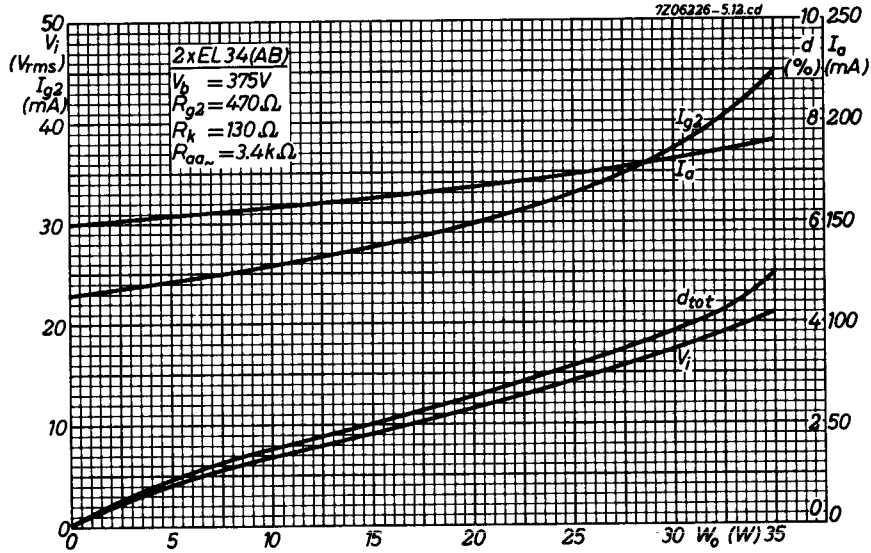

I_a (mA)
W_a = 25W
V_{g2} = 250V
V_{g3} = 0V
V_{g1} = 0V
-5V
-10V
-15V
-20V
-25V
0
100
200
300
400
500
V_a (V)
7Z06224-5.12.cd


500
I_a (mA)
W_a = 25W
V_{g1} = 0V
V_{g2} = 360V
V_{g3} = 0V
-4V
-8V
-12V
-16V
-20V
-24V
-28V
-32V
0
100
200
300
400
500
600
700
V_a (V)
7Z06229-5.12.cd


7Z06231–5.12.cd
V_i (V_{rms})
d (%)
I (mA)
2xEL34(B)
V_b = 375V
V_{g1} = −32V
R_{g2} = 470Ω
$R_{aa\sim}$ = 2.8kΩ
I_a
V_i
d_{tot}
I_{g2}
W_o (W)


7Z06223–5.12.cd
V_i (V_{rms})
d (%)
I (mA)
2xEL34(B)
V_b = 425V
V_{g1} = −38V
R_{g2} = 1kΩ
$R_{aa\sim}$ = 3.4kΩ
V_i
I_a
d_{tot}
I_{g2}
W_o (W)


7Z06232-5.12.cd
2xEL34(B)
V_{ba} =500V
V_{bg2} =400V
V_{g1} =-36V
R_{g2} =750Ω
$R_{aa\sim}$=4kΩ
V_{g3} =0V
V_i (V_{rms})
I_{g2} (mA)
I_a
I_{g2}
V_i
d_{tot}
d (%)
I_a (mA)
W_o (W)


7Z06226-5.12.cd
2xEL34(AB)
V_b =375V
R_{g2}=470Ω
R_k =130Ω
$R_{aa\sim}$=3.4kΩ
V_i (V_{rms})
I_{g2} (mA)
I_{g2}
I_a
d_{tot}
V_i
d (%)
I_a (mA)
W_o (W)

PHILIPS

Data handbook

Electronic components and materials

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9	FP	19990319