

FERRANTI OUTPUT PENTODE

A directly heated miniature Pentode with a centre-tapped filament designed for use in the output stage of Battery Operated Receivers. The low drain filament is suitable only for DC. operation but the sections may be connected either in series or parallel.

PHYSICAL DETAILS.

Base	...	...	B7G—All Glass.
Max. Overall Length	...	...	54.5 mm. (2 $\frac{1}{8}$ in.).
Max. Seated Height	...	...	47.5 mm. (1 $\frac{3}{4}$ in.).
Max. Diameter	...	...	19.0 mm. ($\frac{3}{4}$ in.).

BASE CONNECTIONS.

Pin 1—Filament (–).	Pin 5—Filament centre tap and
Pin 2—Anode.	Suppressor Grid (g_3).
Pin 3—Screen Grid (g_2).	Pin 6—Control Grid (g_1).
Pin 4—No Connection.	Pin 7—Filament (+).

FILAMENT*

	From a Parallel supply		From a Series supply		
	Series	Parallel	Series	Parallel	
Filament Voltage	2.8	1.4	2.6	1.3	volts.
Filament Current	25	50	24	48	mA.

RATINGS.

Max. H.T. Supply Voltage	...	110 volts.
Max. Anode Voltage	...	90 volts.
Max. Screen Voltage	...	90 volts.
Max. Anode Dissipation	...	0.6 watts.
Max. Screen Dissipation	...	0.2 watts.
†Max. Cathode Current	(Pins 5—(1+7))	6 mA.
Max. R_{g1-f}	...	2 M Ω
Max. V_{g1} ($I_{g1} = +0.3 \mu A$)	...	0 volt.

CHARACTERISTICS.

(Parallel Filament Connection).

H.T. Supply Voltage	...	67.5	90	volts.
Anode Voltage	...	64	85	volts.
Screen Voltage	...	64	85	volts.
Negative Control Grid Voltage	...	3.3	5.2	volts.
Anode Current	...	3.5	5.0	mA.
Screen Current	...	0.65	0.9	mA.
Mutual Conductance	...	1.3	1.4	mA/V.
Inner μ (μ_{g1-g2})	...	7.0	7.0	
Anode Impedance	...	170	150	k Ω

TYPICAL OPERATION.

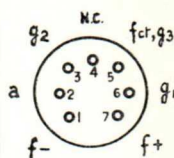
As Single Valve Class "A" Amplifier.

	Series Filament Connection*	Parallel Filament Connection*	Single Section of Filament*		
V_b	90	67.5	90	90	volts.
V_a	85	64	85	85	volts.
V_{g2}	85	64	85	85	volts.
V_{g1}	–5.2	–3.3	–5.2	–3.3	–5.2 volts.
I_a	4.3	3.5	5.0	1.75	2.5 mA.
I_{g2}	700	650	900	330	450 μA .
R_a	15	15	13	30	25 k Ω
V_{in}	3.0	2.6	3.5	2.6	3.6 volts (r.m.s.).
P_{out}	160	100	200	50	100 mW.
D_{tot}	10	10	10	10	%

*†See notes on page 2.

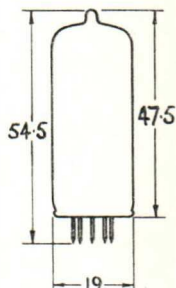
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Base
Connections

Underside View
of Base



All dimensions
shown are in
millimetres
(max.).



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TYPICAL OPERATION—cont.

Two Valves in Class "AB" Push-Pull Amplifier.

(All filament sections in parallel*)

V_b	...	...	67.5	90	volts.
$\dagger R_k$	...	...	470	560	ohms.
$I_a(o)$	...	...	2×2.3	2×3.25	mA.
I_a (max. sig.)	...	...	2×3.4	2×4.75	mA.
$I_{g2}(o)$	...	...	2×430	2×600	$\mu A.$
I_{g2} (max. sig.)	...	...	2×0.95	2×1.5	mA.
R_{a-a}	...	...	20	20	k Ω
$V_{in}(g_1-g_1)$	...	...	11.4	15.8	volts (r.m.s.).
P_{out}	...	...	220	420	mW.
D_{tot}	...	...	3.0	4.0	%

Two Valves in Class "B" Push-Pull Amplifier.

(All filament sections in parallel*)

V_b	...	...	67.5	90	volts.
V_a	...	...	61.5	81.5	volts.
V_{g2}	...	...	61.5	81.5	volts.
V_{g1}	...	...	-5.8	-8.5	volts.
$I_a(o)$	...	...	2×0.75	2×1.0	mA.
I_a (max. sig.)	...	...	2×3.4	2×5.0	mA.
$I_{g2}(o)$	...	...	2×140	2×180	$\mu A.$
I_{g2} (max. sig.)	...	...	2×0.95	2×1.3	mA.
R_{a-a}	...	...	20	16	k Ω
$V_{in}(g_1-g_1)$	...	...	11.4	15.8	volts (r.m.s.)
P_{out}	...	...	220	440	mW.
D_{tot}	...	...	3.0	2.6	%

CAPACITANCES.

C_{in}	...	...	...	...	5.0
C_{out}	...	...	...	...	4.7
C_{a-g1}	...	...	...	...	<0.4

*Series Filament Connection : V_f applied between pins 1 and 7.
 V_{g1} referred to pin 1.

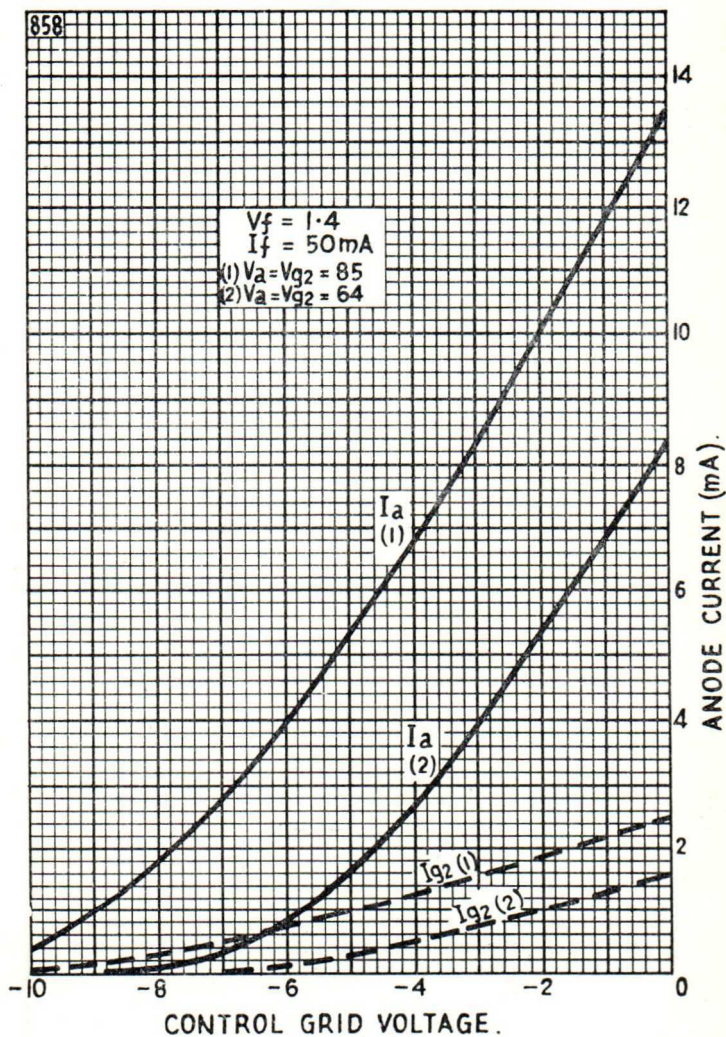
Parallel Filament Connection: V_f applied between pin 5 and pins 1 and 7 connected together.
 V_{g1} referred to pin 5.

Single Section of Filament : V_f applied between pin 5 and either pin 1 or pin 7.

The filament must be shunted to ensure correct filament voltage across each section. If separate h.t. and l.t. batteries are used each filament should be shunted separately to h.t. If a pair of valves are used in push-pull in a 50mA series heater chain, then the corresponding filament sections of each valve must be connected in parallel and the pairs of sections in series. A resistor must shunt the more negative pair of sections. V_{g1} is referred to pin 1.

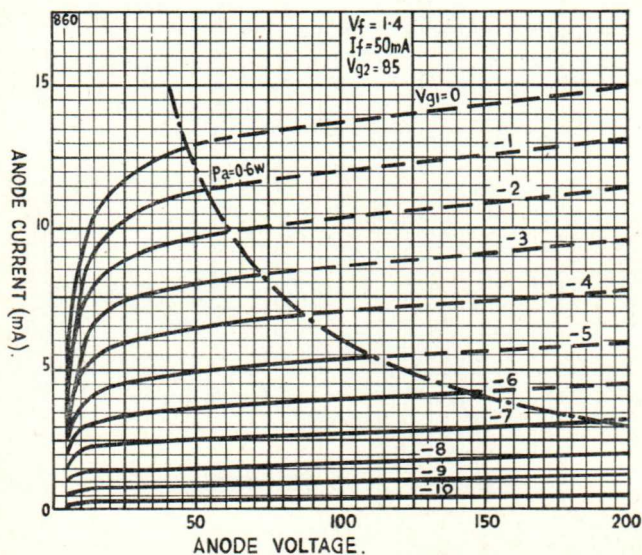
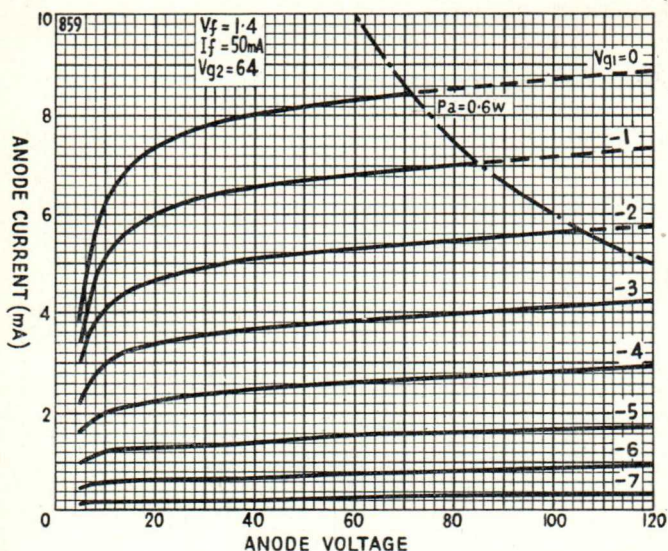
$\dagger$ Maximum cathode current for each 1.4 volt section of filament is 3 mA.

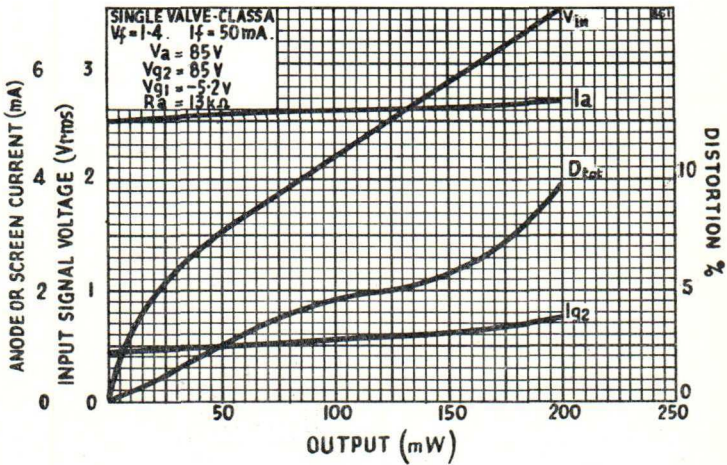
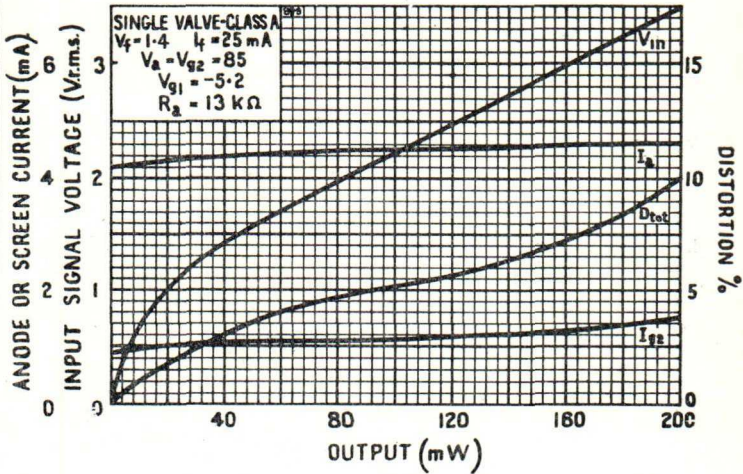
$\dagger$ To simulate the current in the previous stages of a receiver an additional current of 3.5 mA. is fed through R_k .



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