

HALF-WAVE RECTIFIER

EY84

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.

HEATER

V_h	6.3	V
I_h	1.0	A

LIMITING VALUES

P.I.V. max.	2.0	kV
$i_{a(pk)}$ max.	900	mA
$i_{a(surge)}$ max.	3.2	A
V_{h-k} max. (cathode positive)	650	V

Capacitor input

I_{out} max.	} See rating chart 1
$V_{in(r.m.s.)}$ max.	
R_{lim} min.	

See rating charts 2 and 3 and capacitor input regulation curves.

Choke input

I_{out} max.	} See rating chart 1
$V_{in(r.m.s.)}$ max.	
L min. (at 50c/s)	

See choke regulation curves

CHARACTERISTICS

Anode voltage drop ($I_{out}=150mA$)	22	V
--	----	---

TYPICAL OPERATION OF TWO EY84 AS FULL-WAVE RECTIFIER

Capacitor input

$V_{in(r.m.s.)}$	2×500	2×625	V
R_{lim} (per anode)	150	250	Ω
*C (50c/s)	16	16	μF
I_{out}	300	250	mA
V_{out}	500	635	V

*For 1.6kc/s operation the same I/V relation would be obtained using a capacitor of 0.5 μF .

Choke input

$V_{in(r.m.s.)}$	2×500	2×700	V
L	10	10	H
I_{out}	365	300	mA
V_{out}	408	592	V

OPERATING NOTES

The design of a power supply circuit starts with a knowledge of the output conditions and from this information the transformer and secondary or input voltage can be chosen. Reference to the rating charts will indicate whether a rectifier is suitable for a particular application

Rating chart 1

This shows all the combinations of input voltage and output current considered safe for both capacitor and choke input filters.

EY84

HALF-WAVE RECTIFIER

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.

Rating chart 2

This chart shows the minimum series resistance per anode necessary to restrict the maximum switching surge in a capacitor input filter, to its limiting value over the range of supply voltage.

Rating chart 3

This shows the relationship between the maximum rectification efficiency and output current.

Capacitor input filter circuits

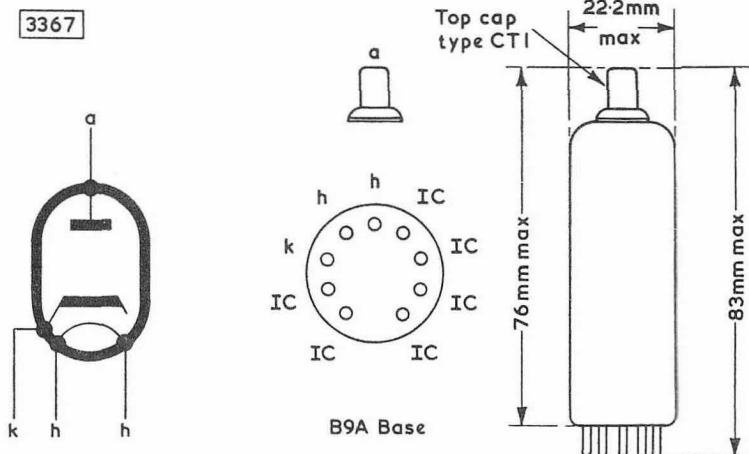
Reference should be made to rating charts 2 and 3 and the regulation curves. The circuit is set-up and the input and output voltage and output current are measured. If the operating conditions lie within the boundary lines of the regulation curves an improvement in the rectification efficiency may be effected by reducing the value of the limiting resistance. Rating chart 2 gives the minimum value of the limiting resistance against open circuit secondary voltage; this resistance will guard against excessive switching currents.

Comparison of the calculated rectification efficiency $\frac{V_{out}}{\sqrt{2} \times V_{1a(r.m.s.)}}$

with rating chart 3 will show whether the limiting resistance must be increased to lower the rectification efficiency to the area of safe operation. Operation within this area indicates that the limiting value $i_{a(pk)}$ has not been exceeded.

Choke input circuit

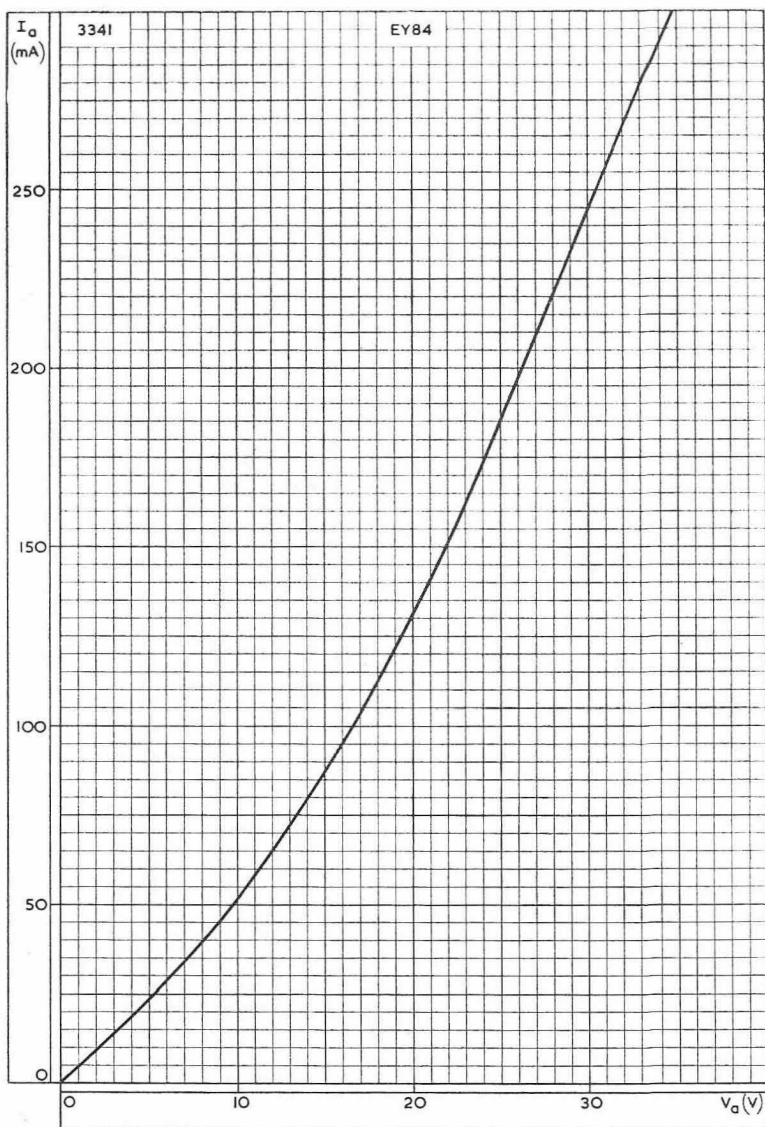
Reference should be made to rating chart 1. A suitable value of choke can be obtained from the choke regulation curves.



HALF-WAVE RECTIFIER

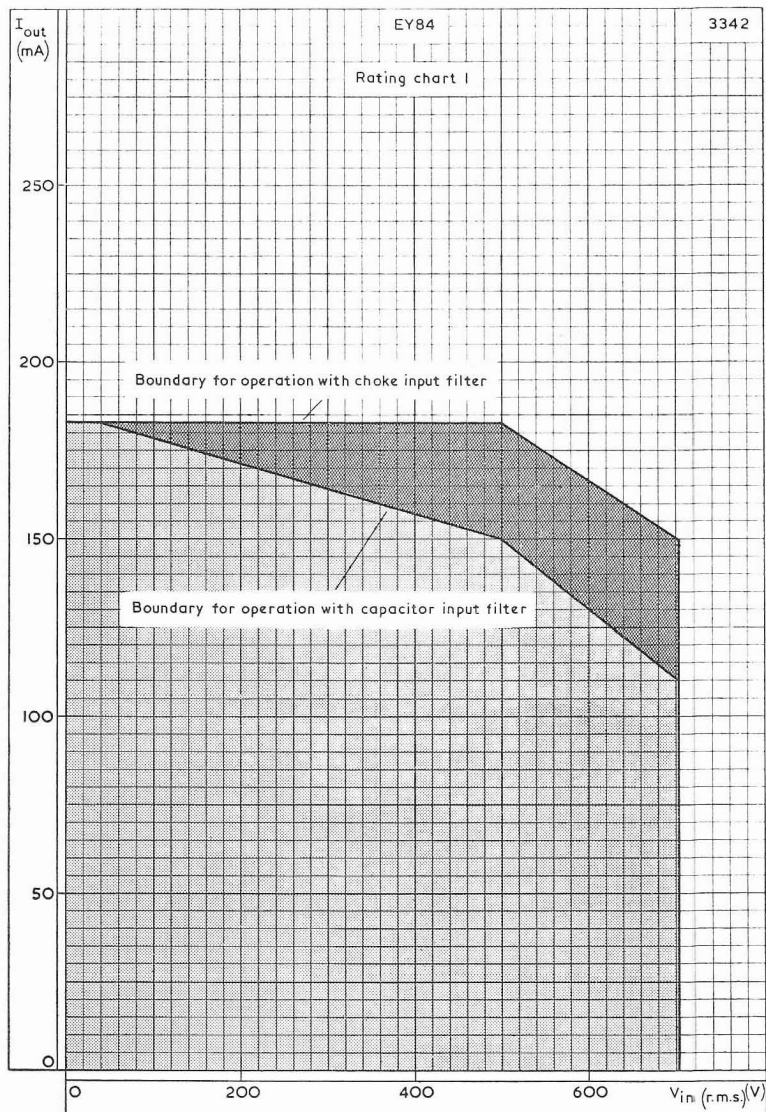
EY84

*Indirectly heated half-wave rectifier primarily
intended for operation at high altitudes.*



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.

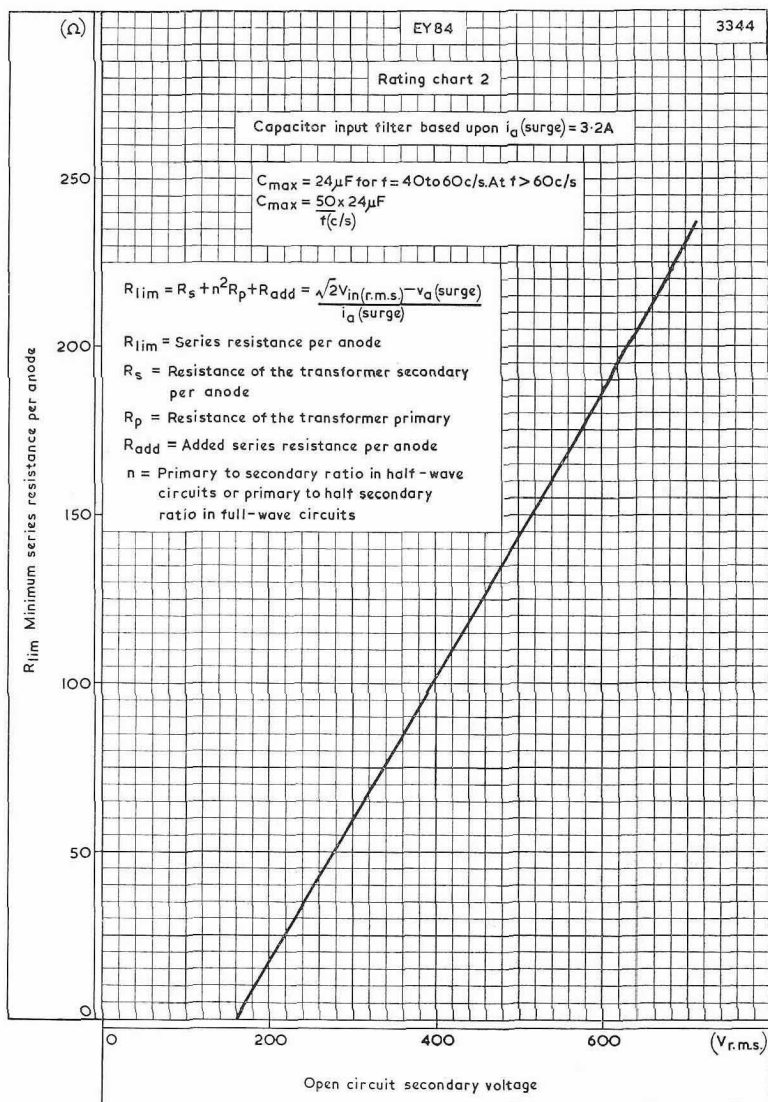


BOUNDARY OF OPERATION WITH CAPACITOR OR CHOKE INPUT FILTER

HALF-WAVE RECTIFIER

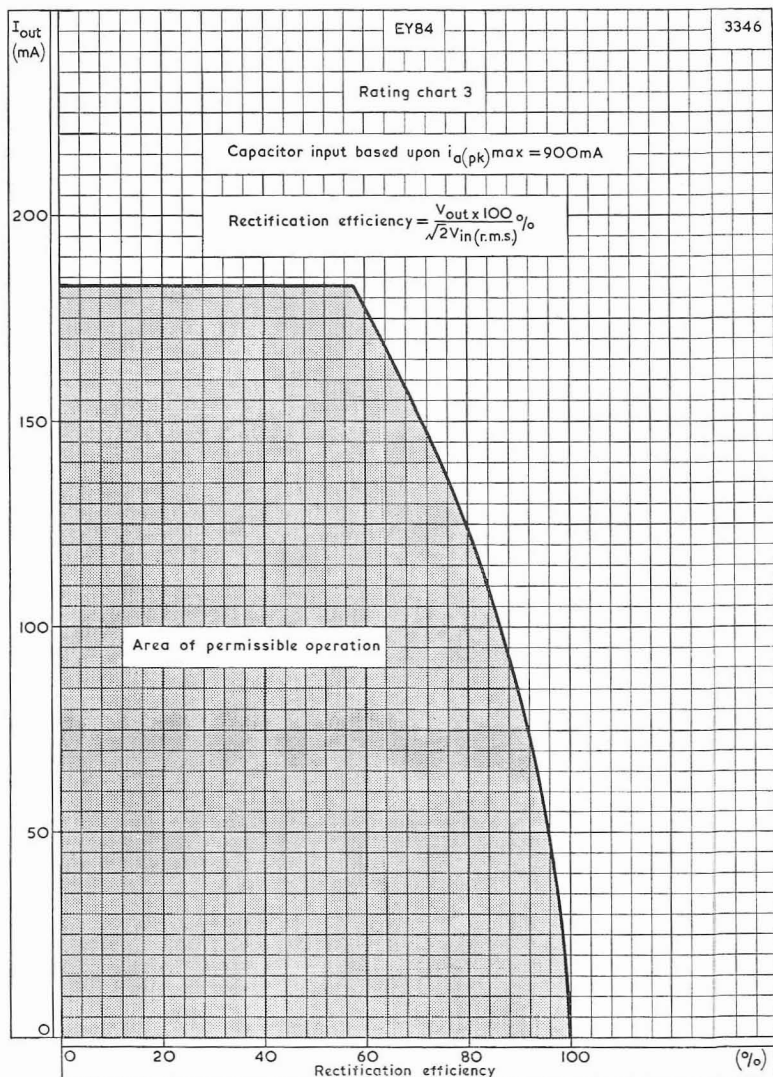
EY84

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.



MINIMUM SERIES ANODE RESISTANCE PLOTTED AGAINST OPEN CIRCUIT SECONDARY VOLTAGE

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.

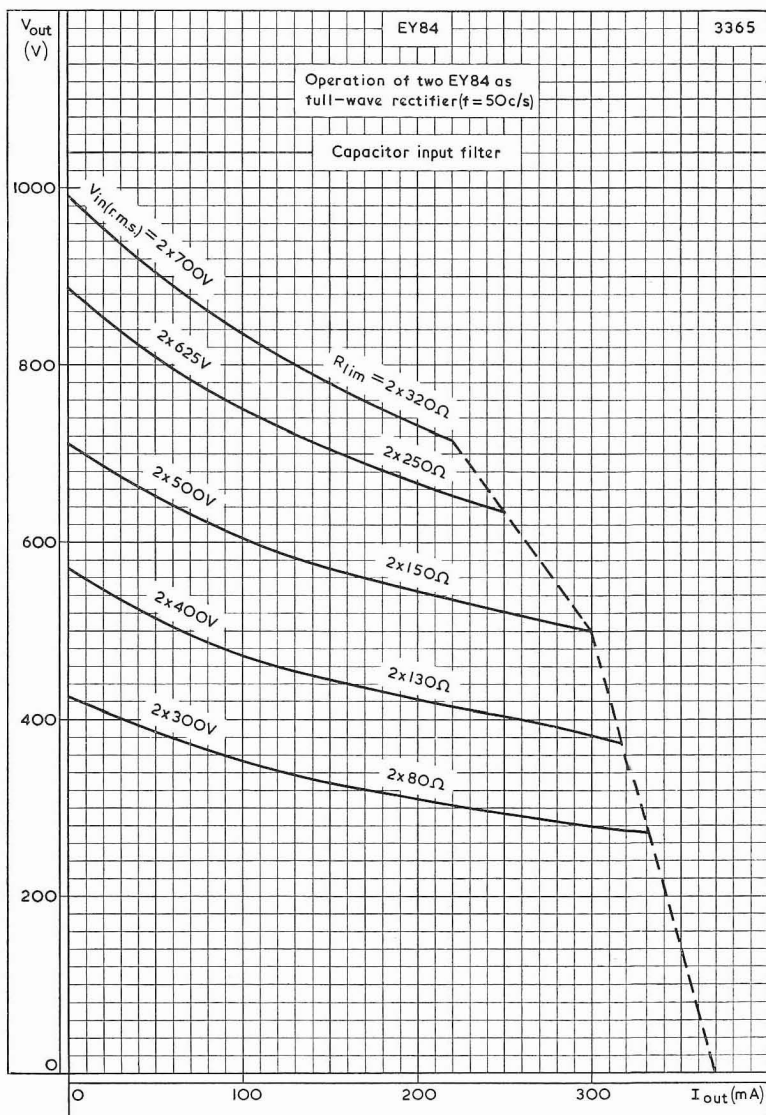


OUTPUT CURRENT PLOTTED AGAINST RECTIFICATION EFFICIENCY

HALF-WAVE RECTIFIER

EY84

Indirectly heated half-wave rectifier primarily
intended for operation at high altitudes.

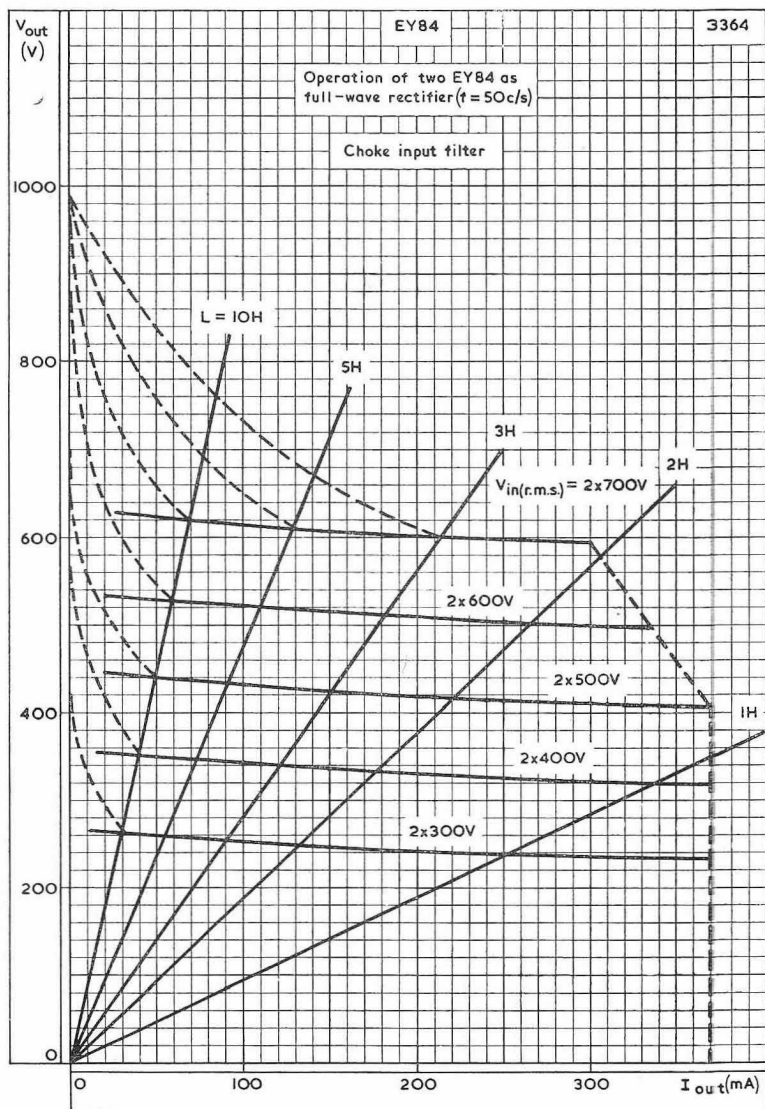


CAPACITOR INPUT FILTER REGULATION CURVES

EY84

HALF-WAVE RECTIFIER

Indirectly heated half-wave rectifier primarily intended for operation at high altitudes.



CHOKE INPUT FILTER REGULATION CURVES