MECHANICAL DATA

Bulb	T-6½
Base	E9-1 Miniature Button, 9-Pin
Outline	6-3
Basing	9DJ
Cathode	Coated Unipotenial
Mounting Position	Any

ELECTRICAL DATA

HEATER CHARACTERISTICS

	6BW4	12BW4	
Heater Voltage[2] AC or DC	6.3	12.6	Volts
Heater Current	900	450	Ma
Maximum Heater Cathode Voltage			
Heater Negative, DC	450		Volts

RATINGS (Design Center Values)[1]

Rectifier Service

Peak Inverse Plate Voltage	1275	Volts Max.
AC Plate Supply Voltage Each Plate, RMS (See Rating Chart I)	450	Volts Max.
DC Output Current	See Rating Chart I	
Steady State Peak Plate Current Each Plate (See Rating Chart II)	350	Ma Max.
Transient Peak Plate Current Each Plate (See Rating Chart III)	2.0	Amperes Max.

AVERAGE CHARACTERISTICS

Tube Voltage Drop		
Tube Conducting:		
100 Ma Each Plate	40	Volts

TYPICAL OPERATION

Full Wave Rectifier — Capacitor Input Filter

AC Plate Supply Voltage Each Plate, RMS[2]	325	Volts
Filter Input Capacitor	40	μf
Effective Plate Supply Resistance Each Plate	82	Ohms
DC Output Current	100	Ma
DC Output Voltage at Filter Input	330	Volts

Full Wave Rectifier — Choke Input Filter

AC Plate Supply Voltage Each Plate, RMS[2]	450	Volts
Filter Input Choke	10	Henrys
DC Output Current	100	Ma
DC Output Voltage at Filter Input	360	Volts

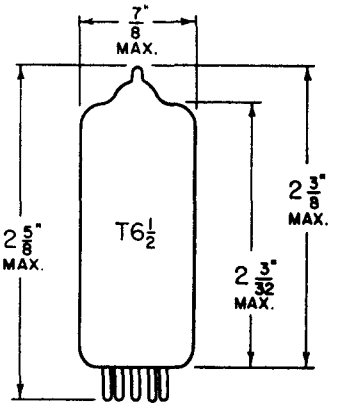
NOTES:

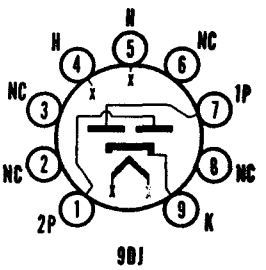
1. *See "Interpretation of Rating Charts".*
2. *AC plate voltage is measured without load.*

QUICK REFERENCE DATA

The Sylvania 6BW4 and 12BW4 are miniature cathode type full wave rectifiers featuring relatively high output current capabilities.

The 12BW4 is intended primarily for use in auto receivers having a 12 volt heater supply.





SYLVANIA ELECTRIC PRODUCTS INC.

RADIO TUBE DIVISION
EMPORIUM, PA.

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SEPTEMBER 1955

NOTES: (Continued)

3. *The 12BW4 is intended to be used in automotive service from a nominal 12 volt battery source. The heater is therefore designed to operate over the 10.0 to 15.9 voltage range encountered in this service. The maximum ratings of the tube provide for an adequate safety factor such that the tube will withstand the wide variation in supply voltages.*

INTERPRETATION OF RATING CHARTS

Rating Charts I, II and III represent boundary conditions beyond which operation of the 6BW4 and 12BW4 is not permitted. With the aid of simple laboratory measurements and the use of the three Charts, any application may be analyzed for proper rectifier type operation.

The boundaries of Rating Chart I are based on limits of supply voltage, plate dissipation and output current. These boundaries differ, depending upon the type of filter used. With capacitor input, operation is confined to the area bounded by FAEDG while for choke input, the entire area bounded by FABCDG may be used.

The boundary of Rating Chart II defines the limit of steady-state peak current. Operation within the boundary is permitted.

Rating Chart III defines the minimum value of effective plate supply resistance, per plate, for any given plate voltage supply which will assure that the surge currents are within a safe value.

$$R_s = N^2R_{pri} + R_{sec} + R_a$$

Where: N = Voltage step up ratio of plate transformer.
R_{pri} = DC resistance of transformer primary.
R_{sec} = Average DC resistance of transformer secondary per section.
R_a = Added series resistance.

For any application, each Chart should be consulted. On *all* Charts the points of operation should fall within the proper boundaries.

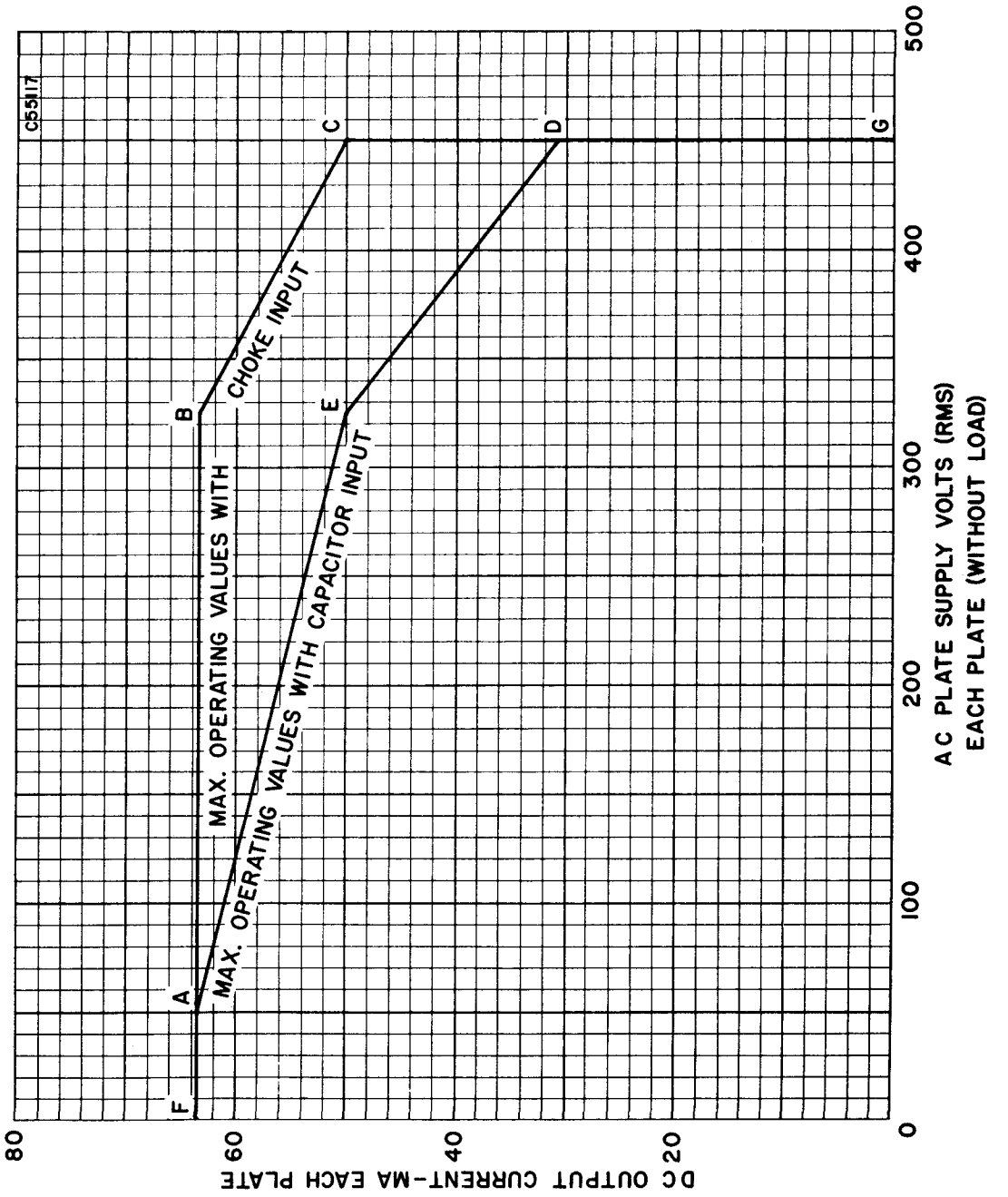
Plate supply voltages are measured with the rectifier tube non-conducting, i.e., with the transformer unloaded. This unloaded voltage is used when calculating rectification efficiency.

The rectification efficiency is defined as:

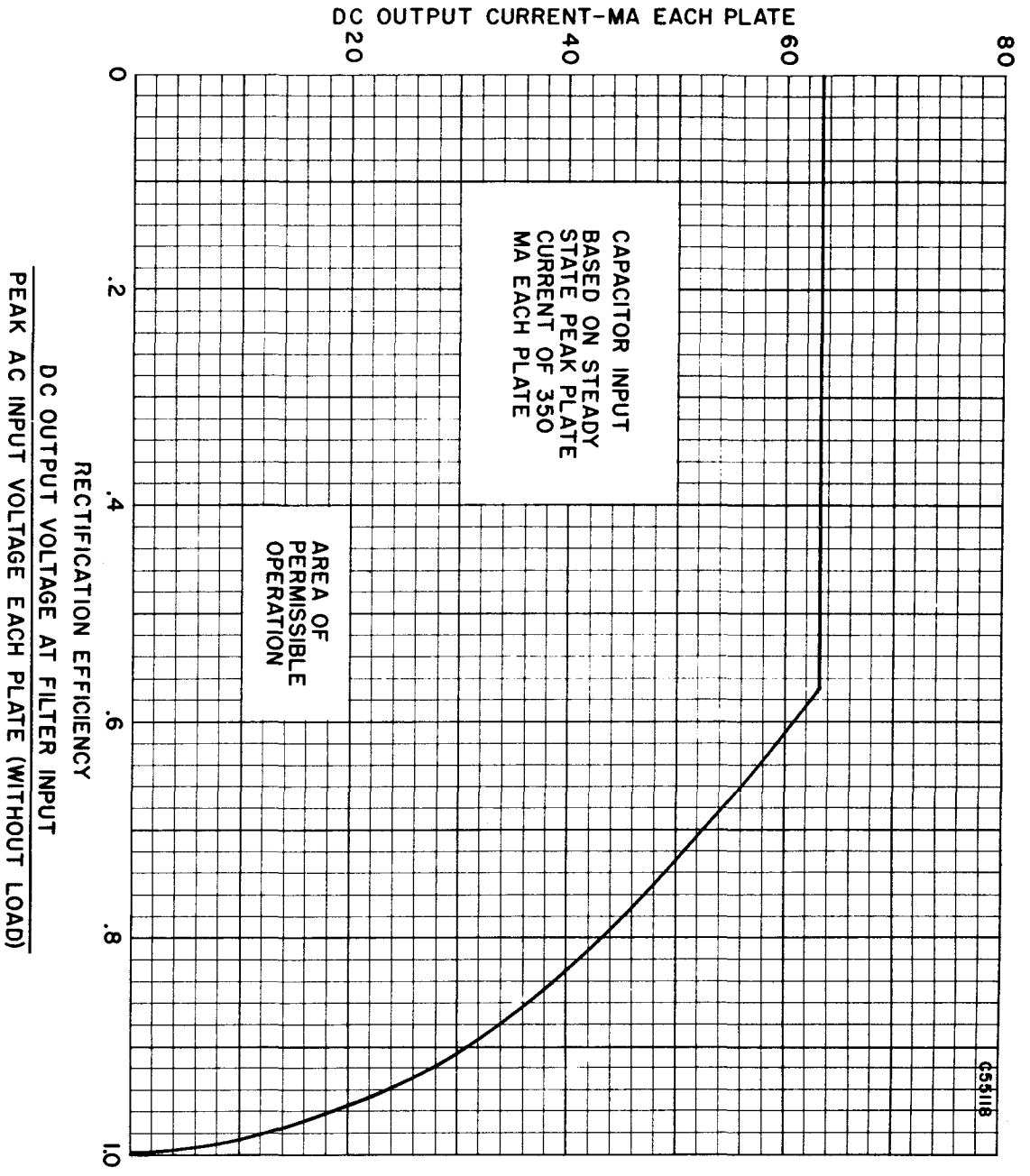
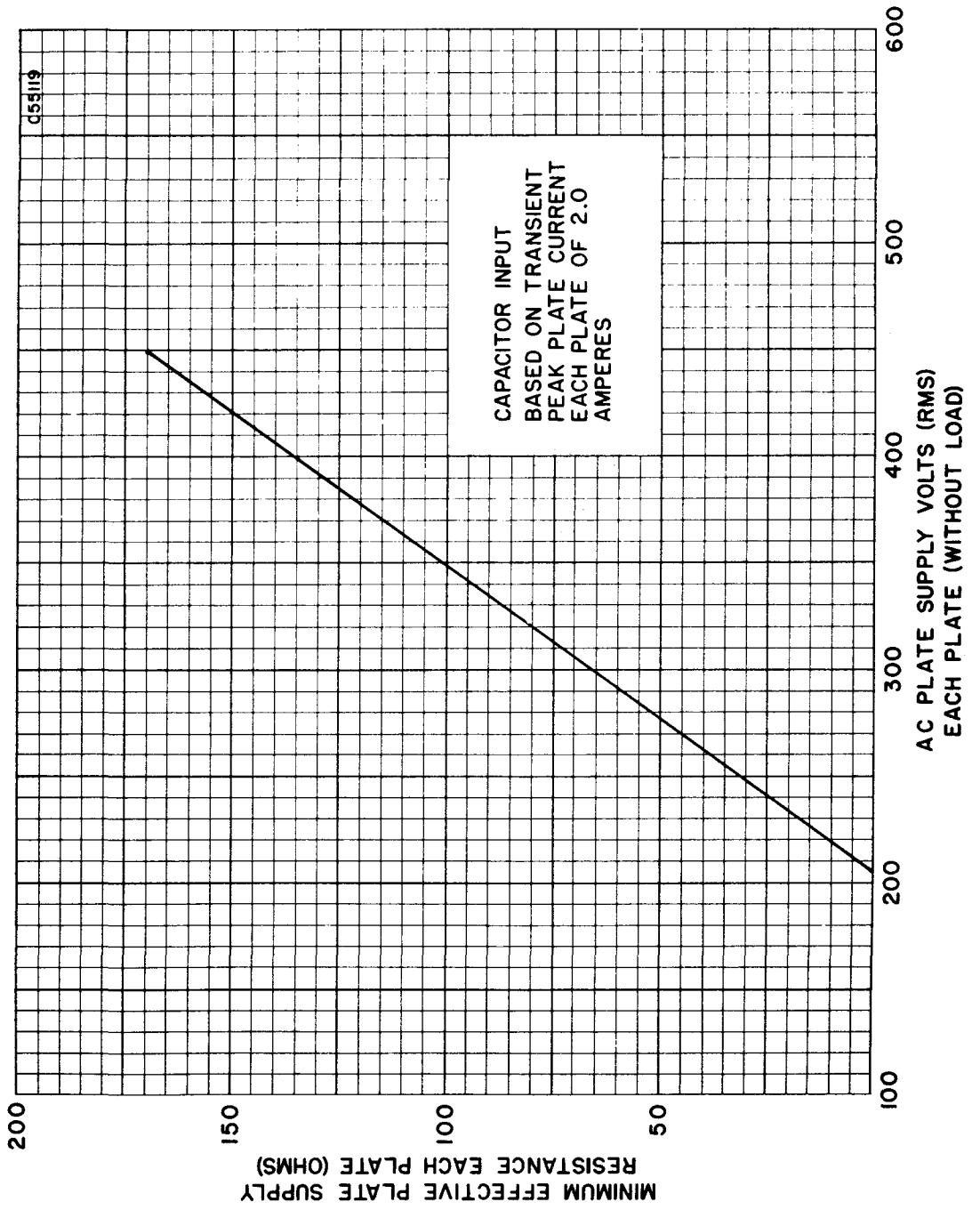
$$\frac{\text{DC Output Voltage}}{\sqrt{2}\ (\text{RMS Supply Voltage Per Plate})}$$

The DC output voltage is measured at the input to the filter.

RATING CHART I



RATING CHART II



RATING CHART III