6X4
FULL-WAVE VACUUM RECTIFIER

MINIATURE TYPE

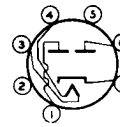
GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:		
Voltage	6.3	ac or dc volts
Current	0.6	amp

Mechanical:

Mounting Position	Any
Maximum Overall Length	2-5/8"
Maximum Seated Length	2-3/8"
Length from Base Seat to Bulb Top (Excluding tip)	2" ± 3/32"
Maximum Diameter	3/4"
Bulb	T-5-1/2
Base	Small-Button Miniature 7-Pin (JETEC No. E7-1)
Basing Designation for BOTTOM VIEW	7CF



Pin 1 – Plate No.2
Pin 2 – No Connection
Pin 3 – Heater
Pin 4 – Heater
Pin 5 – No Connection
Pin 6 – Plate No.1
Pin 7 – Cathode

RECTIFIER SERVICE

Maximum Ratings, *Design-Center Values:* ←

PEAK INVERSE PLATE VOLTAGE	1250 max.	volts
PEAK PLATE CURRENT PER PLATE	210 max.	ma
AC PLATE SUPPLY VOLTAGE (RMS) PER PLATE	See Rating Chart I	
DC OUTPUT CURRENT PER PLATE	See Rating Chart I	

HOT-SWITCHING CURRENT:

If hot-switching is regularly required in operation, the use of choke-input circuits is recommended. Such circuits limit the hot-switching current to a value no higher than that of the peak plate current. When capacitor-input circuits are used, a maximum peak current value per plate of 1 ampere during the initial cycles of the hot-switching transient should not be exceeded.

PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	450 max.	volts
Heater positive with respect to cathode	450 max.	volts

Typical Operation as Full-Wave Rectifier with Capacitor-Input to Filter: ←

AC Plate-to-Plate Supply Voltage (RMS)	650	volts
Filter Input Capacitor	10	μf
Effective Plate-Supply Impedance per Plate*	520	ohms

* Higher values of capacitance than indicated may be used but the effective plate-supply impedance should be increased to prevent exceeding the maximum rating for peak plate current.

← Indicates a change

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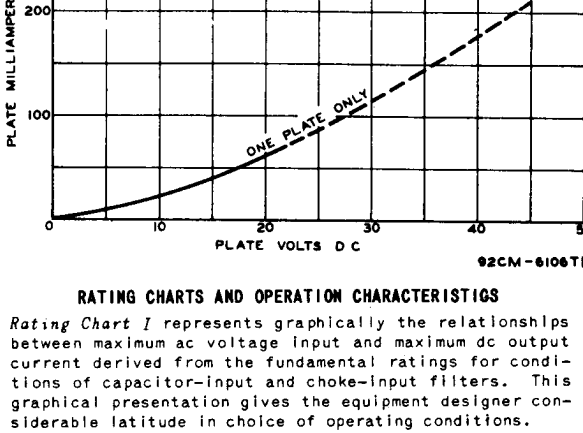
DC Output Voltage at Input to Filter (Approx.):		
At half-load current of 35 ma.	360	volts
At full-load current of 70 ma.	300	volts
Voltage Regulation (Approx.):		
Half-load to full-load current	60	volts
→ **Typical Operation as Full-Wave Rectifier with Choke-Input to Filter:**		
AC Plate-to-Plate Supply Voltage (RMS) . . .	900	volts
Minimum Filter Input Choke	10	henries
DC Output Voltage at Input to Filter (Approx.):		
At half-load current of 35 ma.	385	volts
At full-load current of 70 ma.	370	volts
Voltage Regulation (Approx.):		
Half-load to full-load current	15	volts

AVERAGE PLATE CHARACTERISTIC



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RATING CHARTS AND OPERATION CHARACTERISTICS

Rating Chart I represents graphically the relationships between maximum ac voltage input and maximum dc output current derived from the fundamental ratings for conditions of capacitor-input and choke-input filters. This graphical presentation gives the equipment designer considerable latitude in choice of operating conditions.

Rating Chart II represents graphically the relationship between maximum rectification efficiency and maximum dc output current per plate for conditions of capacitor input to filter.

→Indicates a change

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FULL-WAVE VACUUM RECTIFIER

Rating Chart III represents graphically the relationships between minimum plate-supply resistance per plate and maximum ac plate-supply voltage per plate under no-load conditions for conditions of capacitor input to filter when occasional hot-switching is employed.

The *Operation Characteristics for Full-Wave Circuit with Capacitor-Input Filter* show not only the typical operating curves for such a circuit, but also show by means of boundary-lines "DEA" the limiting current and voltage relationships presented on *Rating Chart I.*

The *Operation Characteristics for Full-Wave Circuit with Choke-Input Filter* show the typical operating curves for such a circuit. They not only show by means of boundary line "ABC" the limiting current and voltage relationships presented on *Rating Chart I,* but also give information as to the effect on regulation of various sizes of chokes. The solid-line curves show the dc voltage outputs which would be obtained if the filter chokes had infinite inductance. The long-dash lines radiating from the zero position are boundary lines for various sizes of chokes as indicated. The intersection of one of these lines with a solid-line curve indicates the point on the curve at which the choke no longer behaves as though it had infinite inductance. To the left of the choke boundary line, the regulation curves depart from the solid-line curves as shown by the representative short-dash regulation curves.

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RCA

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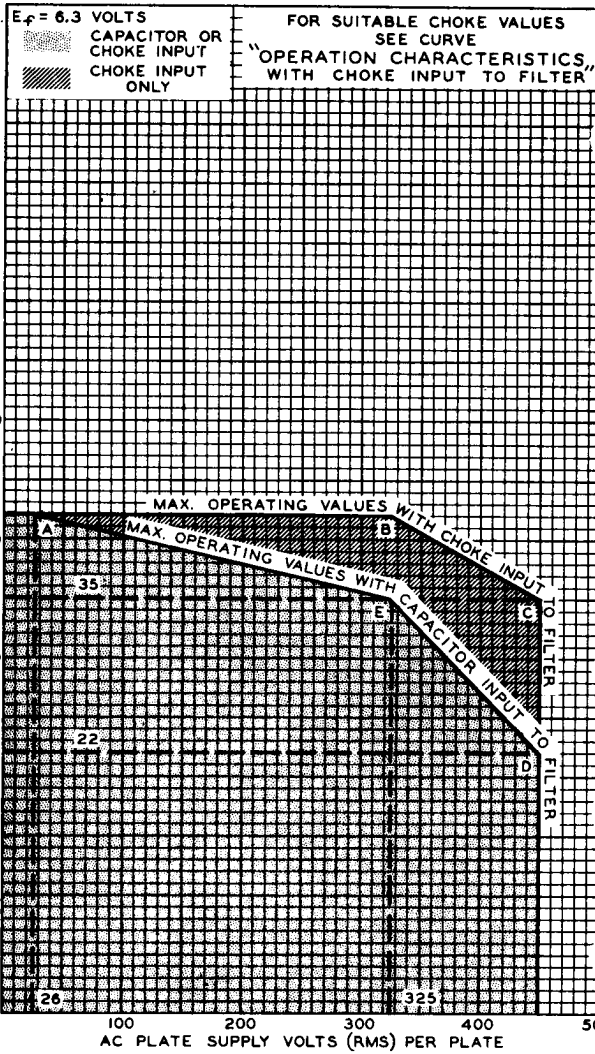
RATING CHART I



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RATING CHART II

CAPACITOR INPUT TO FILTER

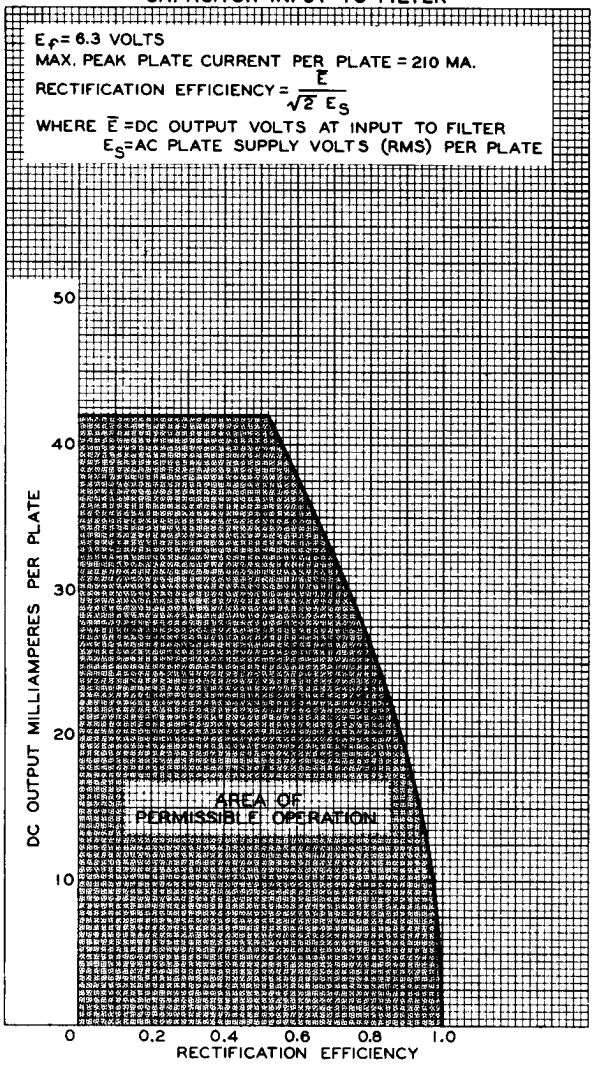
E_f = 6.3 VOLTS

MAX. PEAK PLATE CURRENT PER PLATE = 210 MA.

RECTIFICATION EFFICIENCY = $\frac{\bar{E}}{\sqrt{2}\ E_S}$

WHERE $\bar{E}$ = DC OUTPUT VOLTS AT INPUT TO FILTER

E_S = AC PLATE SUPPLY VOLTS (RMS) PER PLATE



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RATING CHART III

CAPACITOR INPUT TO FILTER

E_f = 6.3 VOLTS MAX. HOT SWITCHING CUR.= 1 AMP.

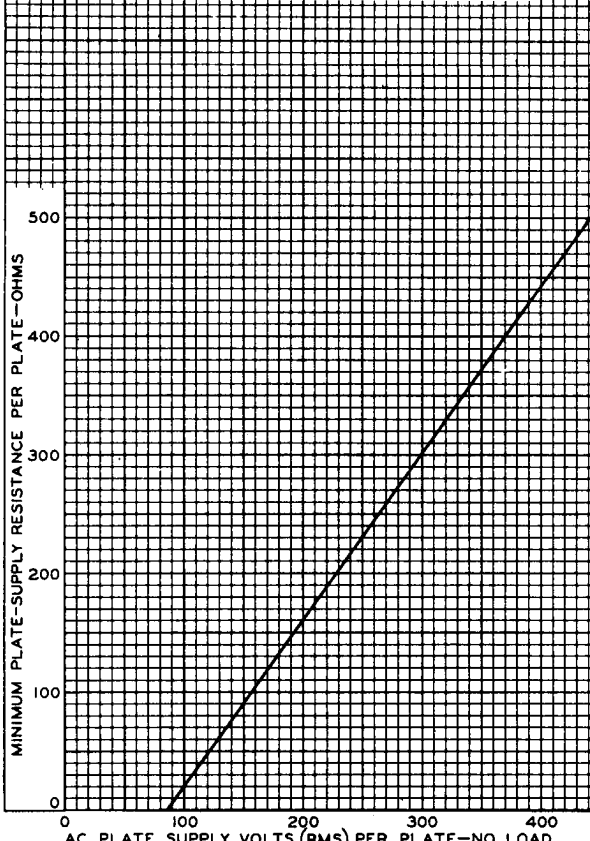
PLATE-SUPPLY RESISTANCE PER PLATE = $R_{SEC} + N^2 R_{PRI} + R_A$

WHERE R_{SEC} = DC RESISTANCE OF TRANSFORMER SECONDARY PER SECTION

R_{PRI} = DC RESISTANCE OF TRANSFORMER PRIMARY

R_A = DC RESISTANCE OF ADDED SERIES RESISTANCE PER PLATE

N = TRANSFORMER VOLTAGE STEP-UP RATIO PER SECTION



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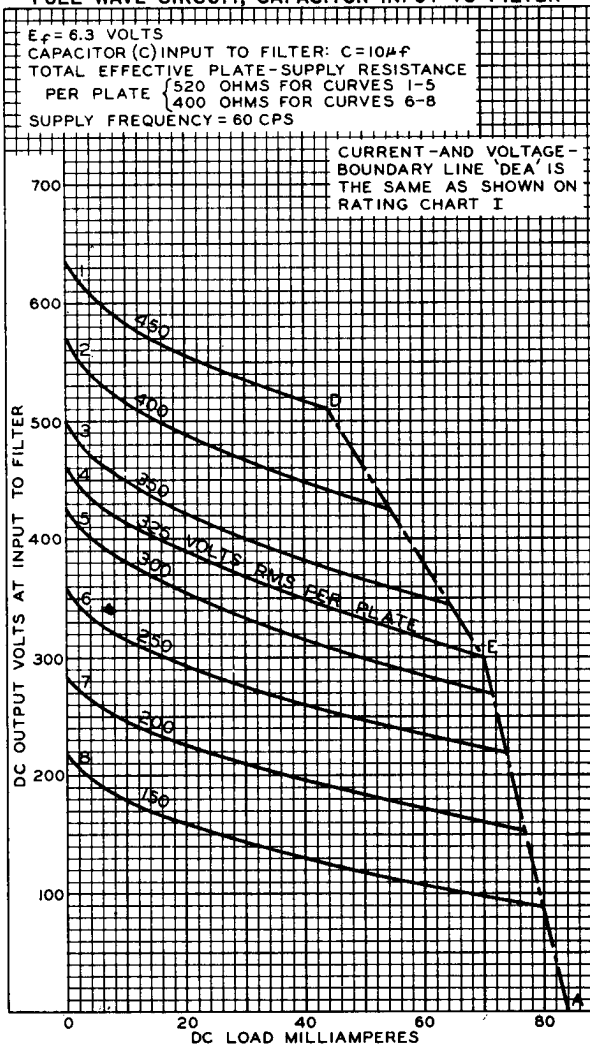
OPERATION CHARACTERISTICS

FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

E_f = 6.3 VOLTS
CAPACITOR (C) INPUT TO FILTER: C = 10 μf
TOTAL EFFECTIVE PLATE-SUPPLY RESISTANCE PER PLATE { 520 OHMS FOR CURVES 1-5 / 400 OHMS FOR CURVES 6-8
SUPPLY FREQUENCY = 60 CPS

CURRENT-AND VOLTAGE-BOUNDARY LINE 'DEA' IS THE SAME AS SHOWN ON RATING CHART I



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OPERATION CHARACTERISTICS

FULL-WAVE CIRCUIT, CHOKE INPUT TO FILTER