



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:

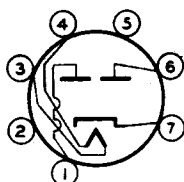
Mounting Position Any
 Maximum Overall Length 2-5/8"
 Maximum Seated Length 2-3/8"
 Length from Base Seat to Bulb Top
 (Excluding tip) 2" $\pm$ 3/32"
 Maximum Diameter 3/4"
 Bulb T-5-1/2
 Base Small-Button Miniature 7-Pin (JETEC No. E7-1)
 Basing Designation for BOTTOM VIEW 7CF

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 μ f
 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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FULL-WAVE VACUUM RECTIFIER

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.):

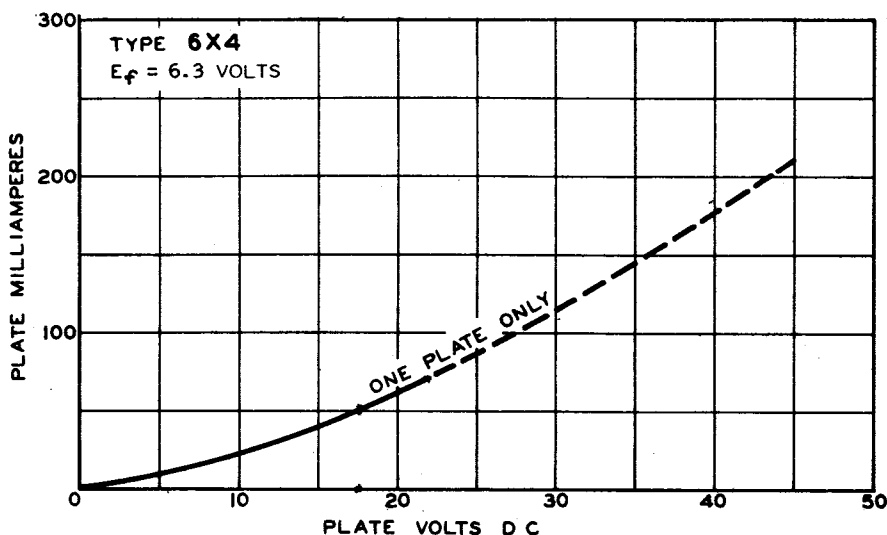
At half-load current of 35 ma. 385 volts

At full-load current of 70 ma. 370 volts

Voltage Regulation (Approx.):

Half-load to full-load current 15 volts

AVERAGE PLATE CHARACTERISTIC



92CM-6106T1

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.

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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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RATING CHART I

 $E_f = 6.3$ VOLTSCAPACITOR OR
CHOKE INPUTCHOKE INPUT
ONLY

FOR SUITABLE CHOKE VALUES

SEE CURVE

"OPERATION CHARACTERISTICS,"
WITH CHOKE INPUT TO FILTER

DC OUTPUT MILLIAMPERES PER PLATE

50

40

30

20

10

0

MAX. OPERATING VALUES WITH CHOKE INPUT

MAX. OPERATING VALUES WITH CAPACITOR INPUT TO FILTER

TO FILTER

TO FILTER

AC PLATE SUPPLY VOLTS (RMS) PER PLATE

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RATING CHART II CAPACITOR INPUT TO FILTER

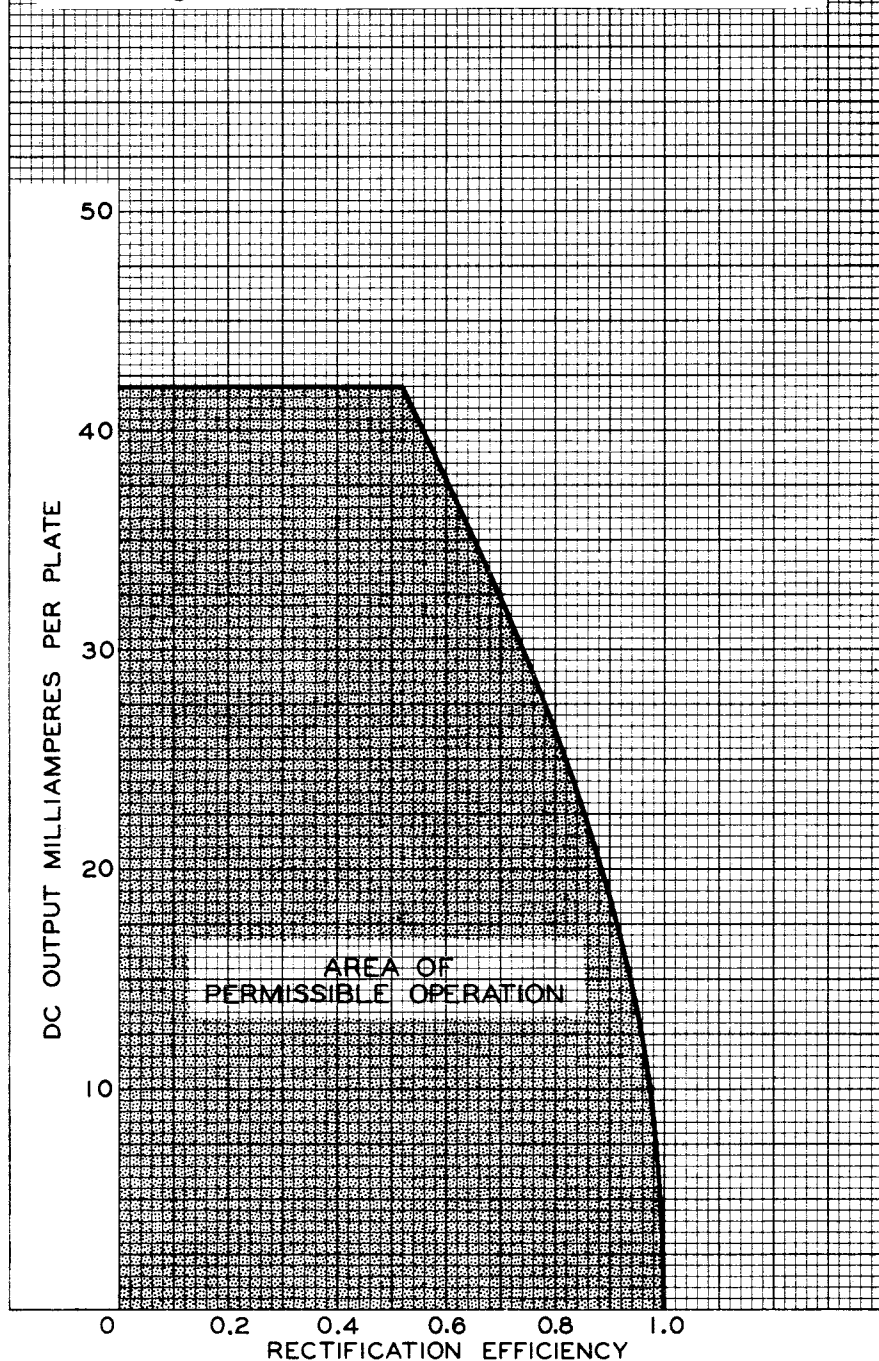
$E_f = 6.3$ VOLTS

MAX. PEAK PLATE CURRENT PER PLATE = 210 MA.

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

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

E_s = AC PLATE SUPPLY VOLTS (RMS) PER PLATE



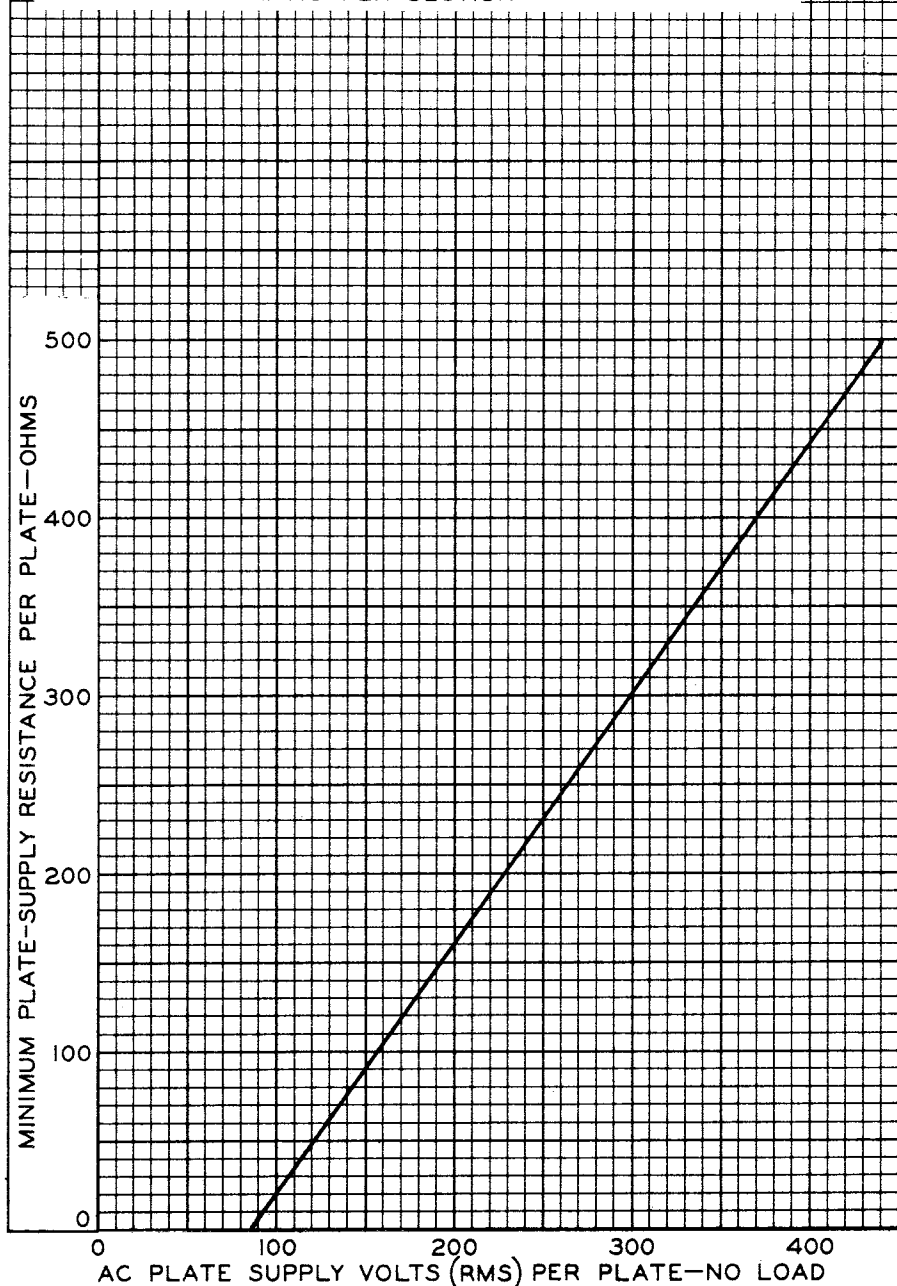
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RATING CHART III CAPACITOR INPUT TO FILTER

$E_f = 6.3$ 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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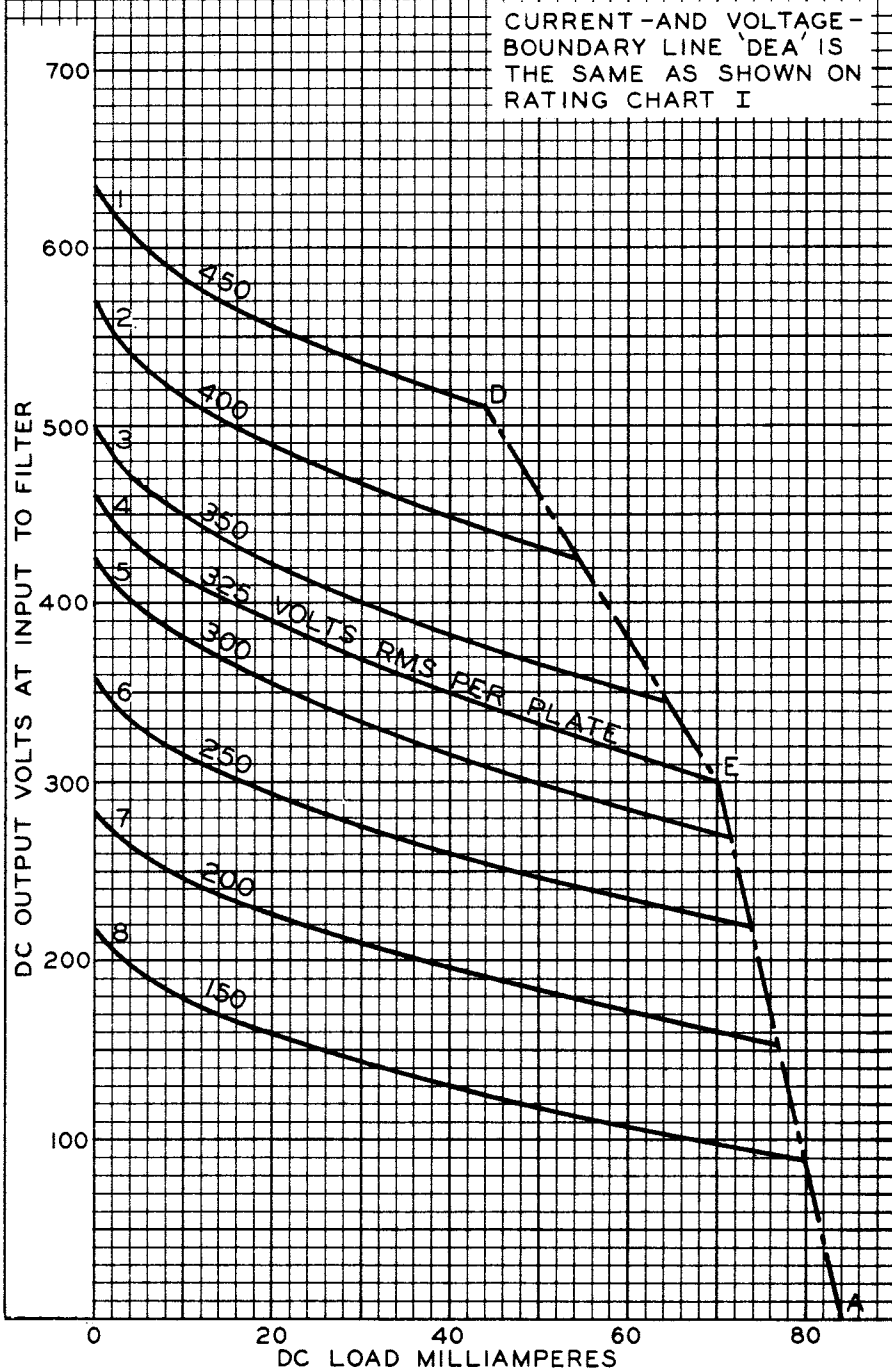
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OPERATION CHARACTERISTICS FULL-WAVE CIRCUIT, CAPACITOR INPUT TO FILTER

$E_f = 6.3$ VOLTS
CAPACITOR (C) INPUT TO FILTER: $C = 10\mu F$
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

