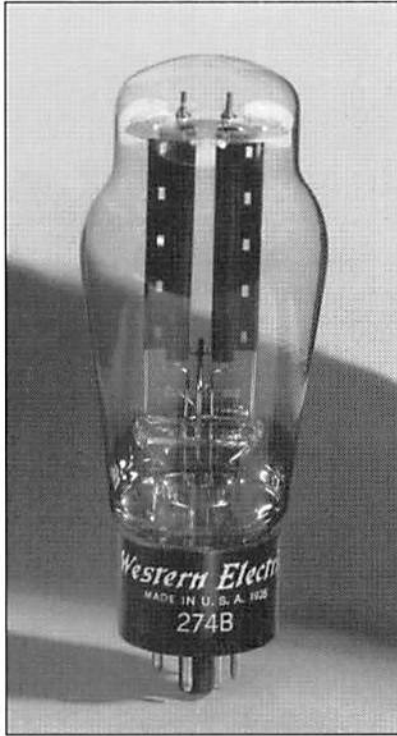


***Western***

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High Fidelity Products

## 274B Vacuum Tube



### Classification

Full-wave, Thermionic High Vacuum Rectifier.

### Application

The 274B tube is designed to supply direct current up to 200 milliamperes from an alternating current source. It comprises two filament type diode units with a common filament.

### Dimensions

Dimensions, outline diagrams of the tube and base, and the arrangement of electrode connections to the base terminals are shown in Figures 1 and 2.

### Base

Medium, octal five pin type.

### Socket

Standard octal five pin type such as the WE B5-15.

### Mounting Positions

Either vertical or horizontal. If mounted in a horizontal position, the planes of the filament, whose direction is indicated in Figure 2, should be vertical.

### Filament Rating

Filament voltage: 5.0 volts, a.c. or d.c.  
Nominal filament current: 2.0 amperes

The filament of this tube is designed to operate on a voltage basis, and should be operated at as near the rated voltage as is practicable.

### Effect of Filter

It is evident from the regulation characteristics of Figures 4 and 5 that for a given output current and voltage, the choke-input filter requires a somewhat higher alternating voltage applied to the plates of the tube than the capacitor-input filter. With the capacitor input filter, however, the normal charging and discharging of the capacitor each half cycle requires the tube to supply relatively large peaks of current during each charging period. The peak current increases in value as the capacitance of the capacitor is increased and may be much larger than the average rectified output current, though its duration in such cases is only a short fraction of a cycle. Since for good tube performance, the anode current must be considerably less at every part of the cycle than the total emission current from the filament, the maximum permissible output current must be limited to such a value that this condition is satisfied. The permissible output current may be larger, therefore, for a choke-input filter, in which the peak anode current is only slightly larger than the output current. The choke-input filter also gives much better regulation than the capacitor-input circuit. The choke-input filter, therefore, should always be selected in preference to the capacitor-input filter wherever possible. With a capacitor-input filter, the capacitance of the input capacitor should preferably not exceed 4 microfarads.

### Characteristics

The current-voltage characteristic of a single diode unit of the 274B tube is shown in Figure 3. The voltage is measured between the plate and a center tap on the filament transformer. Direct-voltage output characteristics as functions of the direct load current for a number of values of applied alternating voltage are given in Figures 4 and 5. The characteristics of Figure 4 are for a choke-input filter such as is shown in circuit A, and those of Figure 5 are for a capacitor-input filter such as is shown in circuit B.

Filament Voltage ..... 5.0 volts  
Maximum Plate Voltage (RMS)  
per Plate ..... 660 volts  
Maximum D-C Output  
Current ..... 225 milliamperes

### General Characteristics

#### ELECTRICAL DATA

Filament Voltage ..... 5.0 volts  
Filament Current ..... 2.0 amperes

#### MECHANICAL DATA

Cathode ..... Coated filament  
Bulb ..... ST16  
Base ..... Medium 5-pin, octal  
Mounting Position Preferably vertical; if horizontal, pins #1 and 4 should be in vertical plane.

### Maximum Ratings

Design-Center Values  
Peak Inverse Voltage ..... 1500 volts  
Peak Plate Current per  
Plate ..... 675 milliamperes  
Peak Transient Plate  
Current per Plate ..... 2.5 amperes

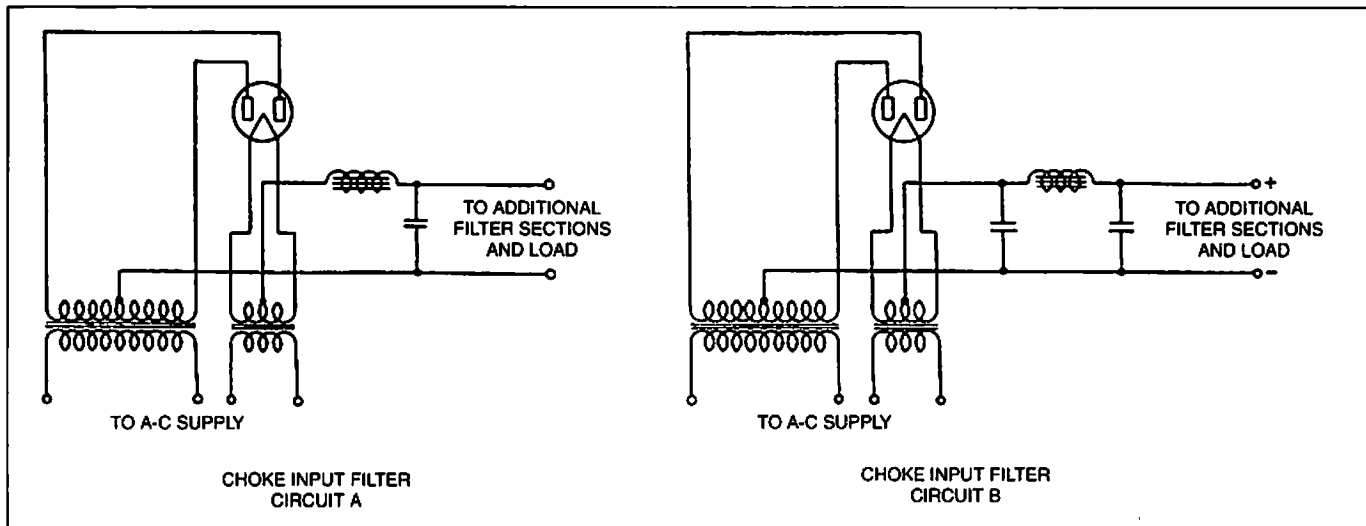
#### With Choke-Input Filter:

A-C Plate Voltage per  
Plate (RMS) ..... 660 volts  
D-C Output Current .. 225 milliamperes  
Minimum Input-Choke  
Inductance ..... 3 henrys

#### With Capacitor-Input Filter:

A-C Plate Voltage per  
Plate (RMS) ..... 450 volts  
D-C Output Current ... 160 milliamperes  
Minimum Total Effective Plate-Supply  
Impedance per Plate ..... 100 ohms

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## Typical Operating Conditions

With Choke-Input Filter:

A-C Plate Voltage per Plate (RMS) ..... 550 volts  
 D-C Output Current ..... 160 milliamperes  
 D-C Output Voltage, Approximate,  
 at Input to Filter ..... 430 volts  
 Filter Input Choke ..... 5 henrys

With Capacitor-Input Filter:

A-C Plate Voltage per  
 Plate (RMS) ..... 450 volts  
 D-C Output Current ..... 140 milliamperes  
 D-C Output Voltage, Approximate,  
 at Input to Filter ..... 475 volts  
 Total Effective Plate-Supply  
 Impedance per Plate ..... 180 ohms  
 Filter Input Capacitor ..... 4 microfarads

	<b>R-M-S Alternating Voltage per Plate Volts</b>	<b>Total Rectified Current Milliamperes</b>
Choke-Input Filter .....	550	160
	* 550	200
	* 660	160
Capacitor-Input Filter .....	450	140
	* 450	** 150

\* Maximum operating conditions  
 \*\* 4  $\mu$ F. maximum filter input capacitance

A less severe condition should be selected in preference to a maximum operating condition wherever possible. The life of the tube at maximum conditions may be shorter than at less severe conditions.

Double the above listed values of rectified current may be obtained from two tubes by connecting the two plates of each tube together, and using one tube in each side of the circuit.

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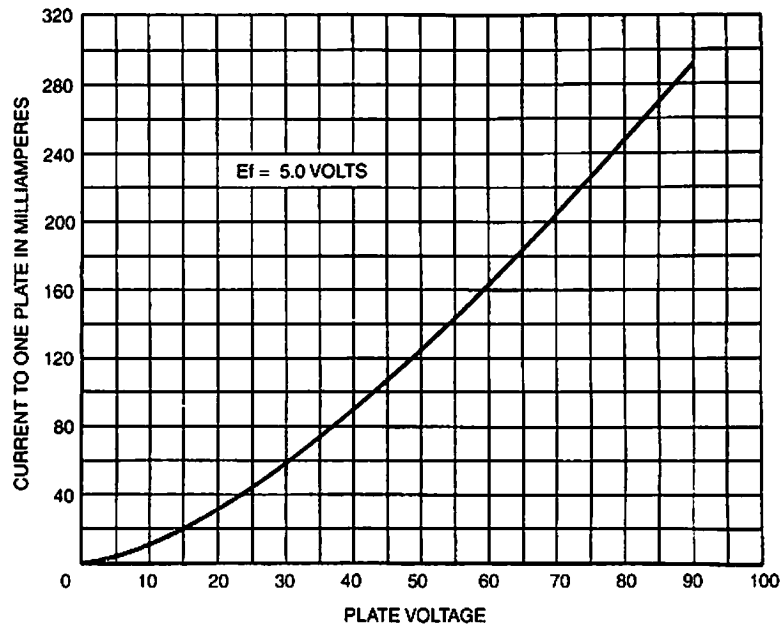


FIG. 3

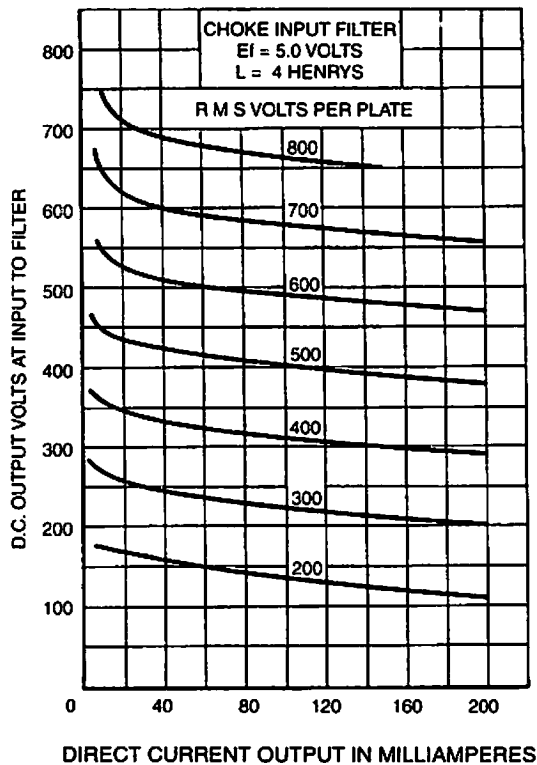


FIG. 4

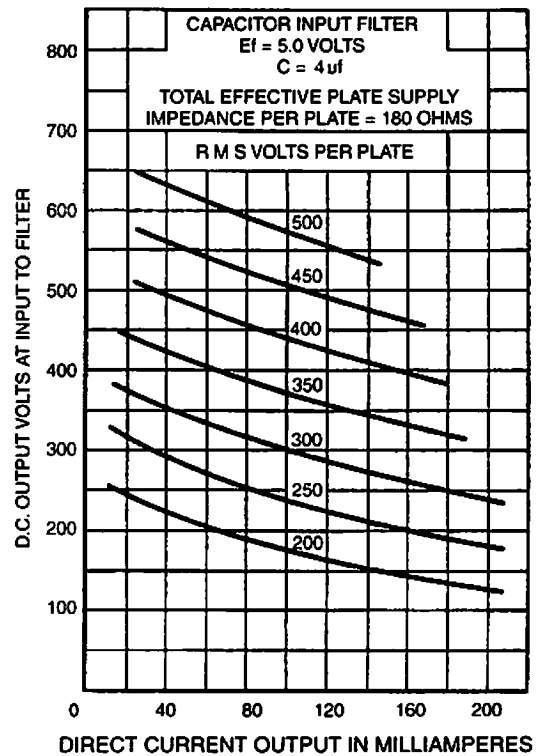
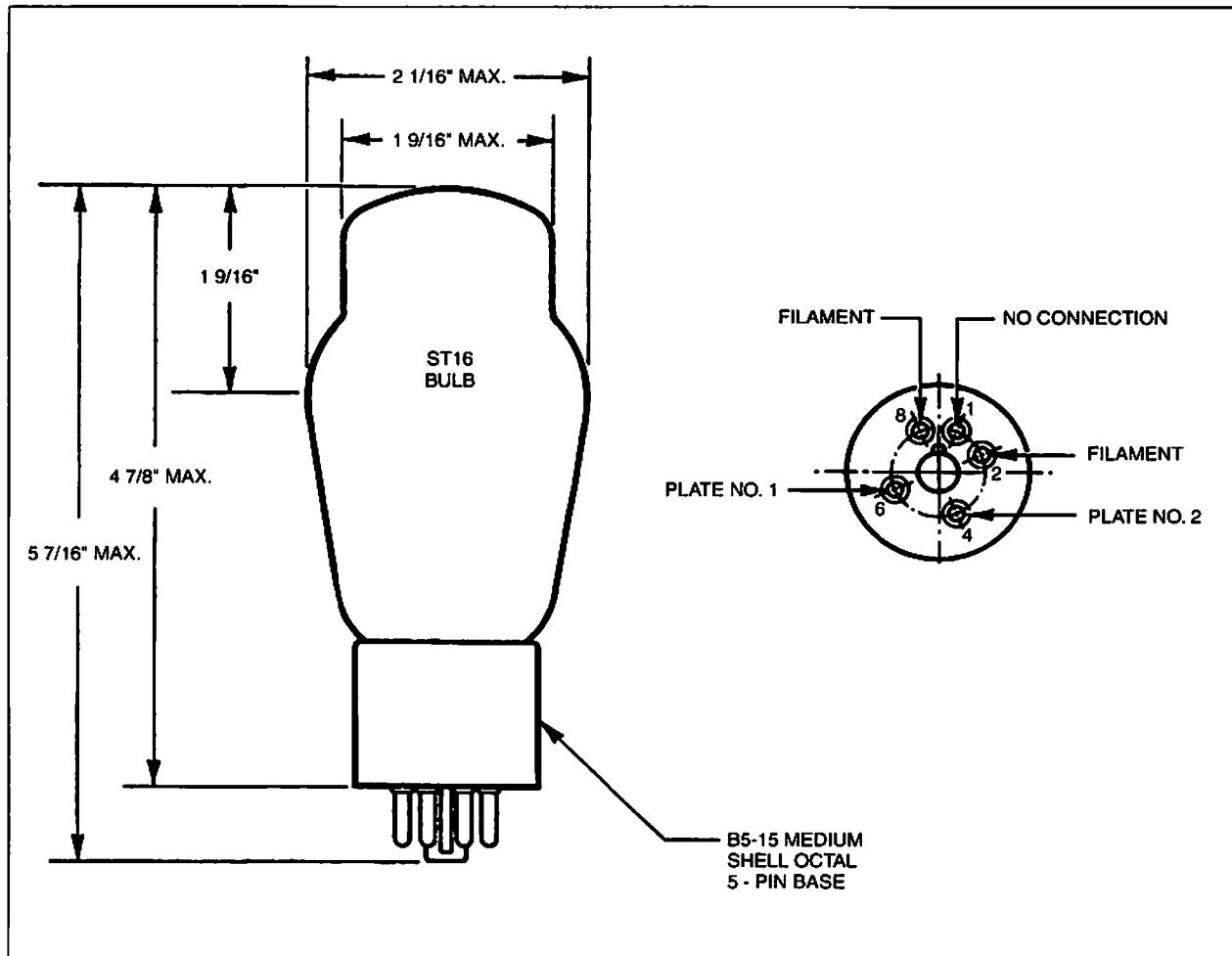


FIG. 5

# 274B Vacuum Tube



## Ordering Information

(Order by Code and Comcode)

### Electron Tubes

Code	Description	Comcode
274B	Full Wave Rectifier	100792399

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