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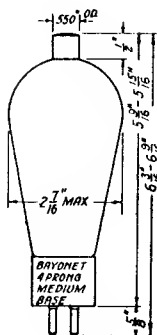
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RAYTHEON AMATEUR TUBES

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## MERCURY VAPOR TYPE HALF-WAVE RECTIFIER



The 866A is a half-wave, shielded filament type mercury vapor rectifier tube particularly suited for high voltage d-c power supplies. Two type 866A tubes in a full wave rectifier circuit with a choke input filter will supply a maximum of 3000 volts d.c. at a drain of 500 milliamperes.

### FILAMENT RATING

Filament Volt. 2.5 volts  
Filament Cur. 5.0 amp

### MAXIMUM RATINGS—TEMP. RANGE 25°—60° C.

Peak Inverse Voltage ..... 10000 volts  
Peak Plate Current ..... 1.0 amp  
Average Plate Current ..... 0.25 amp  
Tube Voltage Drop ..... 10 approx. volts

### TYPICAL OPERATION

| Circuit                | A-C Input Voltage RMS Volts | Maximum D-C Output Volts To Filter | One Section Filter Minimum Choke Henries (L) | Maximum Condenser Mfds. (C) | Maximum D-C Output Current Amperes |
|------------------------|-----------------------------|------------------------------------|----------------------------------------------|-----------------------------|------------------------------------|
| Single-phase Full-Wave | 3535 per tube               | 3180                               | 8.0                                          | 1.25                        | 0.5                                |
| Two Tubes              | 2000 " "                    | 2700                               | 6.8                                          | 1.50                        | 0.5                                |
| Choke Input            | 1500 " "                    | 1800                               | 4.5                                          | 2.1                         | 0.5                                |
| Single-phase Full-Wave | 3535 " "                    | 3950                               | —                                            | —                           | 0.25                               |
| Two Tubes              | 2000 " "                    | 3390                               | —                                            | —                           | 0.25                               |
| Condenser Input        | 1500 " "                    | 2260                               | —                                            | —                           | 0.25                               |
| Single-phase Full-Wave | 7070 total                  | 6360                               | 16.0                                         | 0.6                         | 0.5                                |
| Bridge Circuit         | 6000 " "                    | 5400                               | 13.5                                         | 0.7                         | 0.5                                |
| Four Tubes             | 5000 " "                    | 4500                               | 11.0                                         | 0.9                         | 0.5                                |
| Choke Input            | 4000 " "                    | 3600                               | 8.9                                          | 1.1                         | 0.5                                |

### OPERATING NOTES

Values of L and C given under "Typical Operation" are selected to hold the peak surge current within the maximum rating. If a larger value of L is used the capacity may be increased in proportion to the increase in L. L and C of a two section filter are determined as shown above. If two unequal chokes are used, place the larger choke nearer the tube. With a two section filter and the minimum L and the maximum C shown above, the total ripple will be less than 5%.

### CAUTION

In shipment drops of mercury may be shaken onto the filament. Before the plate voltage is applied to a new tube the filament should be burned at normal voltage for at least 15 minutes. The filament should be allowed to come up to operating temperature before plate voltage is applied. For average conditions the delay is approximately 30 seconds.

The tube should always be mounted vertically with the top cap up.

A socket with heavy, tight prongs should be used and the filament voltage should measure exactly 2.5 volts at the socket in order to insure long life.

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## MERCURY VAPOR TYPE HALF-WAVE RECTIFIER

The 866 is a half-wave filament type mercury vapor rectifier tube particularly suited for medium drain d-c power supplies and linear amplifier bias packs. Two types 866 tubes in a full-wave rectifier circuit with a choke input filter will supply a maximum of 2000 d.c. at a drain of 500 ma.

### FILAMENT RATING

Filament Voltage ..... 2.5 volts  
Filament Current ..... 5.0 amp

### MAXIMUM RATINGS—TEMP. RANGE 10°—60° C.

Peak Inverse Voltage ..... 7500 volts  
Peak Plate Current ..... 1.0 amp  
Average Plate Current ..... 0.25 amp  
Tube Voltage Drop (approximate) ..... 15 volts

### TYPICAL OPERATION

| Circuit                | A-C Input Voltage RMS Volts | Maximum D-C Output Volts To Filter | One Section Filter Minimum Choke Henries (L) | Maximum Condenser Mfds. (C) | Maximum D-C Output Current Amperes |
|------------------------|-----------------------------|------------------------------------|----------------------------------------------|-----------------------------|------------------------------------|
| Single-phase Full-Wave | 2650 per Tube               | 2385                               | 2.0                                          | 1.6                         | 0.5                                |
| Two Tubes              | 2000 " "                    | 1800                               | 4.9                                          | 1.8                         | 0.5                                |
| Choke Input            | 1500 " "                    | 1350                               | 3.3                                          | 2.8                         | 0.5                                |
| Single-phase Full-Wave | 2650 " "                    | 3000                               | —                                            | —                           | 0.25                               |
| Two Tubes              | 2000 " "                    | 2260                               | —                                            | —                           | 0.25                               |
| Condenser Input        | 1500 " "                    | 1700                               | —                                            | —                           | 0.25                               |
| Single-phase Full-Wave | 5000 total                  | 4770                               | 12.0                                         | 0.8                         | 0.5                                |
| Bridge Circuit         | 4500 " "                    | 4050                               | 10.0                                         | 1.0                         | 0.5                                |
| Four Tubes             | 4000 " "                    | 3600                               | 8.4                                          | 1.2                         | 0.5                                |
| Choke Input            | 3500 " "                    | 2700                               | 6.8                                          | 1.5                         | 0.5                                |

For tube outline, basing view and operating notes see type 866A.

## MERCURY VAPOR TYPE HALF-WAVE RECTIFIER

The 872A is a half-wave, shielded filament type mercury vapor rectifier tube designed for heavy current, high voltage power supplies. Two type 872A tubes in a full-wave rectifier circuit with a choke input filter will supply a maximum of 2.5 amperes at 5000 volts d.c.

### FILAMENT RATING

Filament Volt. 5.0 volts  
Filament Cur. 6.75 amp

### MAXIMUM RATINGS—TEMP. RANGE 20°—60° C.

Peak Inverse Voltage ..... 1000 volts  
Peak Plate Current ..... 5.0 amp  
Average Plate Current ..... 1.25 amp  
Tube Voltage Drop (approx.) .. 10 volts

### TYPICAL OPERATION

| Circuit                                          | Maximum A-C Input Volts (RMS) | Approx. D-C Output Volts To Filter | Maximum D-C Output Current—Amp. |
|--------------------------------------------------|-------------------------------|------------------------------------|---------------------------------|
| Single-phase Full-Wave Two Tubes                 | 3535 per tube                 | 3180                               | 2.5                             |
| Single-phase Full-Wave Bridge Circuit Four Tubes | 7070 total                    | 6360                               | 2.5                             |

The values given above are for a sine wave input voltage and with a suitable choke before the first filter condenser.

### CAUTION

In shipment drops of mercury may be shaken onto the filament. Before the plate voltage is applied to a new tube the filament should be burned at normal voltage for at least 15 minutes.

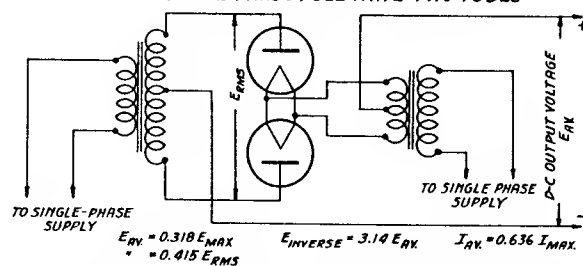
In normal operation the filament should be brought up to operating temperature at least 30 seconds before the plate voltage is applied.

The tube should always be mounted vertically with the top cap up.

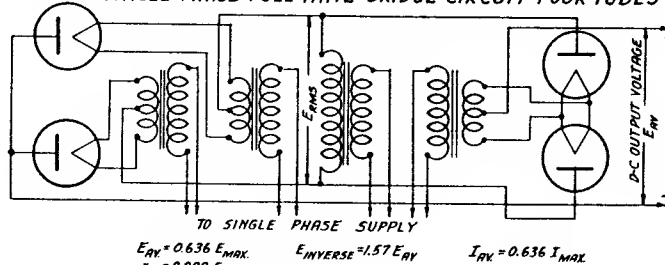
A socket with tight, heavy prongs should be used and the filament voltage should measure exactly 5.0 volts at the socket to insure long life.

### CIRCUITS FOR MERCURY-VAPOR RECTIFIER TUBES

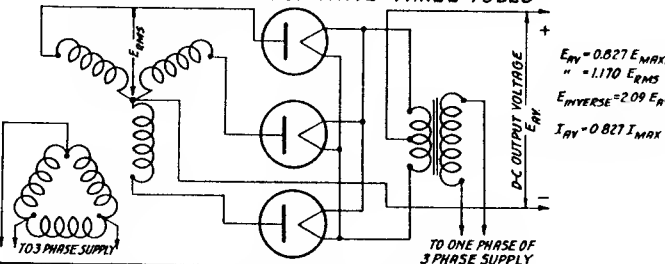
#### SINGLE-PHASE FULL WAVE TWO TUBES



#### SINGLE-PHASE FULL WAVE BRIDGE CIRCUIT FOUR TUBES



#### THREE PHASE HALF WAVE THREE TUBES



The values of  $E_{RV}$ ,  $E_{INVERSE}$ , and  $I_{RV}$  are based on

1. Sine Wave Supply Voltage
2. Equal Phase Voltages
3. Zero Tube Voltage Drop
4. Pure Resistance Load—No Filter