



866-A

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# HALF-WAVE MERCURY-VAPOR RECTIFIER

## GENERAL DATA

### Electrical:

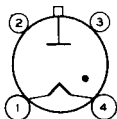
Filament, Coated:

	Min.	Av.	Max.	
Voltage. . . . .	2.38	2.5	2.62	ac volts
Current at 2.5 volts . . . . .	-	5	5.4	amp
Heating time at rated voltage. . . . .	15	-	-	sec
Peak Tube Voltage Drop (Approx.) . . . . .	-	15	-	volts

### Mechanical:

Operating Position . . . . .	Vertical, base down
Maximum Overall Length . . . . .	6-9/16"
Maximum Seated Length. . . . .	5-3/4" ± 3/16"
Maximum Diameter . . . . .	2-7/16"
Weight (Approx.) . . . . .	3 oz
Bulb . . . . .	ST19
Cap. . . . .	Medium (JETEC No.C1-5)
Socket . . . . .	Johnson No.123-209, or equivalent
Base . . . . .	Medium-Shell Small 4-Pin with Bayonet (JETEC No.A4-10)
Basing Designation for BOTTOM VIEW . . . . .	4P

- Pin 1 - Filament
- Pin 2 - No Connection
- Pin 3 - No Connection



- Pin 4 - Filament, Cathode Shield
- Cap - Anode

### Temperature Control:

**Heating**--When the ambient temperature is so low that the normal rise of condensed-mercury temperature above the ambient temperature will not bring the condensed-mercury temperature up to the minimum value of the operating ranges specified under **Maximum Ratings**, some form of heat-conserving enclosure or auxiliary heater will be required.

**Cooling**--When the operating conditions are such that the maximum value of the operating condensed-mercury-temperature range is exceeded, provision should be made for forced-air cooling sufficient to prevent exceeding the maximum value.

### Temperature Rise of Condensed Mercury to Equilibrium Above Ambient Temperature (Approx.):

No load*	26	°C
Full load <sup>▲</sup>	33	°C

\* With 2.38 volts rms on filament, and no heat-conserving enclosure.

<sup>▲</sup> With 2.62 volts rms on filament, average anode current = 0.5 ampere, and no heat-conserving enclosure.

← Indicates a change.

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### HALF-WAVE RECTIFIER

→ **Maximum Ratings, Absolute Values: For supply frequency of 60 cps**

**Operating Condensed-Mercury-  
Temperature Range<sup>•</sup>**  
 20° to 80° C    20° to 70° C    20° to 60° C

#### PEAK INVERSE

ANODE VOLTAGE. . . . . 2500 max.    5000 max.    10000 max. volts

#### ANODE CURRENT:

Peak . . . . . 2 max.    1 max.    1 max. amp

Average<sup>#</sup> . . . . . 0.5 max.    0.25 max.    0.25 max. amp

Fault, for  
duration of  
0.1 second

maximum. . . . . 20 max.    20 max.    20 max. amp

• Operation at 40° ± 5° C is recommended.

# Averaged over any interval of 30 seconds maximum.

### OPERATING CONSIDERATIONS

→ Shields and rf filter circuits should be provided for the 866-A if it is subjected to extraneous high-frequency fields during operation. These fields tend to produce breakdown effects in mercury vapor and are detrimental to tube life and performance. When shields are used, special attention must be given to providing adequate ventilation and to maintaining normal condensed-mercury temperature. Rf filters are employed to prevent damage caused by rf currents which might otherwise be fed back into the rectifier tubes.

→ Indicates a change.



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For Circuit Figures, see Front of this Section

CIRCUIT	MAX. TRANS. SEC. VOLTS (RMS) E	APPROX. DC OUTPUT VOLTS TO FILTER E <sub>av</sub>	MAX. DC OUTPUT AMPERES I <sub>av</sub>	MAX. DC OUTPUT KW TO FILTER P <sub>dc</sub>		
<b>Fig. 1</b> Half-Wave Single-Phase In-Phase Operation	7000 <sup>□</sup> 3500 <sup>▲</sup> 1700*	3200 1600 800	0.25 0.25 0.5	0.8 0.4 0.4		
<b>Fig. 2</b> Full-Wave Single-Phase In-Phase Operation	3500 <sup>□</sup> 1700 <sup>▲</sup> 800*	3200 1600 800	0.5 0.5 1	1.6 0.8 0.8		
<b>Fig. 3</b> Series Single-Phase In-Phase Operation	7000 <sup>□</sup> 3500 <sup>▲</sup> 1700*	6400 3200 1600	0.5 0.5 1	3.2 1.6 1.6		
<b>Fig. 4</b> Half-Wave Three-Phase In-Phase Operation	4000 <sup>□</sup> 2000 <sup>▲</sup> 1000*	4800 2400 1200	0.75 0.75 1.5	3.6 1.8 1.8		
<b>Fig. 5</b> Parallel Three-Phase Quadrature Operation	4000 <sup>□</sup> 2000 <sup>▲</sup> 1000*	4800 2400 1200	1.5 1.5 3	7.2 3.6 3.6		
<b>Fig. 6</b> Series Three-Phase Quadrature Operation	4000 <sup>□</sup> 2000 <sup>▲</sup> 1000*	9600 4800 2400	0.75 0.75 1.5	7.2 3.6 3.6		
<b>Fig. 7</b> Half-Wave Four-Phase Quadrature Operation	3500 <sup>□</sup> 1700 <sup>▲</sup> 800*	4500 2300 1100	<i>Resis- tive Load</i> 0.91 0.91 1.82	<i>Induc- tive Load</i> 1 1 2	<i>Resis- tive Load</i> 4.05 2.07 1.98	<i>Induc- tive Load</i> 4.5 2.3 2.2
<b>Fig. 8</b> Half-Wave Six-Phase Quadrature Operation	3500 <sup>□</sup> 1700 <sup>▲</sup> 800*	4800 2400 1200	<i>Resis- tive Load</i> 0.95 0.95 1.9	<i>Induc- tive Load</i> 1 1 2	<i>Resis- tive Load</i> 4.6 2.3 2.28	<i>Induc- tive Load</i> 4.8 2.4 2.4

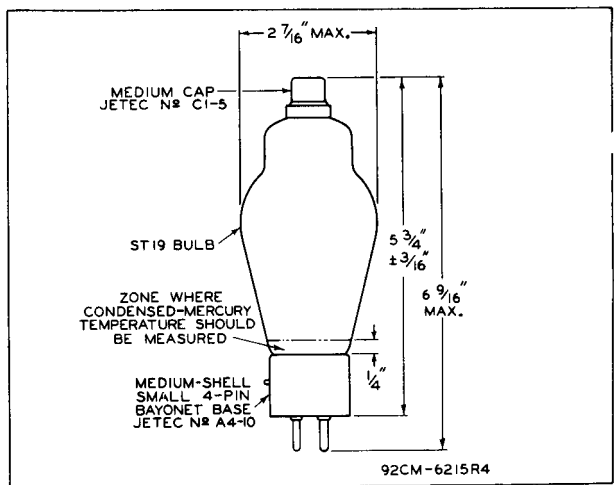
<sup>□</sup> For maximum peak inverse anode voltage of 10000 volts, and condensed-mercury-temperature range of 20° to 60° C.  
<sup>▲</sup> For maximum peak inverse anode voltage of 5000 volts, and condensed-mercury-temperature range of 20° to 70° C.  
<sup>\*</sup> For maximum peak inverse anode voltage of 2500 volts, and condensed-mercury-temperature range of 20° to 80° C.

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RATE OF RISE OF CONDENSED-MERCURY TEMPERATURE

