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# HALF-WAVE MERCURY-VAPOR RECTIFIER

## GENERAL DATA

### Electrical:

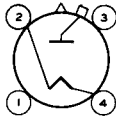
	Min.	Av.	Max.	
Filament, Coated:				
Voltage . . . . .	4.75	5	5.25	ac volts
Current at 5 volts . . . . .	-	7.5	8	amp
Heating time at rated voltage . . . . .	30	-	-	sec
Peak Tube Voltage Drop (Approx.) . . . . .	-	10	-	volts

### Mechanical:

Operating Position . . . . .	Vertical, base down
Overall Length . . . . .	8-1/4" ± 1/4"
Maximum Diameter . . . . .	2-5/16"
Weight (Approx.) . . . . .	7 oz
Bulb . . . . .	T18
Cap. . . . .	Medium (JETEC No.C1-5)
Socket . . . . .	Johnson No.123-211, or equivalent with Bayonet (JETEC No.A4-29)
Base . . . . .	Medium-Metal-Shell Jumbo 4-Pin

Basing Designation for BOTTOM VIEW . . . . . 4AT

- Pin 1 - No Connection
- Pin 2 - Filament, Cathode Shield



- Pin 3 - No Connection
- Pin 4 - Filament 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*	14	°C
Full load <sup>▲</sup>	19	°C

\* with 4.75 volts rms on filament, and no heat-conserving enclosure.  
 ▲ with 5.25 volts rms on filament, average anode current = 1.25 amperes, and no heat-conserving enclosure.

← Indicates a change.

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

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

	20° to 70° C	20° to 60° C	
PEAK INVERSE ANODE VOLTAGE. . . . .	5000 max.	10000 max.	volts
ANODE CURRENT:			
Peak . . . . .	5 max.	5 max.	amp
Average <sup>#</sup> . . . . .	1.25 max.	1.25 max.	amp
Fault, for duration of 0.1 second maximum.	50 max.	50 max.	amp

<sup>•</sup> Operation at 40° ± 5° C is recommended.

<sup>#</sup> Averaged over any interval of 15 seconds maximum.

### OPERATING CONSIDERATIONS

*Shields and rf filter circuits* should be provided for the 872-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)	APPROX. DC OUTPUT VOLTS TO FILTER	MAX. DC OUTPUT AMPERES	MAX. DC OUTPUT KW TO FILTER
	E	$E_{av}$	$I_{av}$	$P_{dc}$
Fig. 1 Half-Wave Single-Phase In-Phase Operation	7000 <sup>□</sup>	3200	1.25	4
	3500 <sup>▲</sup>	1600	1.25	2
Fig. 2 Full-Wave Single-Phase In-Phase Operation	3500 <sup>□</sup>	3200	2.5	8
	1700 <sup>▲</sup>	1600	2.5	4
Fig. 3 Series Single-Phase In-Phase Operation	7000 <sup>□</sup>	6400	2.5	16
	3500 <sup>▲</sup>	3200	2.5	8
Fig. 4 Half-Wave Three-Phase In-Phase Operation	4000 <sup>□</sup>	4800	3.75	18
	2000 <sup>▲</sup>	2400	3.75	9
Fig. 5 Parallel Three-Phase Quadrature Operation	4000 <sup>□</sup>	4800	7.5	36
	2000 <sup>▲</sup>	2400	7.5	18
Fig. 6 Series Three-Phase Quadrature Operation	4000 <sup>□</sup>	9600	3.75	36
	2000 <sup>▲</sup>	4800	3.75	18
Fig. 7 Half-Wave Four-Phase Quadrature Operation	3500 <sup>□</sup> 1700 <sup>▲</sup>	4500 2250	<i>Resis- Induc-</i>	<i>Resis- Induc-</i>
			<i>tive Load Load</i>	<i>tive Load Load</i>
Fig. 8 Half-Wave Six-Phase Quadrature Operation	3500 <sup>□</sup> 1700 <sup>▲</sup>	4800 2400	<i>Resis- Induc-</i>	<i>Resis- Induc-</i>
			<i>tive Load Load</i>	<i>tive Load Load</i>

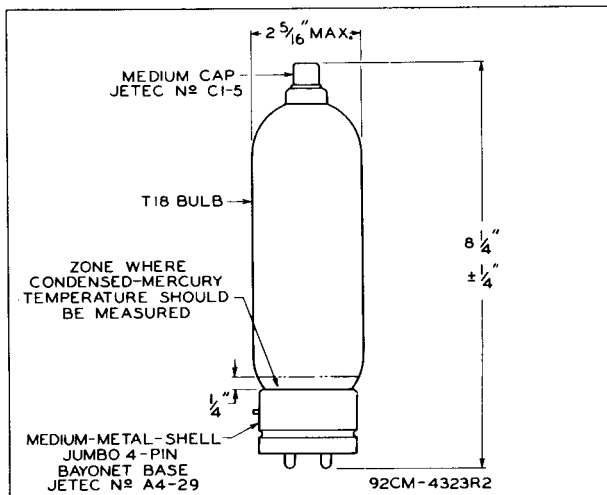
□ For maximum peak inverse anode voltage of 10000 volts and condensed-mercury-temperature range of 20° to 60° C.  
 ▲ For maximum peak inverse anode voltage of 5000 volts and condensed-mercury-temperature range of 20° to 70° C.

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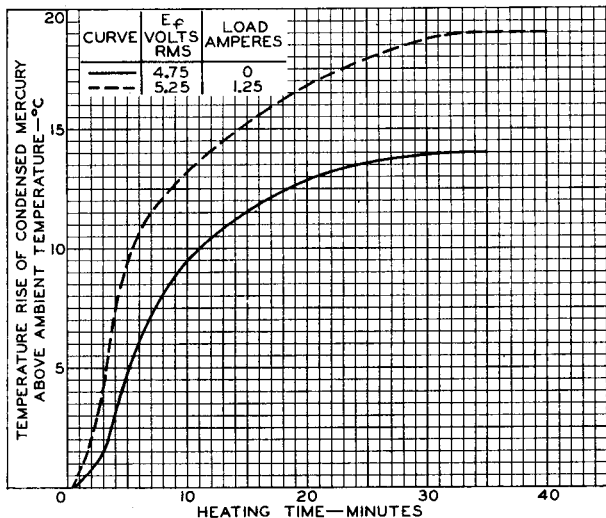


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## RATE OF RISE OF CONDENSED-MERCURY TEMPERATURE



92CS-9029