920

TWIN PHOTOTUBE

GAS TYPE

Cathodes	Quarter-cylindrical, caesium-coated
Cathode Window Area (Each unit)	0.31 sq. in.
Direct Interelectrode Capacitances:	
Anode to Cathode (Each unit)	1.5 μμf
Between Cathodes	1.6 μμf
Between Anodes	0.36 μμf
Maximum Overall Length	4"
Maximum Diameter	1-3/16"
Bulb	T-9
Base	Small 4-pin

MAXIMUM RATINGS and CHARACTERISTICS

All values are for each unit

Anode-Supply Voltage (D.C. or Peak A.C.)	90 max.	volts
Ambient Temperature	50 max.	°C
Sensitivity: *		
At 100 cycles	75	μamp./lumen
At 1000 cycles	70	μamp./lumen
At 5000 cycles	63	μamp./lumen
Gas Amplification Factor **	Not over 10	
D-C Resistance of Load:		
With anode-supply voltage of 90 volts		
For d-c currents { greater than 2.5 μamp.	4 min.	megohms
For d-c currents { less than 2.5 μamp.	No minimum	

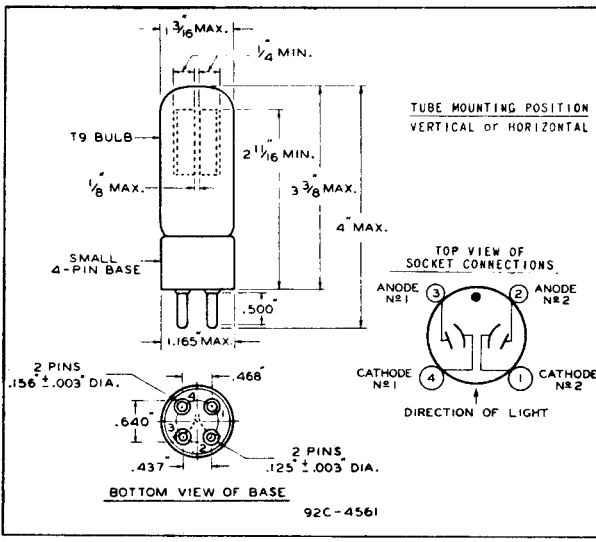
* Sensitivity is measured with a light input varied sinusoidally about a mean value from zero to a maximum of twice the mean. The sensitivity values shown are the ratios of the amplitude of variation in the current output to the amplitude of variation in the light input. The method of sensitivity measurement used is based on the approximation that sensitivity at 100 cycles is equal to sensitivity at 0 cycles. The measurements were made with a 90-volt supply, a 1-megohm load, and a mean light input of 0.015 lumen. The light source was a Mazda projection lamp operated at a filament color temperature of 2870 degrees Kelvin. The effect of interelectrode capacitance was made negligible. ←

** Gas Amplification Factor is given as a ratio of sensitivity at maximum anode voltage to sensitivity at a voltage sufficiently low (approximately 25 volts) to eliminate gas ionization effects.

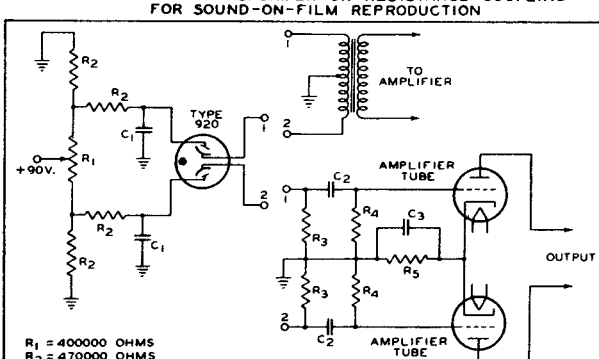
← Indicates a change.

920

TWIN PHOTOTUBE



TYPICAL CIRCUIT FOR THE 920 WITH EITHER TRANSFORMER OR RESISTANCE COUPLING FOR SOUND-ON-FILM REPRODUCTION



R_1 = 400000 OHMS
R_2 = 470000 OHMS
R_3 = 0.1 TO 5 MEGOHMS
R_4 = 1.0 TO 5 MEGOHMS
R_5 = SELF-BIAS RESISTOR
C_1 = 0.1 μf
C_2 = 0.1 TO 1.0 μf
C_3 = BY-PASS CONDENSER

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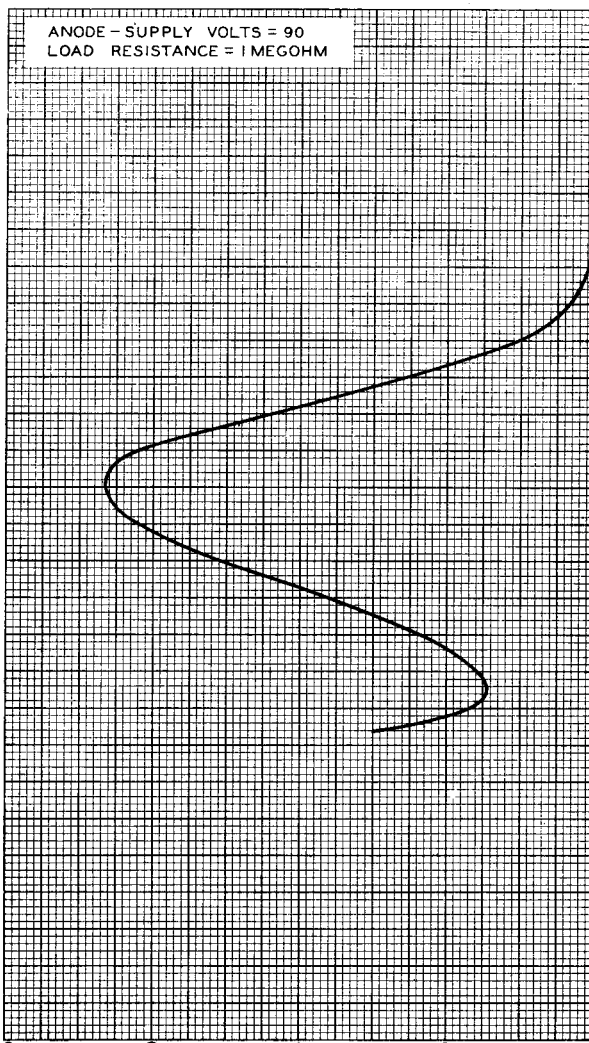
SPECTRAL SENSITIVITY CHARACTERISTICS



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92C-4617R1

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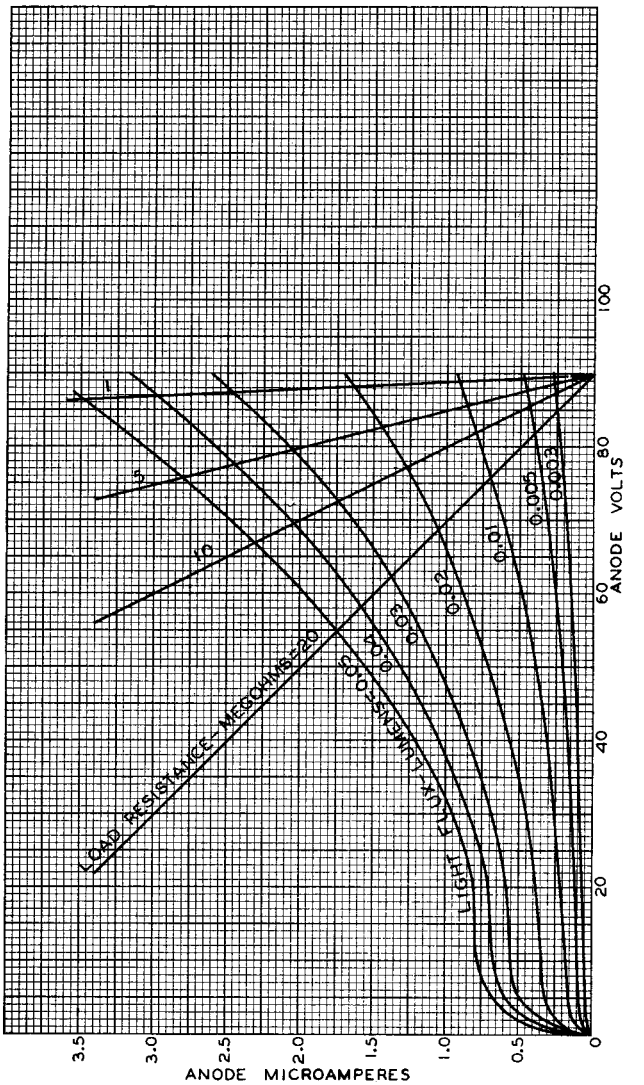
AVERAGE ANODE CHARACTERISTICS



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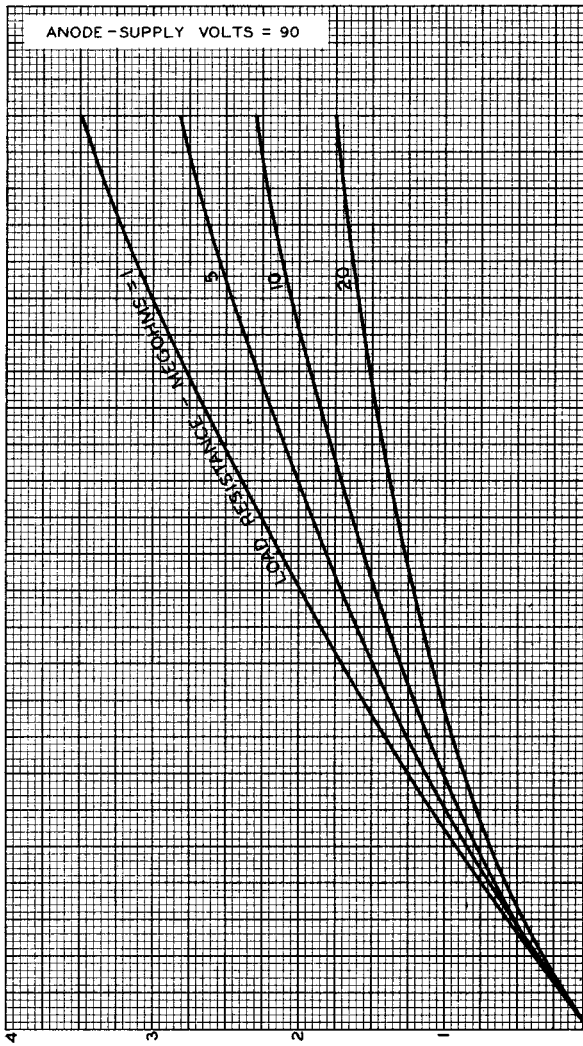
AVERAGE CHARACTERISTICS



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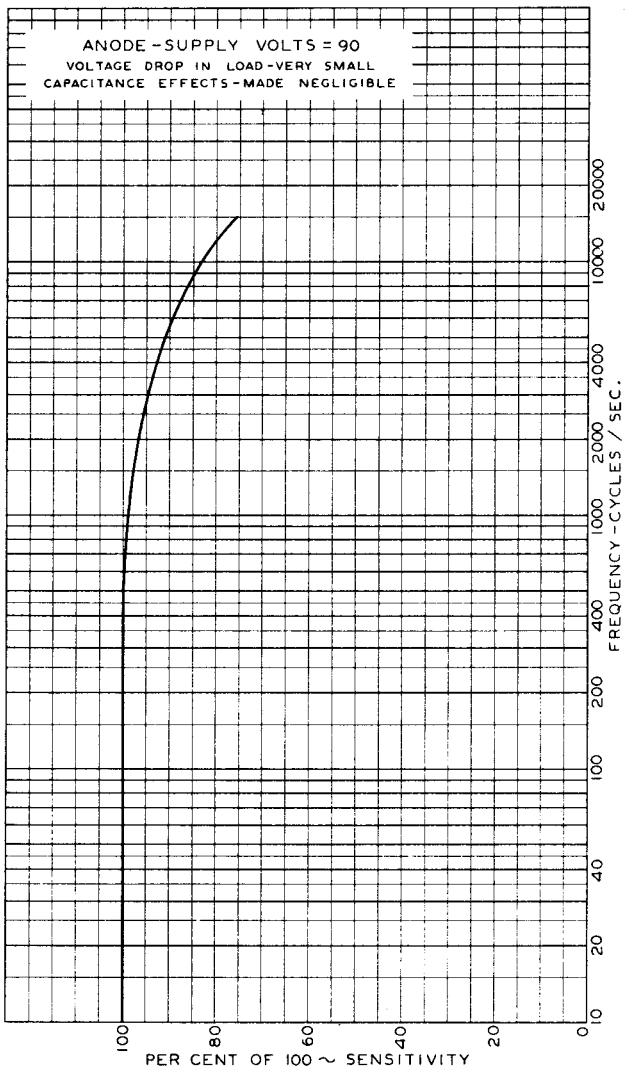
AVERAGE SENSITIVITY CHARACTERISTIC



NOV. 26, 1937

RCA RADIOTRON DIVISION
RCA MANUFACTURING COMPANY, INC.

92C-4823

Gas Phototube

SIDE-ON, TWIN-UNIT TYPE HAVING S-1 RESPONSE

DATA

General:

Spectral Response	S-1
Wavelength of Maximum Response	8000 ± 1000 angstroms
Cathode (Each):	
Shape	Quarter-Cylindrical
Minimum projected length[a]	1-3/16"
Minimum projected width[a]	1/4"
Direct Interelectrode Capacitances (Approx.):	
Cathode to cathode[b]	1.8 μμf
Cathode to anode[c]	1.6 μμf
Anode to anode[d]	0.4 μμf ←
Maximum Overall Length	4"
Maximum Seated Length	3-3/8"
Seated Length to Center of Cathodes	2-1/8" ± 3/32"
Maximum Diameter	1-3/16"
Operating Position	Any
Weight (Approx.)	1.1 oz ←
Bulb	T9
Socket	Amphenol No.77-M1P-4-T, or equivalent ←
Base	Small-Shell Small 4-Pin (JEDEC No.A4-5)
Basing Designation for BOTTOM VIEW	4BG

Pin 1 – Photocathode of Unit No.2
Pin 2 – Anode of Unit No.2
Pin 3 – Anode of Unit No.1
Pin 4 – Photocathode of Unit No.1

DIRECTION OF RADIATION

Maximum Ratings, *Absolute-Maximum Values:* ←

Values are for Each Unit

	Rating I	*Rating II*	
ANODE-SUPPLY VOLTAGE (DC or Peak AC)	70 max.	90 max.	volts
AVERAGE CATHODE-CURRENT DENSITY[e]	30 max.	15 max.	μa/sq.in.
AVERAGE CATHODE CURRENT[e]	4 max.	2 max.	μa
AMBIENT TEMPERATURE	100 max.	100 max.	°C

← Indicates a change.

→Characteristics:

Values are for each unit with an anode-supply voltage of 90 volts unless otherwise specified

	Min.	Median	Max.	
Sensitivity:				
Radiant, at 8000 angstroms. .	–	0.0094	–	amp/watt
Luminous:[f]				
At 0 cps.	50	100	175	μa/lumen
At 5000 cps	–	85	–	μa/lumen
At 10000 cps.	–	74	–	μa/lumen
Ratio of Luminous Sensitivities (Unit No.1 to Unit No.2). . .	0.5	1.15	2.0	
Gas Amplification Factor[g] . . .	–	–	9	
Anode Dark Current at 25° C . .	–	–	0.1	μa

Minimum Circuit Values:

Values are for Each Unit

With an anode-supply voltage of	*70 or less*	*90*	*volts*
DC Load Resistance:			
For dc currents above 2 μa. .	0.1 min.	–	megohm
For dc currents below 2 μa. .	0 min.	–	megohm
For dc currents above 1 μa. .	—	2.5 min.	megohms
For dc currents below 1 μa. .	–	0.1 min.	megohm

[a] On plane perpendicular to indicated direction of incident radiation.

[b] With anodes grounded.

[c] Each unit, with other unit grounded.

[d] With cathodes grounded.

[e] Averaged over any interval of 30 seconds maximum.

[f] For conditions where the light source is a tungsten-filament lamp operated at a color temperature of 2870° K. A dc anode supply of 90 volts and a 1-megohm load resistor are used. For the 0-cycle measurement, a light input of 0.04 lumen is used. For the 5000- and 10000-cycle measurements, the light input is varied sinusoidally about a mean value of 0.015 lumen from zero to a maximum of twice the mean value.

[g] The ratio of luminous sensitivity at an anode-supply voltage of 90 volts to luminous sensitivity at an anode-supply voltage of 25 volts. In each case, sensitivity is obtained under conditions where the light source is a tungsten-filament lamp operated at a color temperature of 2870° K, the light input is 0.04 lumen, and the load resistor has a value of 1 megohm.

SPECTRAL-SENSITIVITY CHARACTERISTIC OF PHOTOSENSITIVE DEVICE HAVING S-1 RESPONSE

and

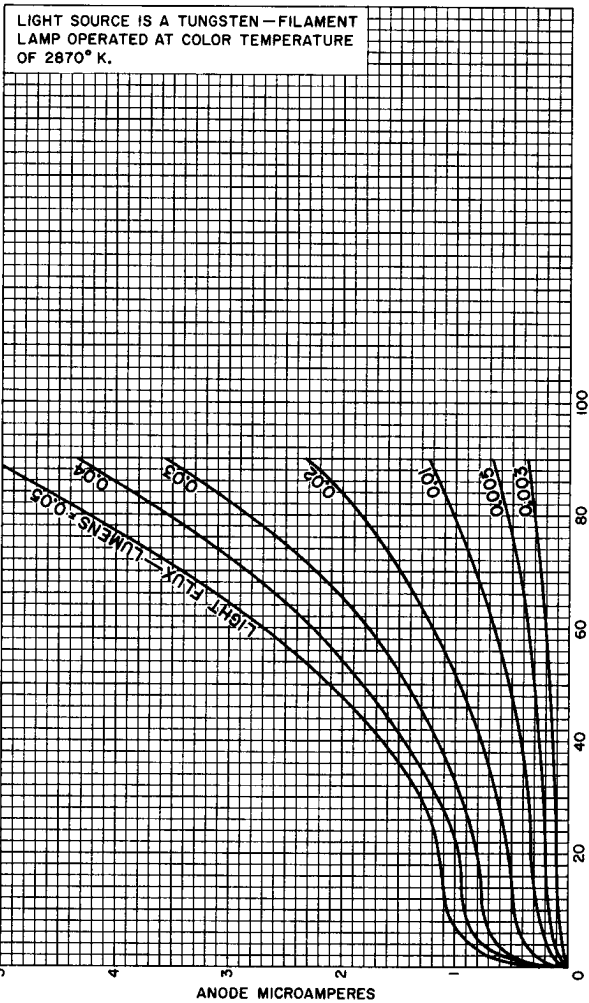
FREQUENCY-RESPONSE CHARACTERISTICS OF GAS PHOTOTUBES

are shown at the front of this section

DIMENSIONAL OUTLINE
shown under Type 5584 also applies to the 920

→Indicates a change.

AVERAGE ANODE CHARACTERISTICS
Each Unit



92CM-4618R4