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IMAGE-CONVERTER TUBE

MONOVOLTAGE TYPE HAVING S-I RESPONSE

For use, in combination with suitable optical systems, in viewing a scene irradiated with near-infrared radiation

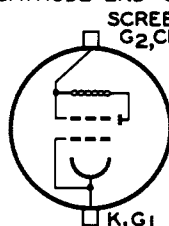
DATA**General:**

Spectral Response.	S-1
Wavelength of Maximum Response	8000 $\pm$ 1000 angstroms
Photocathode, Semitransparent:	
Shape.	Circular
Minimum useful diameter.	0.75"
Fluorescent Screen:	
Shape.	Circular
Minimum useful diameter.	0.57"
Phosphor	P20 [■] , Aluminized
Fluorescence	Yellow-Green
Phosphorescence.	Yellow-Green
Persistence.	Medium-Short
Focusing Method (Self-focusing).	Electrostatic
Overall Length	2.28" $\pm$ 0.05"
Greatest Diameter.	1.35" $\pm$ 0.03"
Weight (Approx.)	1.5 oz
Operating Position	Any
Terminal Connections (See Dimensional Outline):	

DIRECTION OF INCIDENT RADIATION;
PERPENDICULAR TO
PHOTOCATHODE END OF TUBE

CL - Collector

G₁ - Grid No. 1
(Focusing
Electrode)



G₂ - Grid No. 2
(Focusing &
Accelerating
Electrode)
K - Photocathode

Maximum Ratings, Absolute-Maximum Values:**FLUORESCENT- SCREEN VOLTAGE:**[□]

Peak instantaneous	13000 max.	volts
Average (DC)	12500 max.	volts

AVERAGE PHOTOCATHODE CURRENT

(Continuous operation)*.	0.35 max.	μ a
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AMBIENT TEMPERATURE.	75 max.	$^{\circ}$ C
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Characteristics:

At Ambient Temperature of 25^o C

Fluorescent-Screen Voltage (DC) [□] . . .	12000	volts
Median Paraxial Magnification		
Factor [▲]	0.75	
Minimum Conversion Index [†]	10	
Minimum Resolution [▲]	25	line-pairs per mm



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Maximum Quotient** of Screen Back-ground by Conversion Index 0.33 μ lumen/sq.cm.

■ For Curves, see *front of Cathode-Ray Tube, Storage Tube, & Monoscope Section. See also Operating Considerations.*

□ Referred to photocathode.

* Averaged over any interval of 10 seconds maximum.

• Defined as the ratio of the linear size of the image on the fluorescent screen to the linear size of the image on the photocathode. The image on the photocathode consists of two parallel lines 0.08" long, each located 0.08" from the tube axis. Size of the image on the fluorescent screen is determined by measuring the spacing between the two parallel lines.

† Ratio of luminous flux from fluorescent screen to the product of the luminous flux incident on Corning No. 2540 Infrared Filter (Melt No. 1613, 2.61-mm thick), or equivalent, and the filter factor of 11.6 per cent. The light source is a tungsten filament lamp operated at a color temperature of 2870° K.

▲ The resolution, both horizontally and vertically in a 0.15-inch-diameter circle centered on the photocathode, is determined with a pattern consisting of alternate black and white lines of equal width. Any two adjacent lines are designated as a "line-pair".

** The value of this quotient for any individual tube multiplied by the square of the magnification factor of the tube gives that value of the incident illumination from a 2870° K source required to produce an increase in screen brightness equal to the screen background.

OPERATING CONSIDERATIONS

The curves giving the *spectral-energy emission characteristic* and the *persistence characteristics* of phosphor P20 are located in the front of the Cathode-Ray Tube, Storage Tube, & Monoscope Section. Only persistence-characteristic curve A applies to the 6929.

Subjecting the 6929 to intense incident-radiation levels may temporarily decrease the tube's sensitivity even though there is no voltage applied. The magnitude and duration of this decrease depend on the length of exposure. Permanent damage to the tube may result if it is exposed to radiant energy so great as to cause excessive heating of the photocathode.

Support for the 6929 may be provided at the photocathode end by a cushioned arrangement and at the screen end by a suitable fixture which will exert adequate but not excessive pressure to hold the tube firmly against the cushion.

Connections to the two terminals of the tube, indicated on the *Dimensional Outline*, should not be soldered to the terminals. They may be made by spring fingers engaging the rim or the straight side of each terminal.

Magnetic shielding of the 6929 is required to minimize the effects of extraneous fields on tube performance. It is to be noted that ac magnetic fields are particularly objectionable in that they seriously impair tube resolution. If an iron or steel case is used, care should be taken in its construction to insure that the case is completely demagnetized.



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The high voltage at which the 6929 is operated may be very dangerous. Great care should be taken in the design of apparatus to prevent the user from coming in contact with the high voltage. Precautions must include safeguards which eliminate all hazards to operating personnel. In the use of high-voltage tubes, such as the 6929, it should always be remembered that high voltage may appear at normally low-potential points in the circuit because of capacitor breakdown or incorrect circuit connections. Before any part of the circuit is touched, the voltage-supply switch should be turned off and both terminals of any capacitors connected to ground.

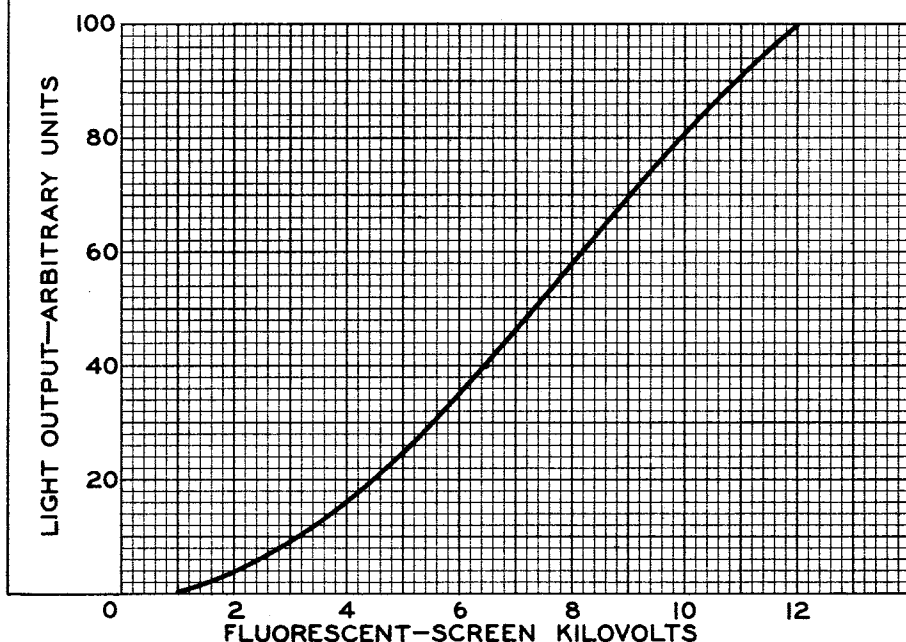
**The curve showing the Spectral-Sensitivity
Characteristic of Phototube having S-I Response
located at the front of this Section also
applies to the 6929**

8-59

DATA 2

AVERAGE CHARACTERISTIC

LIGHT INPUT OF 0.1 LUMEN FROM 2870° K TUNGSTEN SOURCE
INCIDENT ON CORNING N₂2540 INFRARED FILTER.
IRRADIATED PHOTOCATHODE AREA HAS DIAMETER OF 3/4 INCH.

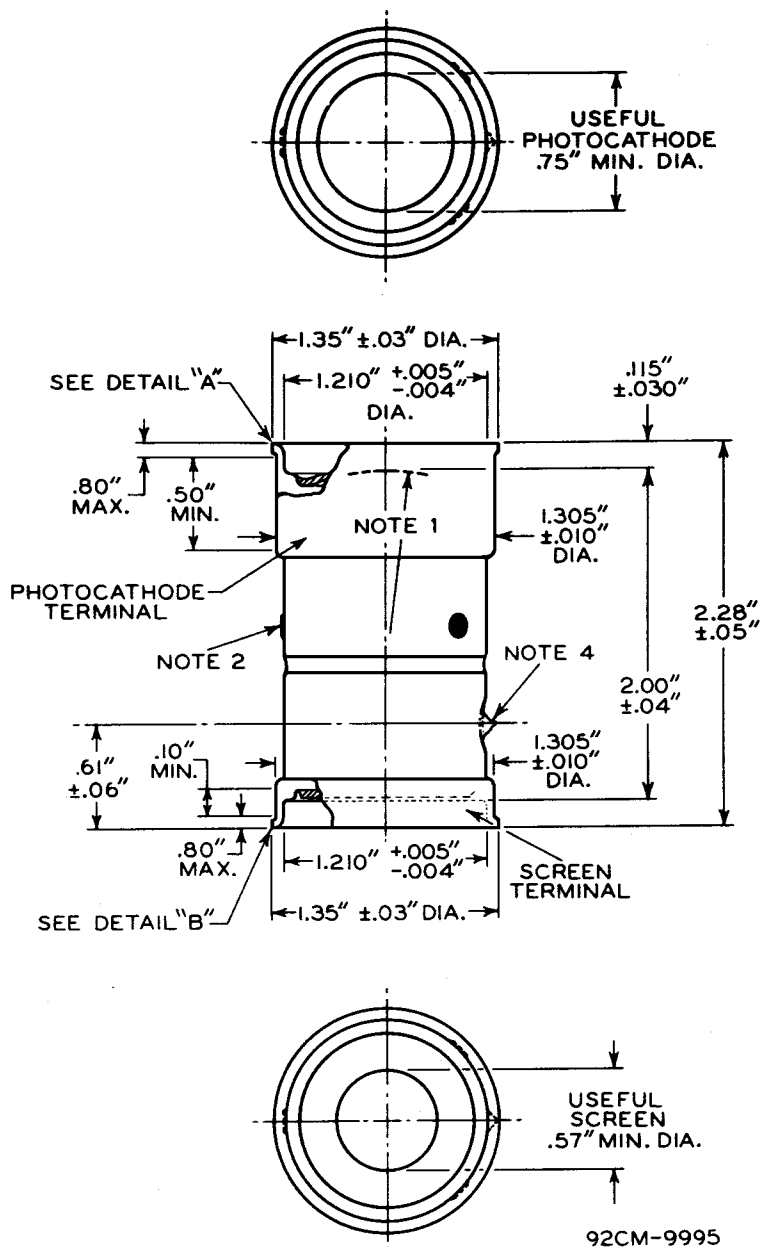


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IMAGE-CONVERTER TUBE



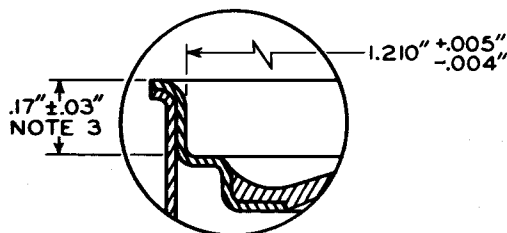


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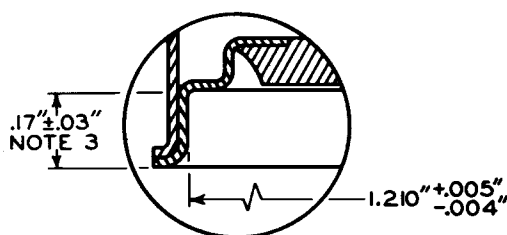
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IMAGE-CONVERTER TUBE

DETAIL A



DETAIL B



NOTE 1: RADIUS OF CURVATURE OF FACEPLATE IS $1.230'' \pm 0.005''$; FACEPLATE THICKNESS AT CENTER IS $0.060'' \pm 0.004''$.

NOTE 2: THREE INSULATED LEAD TIPS WILL NOT EXTEND BEYOND MAXIMUM OUTSIDE DIAMETER OF TUBE. LEADS ARE USED ONLY DURING TUBE MANUFACTURE.

NOTE 3: DEPTH IS MEASURED TO TANGENT OF THE TWO RADII.

NOTE 4: TIP WILL NOT EXTEND BEYOND MAXIMUM OUTSIDE DIAMETER OF TUBE.

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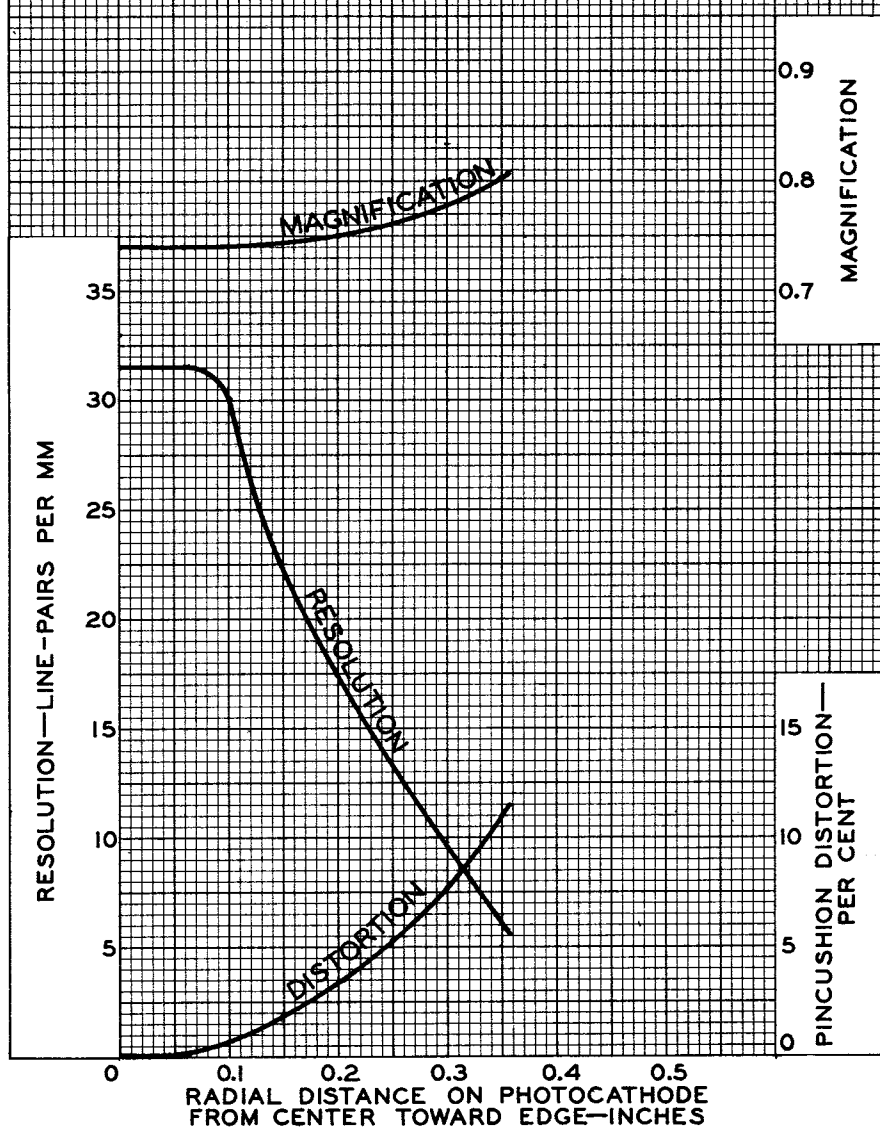


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AVERAGE CHARACTERISTICS

$$\text{PINCUSHION DISTORTION (PER CENT)} = \left(\frac{M_x}{M_c} - 1 \right) \times 100$$

WHERE:

M_x=MAGNIFICATION AT DISTANCE "x" FROM
CENTER OF PHOTOCATHODEM_c=MAGNIFICATION AT CENTER OF
PHOTOCATHODE

ELECTRON TUBE DIVISION

92CM-9984

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY