



6032

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**IMAGE-CONVERTER TUBE**

*For use, in combination with suitable optical systems,  
in viewing a scene with infrared radiation*

**DATA****General:**

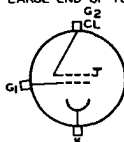
|                                                                                                                      |                           |
|----------------------------------------------------------------------------------------------------------------------|---------------------------|
| Spectral Response. . . . .                                                                                           | S-1                       |
| Wavelength of Maximum Response . . . .                                                                               | 8000 $\pm$ 1000 angstroms |
| Photocathode, Semitransparent:                                                                                       |                           |
| Shape. . . . .                                                                                                       | Circular                  |
| Minimum window area. . . . .                                                                                         | 1 sq. in.                 |
| Minimum window diameter. . . . .                                                                                     | 1-1/8"                    |
| Minimum quality-circle diameter within window. . . . .                                                               | 1"                        |
| Phosphor (For curves, see front of Cathode-Ray Tube Section.<br><i>See also Operating Considerations</i> ) . . . . . | P20                       |
| Fluorescence . . . . .                                                                                               | Yellow-Green              |
| Phosphorescence. . . . .                                                                                             | Yellow-Green              |
| Persistence. . . . .                                                                                                 | Medium-Short              |
| Fluorescent Screen:                                                                                                  |                           |
| Shape. . . . .                                                                                                       | Circular                  |
| Minimum diameter . . . . .                                                                                           | 5/8"                      |
| Focusing Method. . . . .                                                                                             | Electrostatic             |
| Overall Length . . . . .                                                                                             | 4-15/32" $\pm$ 1/16"      |
| Maximum Diameter . . . . .                                                                                           | 2-3/32" $\pm$ 1/32"       |
| Weight (Approx.) . . . . .                                                                                           | 3.6 oz                    |
| Operating Position . . . . .                                                                                         | Any                       |
| Terminal Connections ( <i>See Dimensional Outline</i> ):                                                             |                           |

DIRECTION OF LIGHT:  
PERPENDICULAR TO  
LARGE END OF TUBE

CL—Collector

G<sub>2</sub>—Grid No.2G<sub>1</sub>—Grid No.1

K—Photocathode

**Maximum Ratings, Absolute Values:**

|                                                                  |            |              |
|------------------------------------------------------------------|------------|--------------|
| GRID-No.2* VOLTAGE (DC or Peak AC) <sup>□</sup> . . . . .        | 20000 max. | volts        |
| GRID-No.1 VOLTAGE <sup>□</sup> . . . . .                         | 2700 max.  | volts        |
| AVERAGE PHOTOCATHODE CURRENT<br>(Continuous Operation) . . . . . | 1 max.     | $\mu$ a      |
| AMBIENT TEMPERATURE. . . . .                                     | 75 max.    | $^{\circ}$ C |

**Characteristics:**

|                                                                                              |              |              |         |
|----------------------------------------------------------------------------------------------|--------------|--------------|---------|
| Grid-No.2* Voltage . . . . .                                                                 | 16000        | 20000        | volts   |
| Grid-No.1 (Focusing-Electrode) Voltage—<br>10.75% to 13.25% of<br>grid-No.2 voltage. . . . . | 1720 to 2120 | 2150 to 2650 | volts   |
| Maximum Grid-No.1 Current . . . . .                                                          | 0.4          | 0.5          | $\mu$ a |

\*,<sup>□</sup>: See next page.



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|                                                                             |        |        |                              |
|-----------------------------------------------------------------------------|--------|--------|------------------------------|
| Paraxial Magnification Factor <sup>†</sup> .                                | 0.5    | 0.5    |                              |
| Sensitivity:                                                                |        |        |                              |
| Radiant, at 8000 angstroms . .                                              | 0.0038 | 0.0038 | $\mu\text{a}/\mu\text{watt}$ |
| Infrared <sup>•</sup> . . . . .                                             | 5      | 5      | $\mu\text{a}/\text{lumen}$   |
| Minimum Conversion Index <sup>†</sup> . . .                                 | 8      | 10     |                              |
| Minimum Resolution (In central<br>area of photocathode) <sup>▲•</sup> . . . | 18     | 18     | line-pairs<br>per mm         |

\* Grid No.2 serves the dual function of high-voltage electrode for accelerating the electron beam and of collector through which the electrons leave the tube after their energy has been transformed within the tube.

□ Referred to photocathode.

• Under the following conditions: 2870° K tungsten light source; light flux of 0.1 lumen incident on Corning No.2540 Infrared Filter (Melt 1613, 2.61-mm thick, or equivalent); irradiated area of photocathode is 3/4" in diameter.

† Ratio of light flux from fluorescent screen to the product of the light flux incident on the infrared filter multiplied by the filter factor.

▲ The resolution, both horizontally and vertically, in a 0.3"-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."

• Magnification is defined as the ratio of the distance from the tube axis of an image point on the fluorescent screen to the distance from the tube axis of an object point on the photocathode. Paraxial magnification is the magnification observed along the tube axis.

## 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 Section. Only persistence-characteristic curve A applies to the 6032.

*Subjecting the 6032 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.

The *sensitivity values* for the 6032 are *average values*. The average values are representative of this type when operated with low values of photocathode current. At high values of photocathode current, a drop in sensitivity below the values shown may be expected. The extent of the drop is affected by the nature and severity of the operating conditions to which the 6032 is subjected. After a period of idleness, the 6032 usually recovers a substantial percentage of such loss in sensitivity.

*Support* for the 6032 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 cushioned arrangement.



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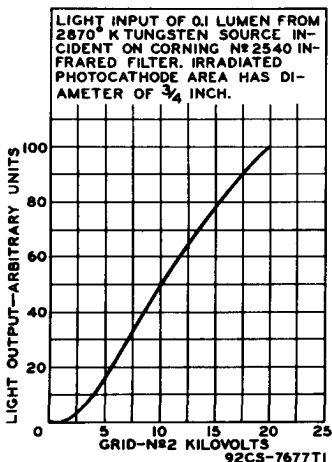
## IMAGE-CONVERTER TUBE

*Shielding* of the 6032 is required to minimize the effects of extraneous fields on tube performance. If an iron or steel case is used, care should be taken in its construction to insure that the case is completely demagnetized. The shielding case may be designed, if desired, to include an annular end piece to position the tube properly in the optical system. The circular opening of the end piece should have a diameter less than 1-1/2" in order to bear on the rim of the tube face (See *Dimensional Outline*).

Connections to the respective terminals of the tube, indicated on the *Dimensional Outline*, should not be soldered to the terminals. They should be made by flexible metal bands fastened firmly around the tube in the contact areas shown on the *Dimensional Outline*. The bands should be fastened only tight enough to insure good contact. If the bands are too tight, the metal-glass seals may be damaged.

The curve showing the Spectral-Sensitivity Characteristic of Phototube having S-1 Response located at the front of this Section also applies to the 6032

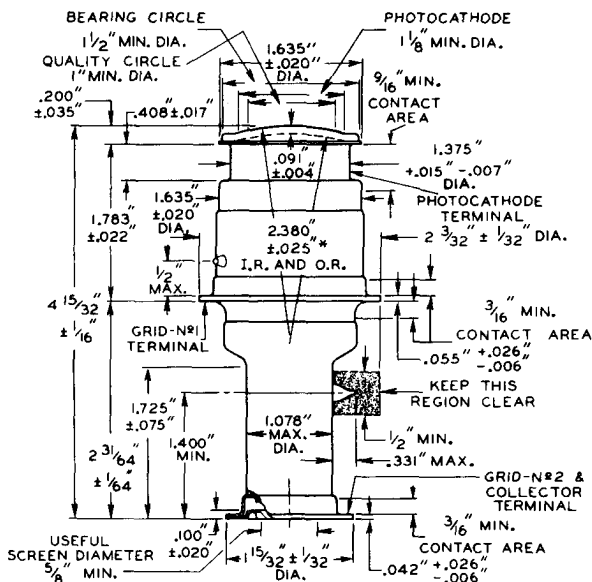
## AVERAGE CHARACTERISTIC





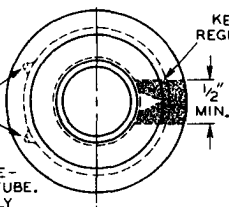
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## IMAGE-CONVERTER TUBE



\* WITHIN QUALITY CIRCLE

INSULATED LEAD TIPS WILL NOT EXTEND BEYOND MAX. O.D. OF TUBE. LEADS ARE USED ONLY DURING TUBE MANUFACTURE.

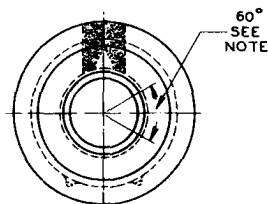
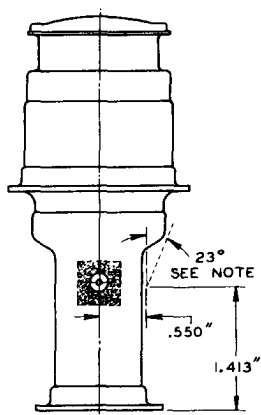




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NOTE: THE CONTOUR OF THE FLARED GLASS NECK WILL BE WITHIN THE DOTTED LINE OVER A 60° SECTION AS SHOWN ON END VIEW.

92CL - 7617R2



## 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 PHOTOCATHODE

$M_c$  = MAGNIFICATION AT CENTER OF  
PHOTOCATHODE

