# GL-7293
# IMAGE ORTHICON

**FIELD-MESH** **MAGNETIC FOCUS AND DEFLECTION**

The GL-7293 is a television camera tube for both outdoor and studio pickup service.

The tube features a field mesh in the scanning section which minimizes landing and shading errors, prevents geometric distortion, provides sharp transition from black to white without spurious effect, and improves corner resolution.

A suppressor grid assures excellent signal-to-noise ratio by preventing field-mesh secondary electrons from entering the electron multiplier and reducing beam modulation.

A photocathode with a spectral response close to that of the eye permits portrayal of scenes in nearly their true tonal graduation.

In operation alignment is performed with the lens open on a chart or scene since dynode apertures are not visible with the lens capped.

The GL-7293 is interchangeable with the 5820. The field-mesh feature, however, results in improved performance.

## Electrical

| | | |
|---|---|---|
| Cathode—Unipotential | | |
| Heater Voltage, AC or DC | 6.3 ±10% | Volts |
| Heater Current | 0.6 | Amperes |
| Photocathode—Semi-transparent | | |
| Response—S-10 | | |
| Rectangular Image, 4 by 3 aspect ratio | | |
| Useful Size, maximum diagonal | 1.8 | Inches |
| Orientation—Proper orientation is obtained when the vertical scan is essentially parallel to the plane passing through the center of the faceplate and pin No. 7 of the shoulder base. | | |
| Focusing Method—Magnetic | | |
| Deflecting Method—Magnetic | | |
| Direct Interelectrode Capacitance | | |
| Anode to all other Electrodes | 12 | μμf |

## Mechanical

| | | |
|---|---|---|
| Over-all Length | 15.20 ±0.25 | Inches |
| Greatest Diameter of Bulb | 3.00 ±0.06 | Inches |
| Minimum Deflecting-Coil Inside Diameter | 2⅜ | Inches |
| Deflecting-Coil Length | 5 | Inches |
| Focusing-Coil Length | 10 | Inches |
| Alignment-Coil Length | 15/16 | Inches |
| Photocathode Distance Inside End of Focusing Coil | ½ | Inche |
| Weight, approximate | 1.4 | Pounds |

Operating Position—Any, except with diheptal base up and the tube axis at an angle of less than 20 degrees from vertical.

## MAXIMUM RATINGS—ABSOLUTE VALUES

| | | |
|---|---|---|
| Photocathode Voltage | −550 Max | Volts |
| Photocathode Illumination | 50 Max | Foot-Candles |
| Anode Supply Voltage* | 1350 Max | Volts |
| Grid-No. 1 Voltage | | |
| Negative-Bias Value | 125 Max | Volts |
| Positive-Bias Value | 0 Max | Volts |
| Grid-No. 2 and Dynode-No. 1 Voltage | 350 Max | Volts |
| Grid-No. 3 Voltage | 400 Max | Volts |
| Grid-No. 4 Voltage | 300 Max | Volts |
| Grid-No. 5 Voltage | 150 Max | Volts |
| Grid-No. 6 Voltage | −550 Max | Volts |
| Voltage Per Multiplier Stage | 350 Max | Volts |

| | | |
|---|---|---|
| Target Voltage | | |
| Positive Value | 10 Max | Volts |
| Negative Value | 10 Max | Volts |
| Peak Heater-Cathode Voltage | | |
| Heater Negative with Respect to Cathode | 125 Max | Volts |
| Heater Positive with Respect to Cathode | 10 Max | Volts |
| Operating Temperature of Any Part of Bulb | 50 Max | C |
| Operating Temperature of Bulb at Large End of Tube, target section | 35 Min | C |
| Temperature Difference Between Target Section and Any Part of Bulb Hotter than Target Section | 5 Max | C |

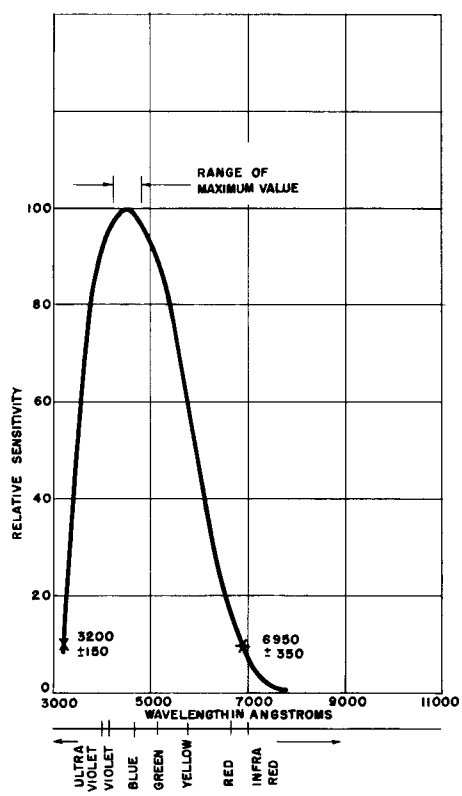
GENERAL ELECTRIC

## TYPICAL OPERATION

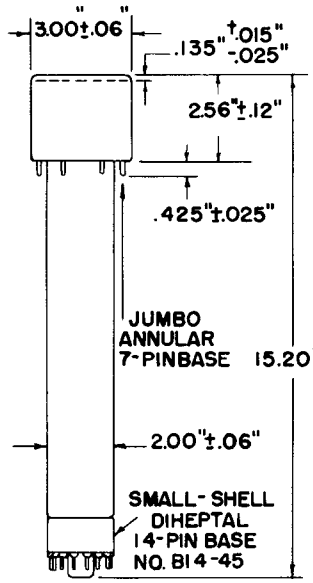
| | | |
|---|---|---|
| Photocathode Voltage, image focus | —400 to —540 | Volts |
| Grid-No. 1 Voltage for Picture Cutoff, beam | —45 to —115 | Volts |
| Grid-No. 2 and Dynode-No. 1 Voltage | 300 | Volts |
| Grid-No. 3 Voltage†, multiplier focus | 225 to 330 | Volts |
| Grid-No. 4 Voltage, beam focus | 140 to 180 | Volts |
| Grid-No. 5 Voltage, decelerator | 0 to 125 | Volts |
| Grid-No. 6 Voltage, accelerator— 75 Percent of Photocathode Voltage, approximate | —300 to —405 | Volts |
| Dynode-No. 2 Voltage | 600 | Volts |
| Dynode-No. 3 Voltage | 800 | Volts |
| Dynode-No. 4 Voltage | 1000 | Volts |
| Dynode-No. 5 Voltage | 1200 | Volts |
| Anode Voltage | 1250 | Volts |
| DC Anode Current | 30 | Microamperes |
| Signal Output Current, peak-to-peak | 3 to 24 | Microamperes |
| Target Voltage‡ | | |
| Target Cutoff Voltage‡ | —3 to +1 | Volts |
| Target Temperature Range | 35 to 45 | C |
| Ratio of Peak-to-Peak Highlight Video Signal Current to RMS Noise Current, approximate | 35 | |
| Minimum Peak-to-Peak Blanking Voltage | 5 | Volts |
| Field Strength at Center of Focusing Coil§ | 75 | Gausses |
| Field Strength of Alignment Coil△, approximate | 0 to 3 | Gausses |

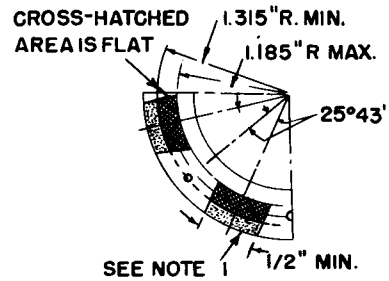
* Ratio of dynode voltages is shown under Typical Operation.
† Adjust to give maximum signal.
‡ Adjustable from —3 to +5 volts with blanking voltage off. Normal setting of target voltage is +2 volts from target cutoff.
§ Direction of current should be such that a north-seeking pole is attracted to the image end of the focusing coil, with the indicator located outside of and at the image end of the focusing coil.
△ Adjusted to produce flattest field with maximum response. Alignment is correct when the center of the picture merely goes through focus and does not rotate when beam focus (Grid-No. 4) is varied.

### SPECTRAL-SENSITIVITY CHARACTERISTIC—S10 RESPONSE
For Equal Values of Radiant Flux at All Wavelengths



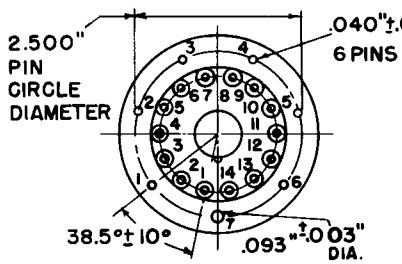

"X"- POINTS REPRESENT 10 PERCENT OF MAXIMUM RESPONSE.




DETAIL OF BOTTOM VIEW OF JUMBO ANNULAR BASE

NOTE 1: DOTTED AREA IS FLAT OR EXTENDS TOWARD DIHEPTAL-BASE END OF TUBE BY 0.060" MAX.




ENLARGED BOTTOM VIEW

ANNULAR BASE GAGE

ANGULAR VARIATIONS BETWEEN PINS AS WELL AS ECCENTRICITY OF NECK CYLINDER WITH RESPECT TO PHOTOCATHODE CYLINDER ARE HELD TO TOLERANCES SUCH THAT PINS AND NECK CYLINDER WILL FIT FLAT-PLATE GAGE WITH:

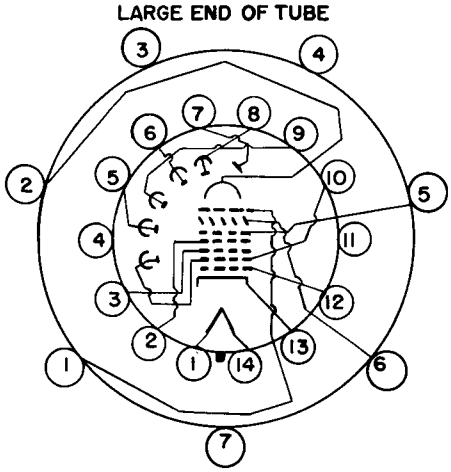
a. SIX HOLES HAVING DIAMETER OF 0.065"± .0.001" AND ONE HOLE HAVING DIA. OF 0.150±0.001. ALL HOLES HAVE DEPTH OF 0.265"±0.001". THE SIX 0.065" HOLES ARE ENLARGED BY 45° TAPER TO DEPTH OF 0.047." ALL HOLES ARE SPACED AT ANGLES OF 51°26'±5' ON CIRCLE DIAMETER OF 2.500"± 0.001"

b. SEVEN STOPS HAVING HEIGHT OF 0.187"±0.001", CENTERED BETWEEN PIN HOLES, TO BEAR AGAINST FLAT AREAS OF BASE.

c. RIM EXTENDING OUT OF A MINIMUM OF 0.125" FROM 2.812" DIAMETER AND HAVING HEIGHT OF 0.126" ±0.001".

d. NECK-CYLINDER CLEARANCE HOLE HAVING DIAMETER OF 2.200"± 0.001"

DIRECTION OF LIGHT: PERPENDICULAR TO LARGE END OF TUBE



WHITE INDEX LINE ON FACE

BASING DIAGRAM

SMALL-SHELL DIHEPTAL 14-PIN BASE

PIN 1: HEATER
PIN 2: GRID NO. 4
PIN 3: GRID NO. 3
PIN 4: INTERNAL CONNECTION-DO NOT USE
PIN 5: DYNODE NO. 2
PIN 6: DYNODE NO. 4
PIN 7: ANODE
PIN 8: DYNODE NO. 5
PIN 9: DYNODE NO. 3
PIN 10: DYNODE NO. 1, GRID NO. 2
PIN 11: INTERNAL CONNECTION DO NOT USE
PIN 12: GRID NO. 1
PIN 13: CATHODE
PIN 14: HEATER

KEYED JUMBO ANNULAR 7-PIN BASE

PIN 1: GRID NO. 6
PIN 2: PHOTOCATHODE
PIN 3: INTERNAL CONNECTION-DO NOT USE
PIN 4: INTERNAL CONNECTION DO NOT USE
PIN 5: GRID NO. 5
PIN 6: TARGET
PIN 7: INTERNAL CONNECTION DO NOT USE

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