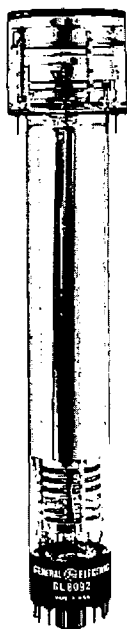


IMAGE ORTHICON



**EXCEPTIONAL SENSITIVITY
3 IN. DIAMETER, MAXIMUM
LONG LIFE**

**MAGNETIC FOCUS AND DEFLECTION
COLOR AND BLACK-AND-WHITE
FIELD MESH**

The GL-8092 is a television camera tube primarily intended for live color-pickup service where normal lighting conditions are not available. This includes the range of applications from most remotes to black-and-white illuminated studios.

The tube features a high-gain, thin-film semiconductor target, which results in extremely high sensitivity and ability to handle wide ranges of scene illumination. The tube will produce color pictures of good quality at a scene illumination of approximately 40 foot-candles, and black-and-white pictures at light levels of approximately 1 foot-candle.

Particularly important for color service is the addition of a field mesh in the scanning section which provides an ex-

cellent landing, shading, and dynamic match in color cameras utilizing three image orthicons for the simultaneous method of pickup.

Other significant advantages of the thin-film semiconductor target include excellent resolution and high amplitude response, elimination of stickiness throughout life, greatly reduced susceptibility to permanent burn-in damage, stable operation during life and elimination of target raster burns.

A photocathode with a spectral response close to that of the eye provides accurate color rendition of scenes by assuring gray-scale reproduction of colors in nearly their true tonal gradation.

The GL-8092 is interchangeable with the GL-7629, -7293, -5820 and 7513.

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	μf

Mechanical

Over-all Length	15.20 ± 0.25	Inches
Greatest Diameter of Bulb	3.00 ± 0.06	Inches
Minimum Deflection Coil Inside		
Diameter	2 3/8	Inches
Deflecting Coil Length	5	Inches
Focusing Coil Length	10	Inches
Alignment-Coil Length	1 1/8	Inch
Photocathode Distance Inside End of Focusing Coil	1/2	Inch
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.		

Thermal

Operating Temperature of Any Part of Bulb	55	C
Operating Temperature of Bulb at Large End of Tube, target section, minimum	0	C
Temperature Difference Between Target Section and Any Part of Bulb Hotter than Target Section	5	C

MAXIMUM RATINGS—ABSOLUTE VALUES

Photocathode Voltage	-550	Volts	Voltage per Multiplier Stage	350	Volts
Photocathode Illumination	50	Foot-Candles	Target Voltage		
Anode Supply Voltage*	1350	Volts	Above Target Cutoff, positive direction	6	Volts
Grid-No. 1 Voltage			Negative Value	10	Volts
Negative Bias Value	125	Volts	Peak Heater-Cathode Voltage		
Positive Bias Value	0	Volts	Heater Negative with Respect to		
Grid-No. 2 and Dynode-No. 1 Voltage	350	Volts	Cathode	125	Volts
Grid-No. 3 Voltage	400	Volts	Heater Positive with Respect to		
Grid-No. 4 Voltage	300	Volts	Cathode	10	Volts
Grid-No. 5 Voltage	150	Volts			
Grid-No. 6 Voltage	-550	Volts			

TYPICAL OPERATION

Photocathode Voltage, image focus.....	-400 to -540 Volts	Target Voltage†	
Grid-No. 1 Voltage for Picture Cutoff, beam.....	-45 to -115 Volts	Target Cutoff Voltage. †.....	-3 to +1 Volts
Grid-No. 2 and Dynode-No. 1 Voltage.....	300 Volts	Target Temperature Range...	15 to 50 C
Grid-No. 3 Voltage‡, multiplier focus.....	225 to 330 Volts	Ratio of Peak-to-Peak High-light Video Signal Current to RMS Noise Current:	
Grid-No. 4 Voltage, beam focus.....	140 to 180 Volts	Minimum.....	29
Grid-No. 5 Voltage, decelerator.....	0 to 125 Volts	Average.....	34
Grid-No. 6 Voltage, accelerator -75 percent of Photocathode Voltage, approximate.....	-300 to -405 Volts	Photocathode illumination at 2870°K Required to Reach the Knee of Light Transfer Characteristic, approximate..	0.0035 Foot-Candles
Dynode-No. 2 Voltage.....	600 Volts	Peak-to-Peak Blanking Voltage.	5 to 20 Volts
Dynode-No. 3 Voltage.....	800 Volts	Field Strength at Center of Focusing Coil§.....	75 Gauss
Dynode-No. 4 Voltage.....	1000 Volts	Field Strength of Alignment Coil, approximate.....	0 to 3 Gauss
Dynode-No. 5 Voltage.....	1200 Volts		
Anode Voltage.....	1250 Volts		
DC Anode Current, average...	30 Microamperes		
Signal Output Current, peak-to-peak—See Light Transfer Characteristic Curve, page 3.			

* Ratio of dynode voltages is shown under Typical Operation.

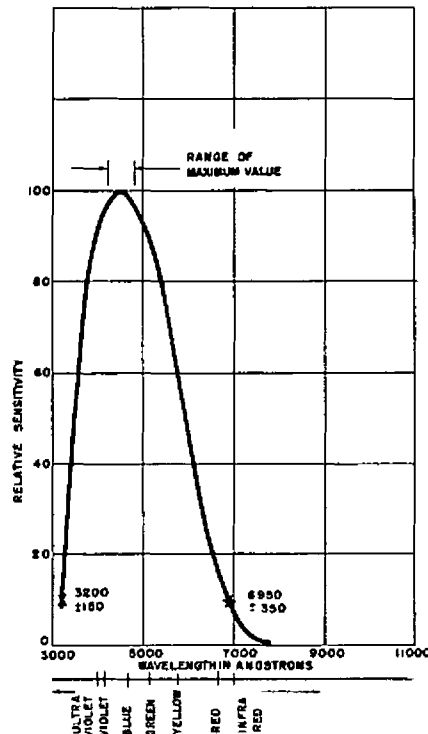
† Adjust to give the most uniformly shaded picture near maximum signal.

‡ The target supply voltage should be adjustable from -3 to +5 volts with blanking voltage off. Recommended target voltage is +2 volts above cutoff. At marginally low light levels, a slight increase in target voltage may help sensitivity. Slight readjustment, usually only a small fraction of a volt, may be necessary to minimize microphonics.

§ Direction of current should be such that a north-seeking pole is attracted to the image and of the focusing coil, with the indicator located outside of and at the image end of the focusing coil.

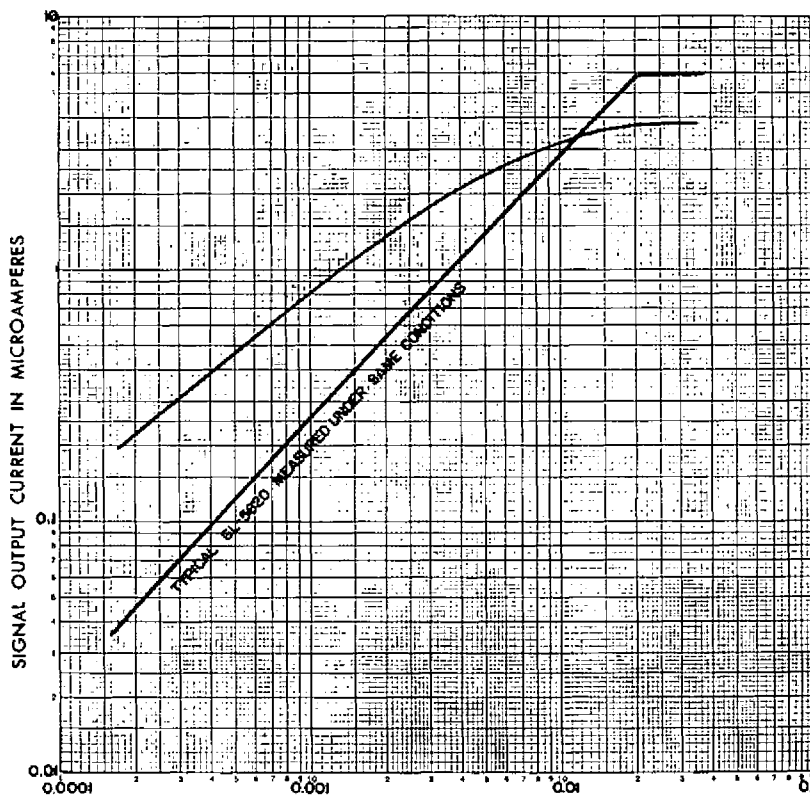
SPECTRAL-SENSITIVITY CHARACTERISTIC—S-10 RESPONSE

For Equal Values of Radiant Flux at All Wavelengths



X - POINTS REPRESENT 10 PERCENT OF MAXIMUM RESPONSE.

LIGHT TRANSFER CHARACTERISTIC

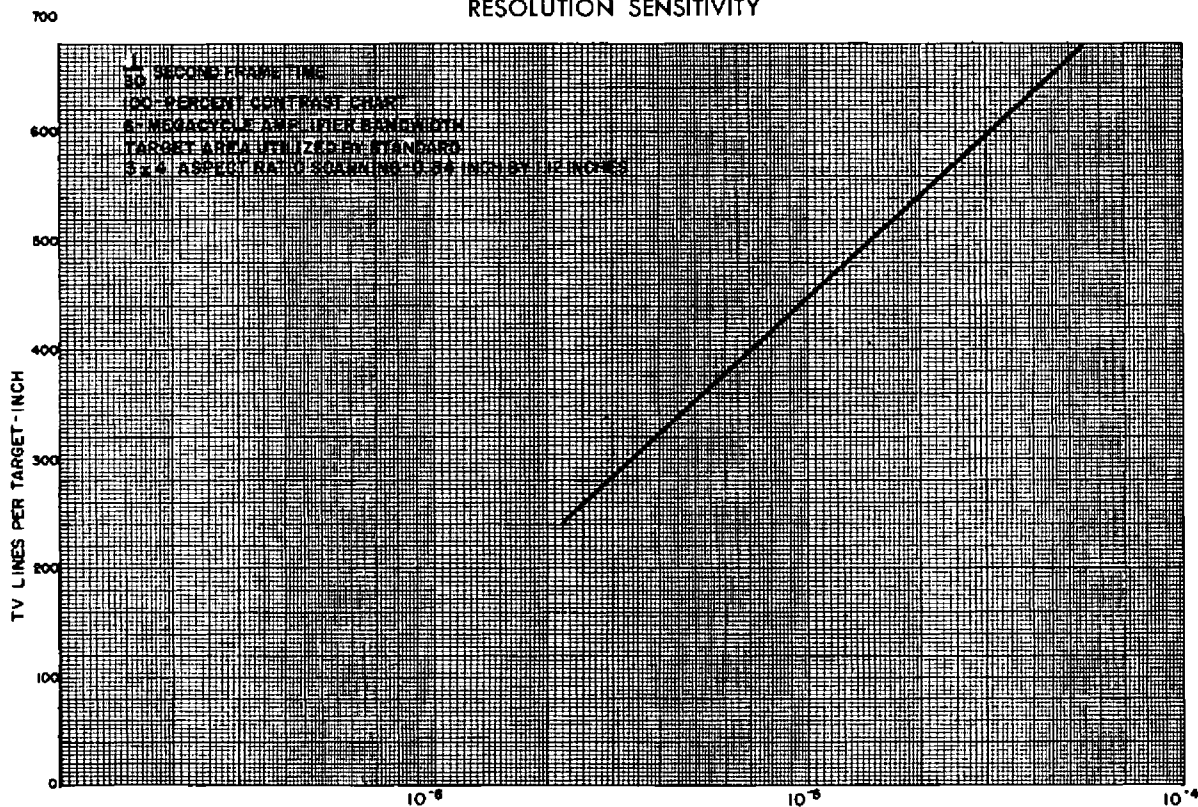


K-69087-72A908

HIGHLIGHT ILLUMINATION ON PHOTOCATHODE IN FOOT-CANDLES

11-30-59

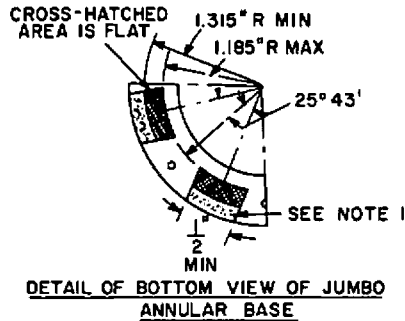
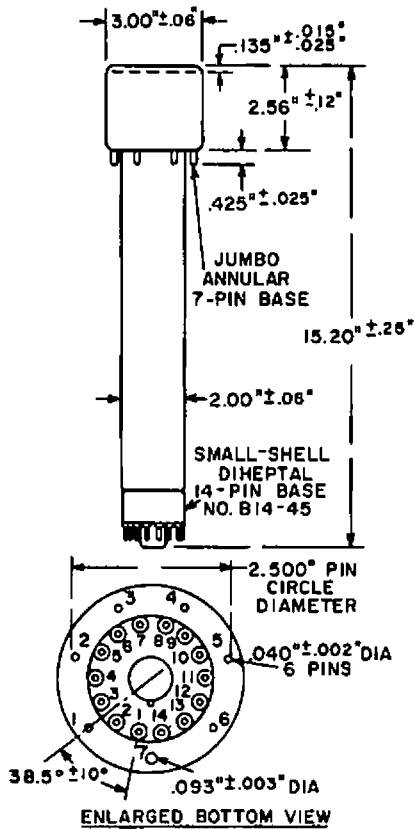
RESOLUTION SENSITIVITY



K-69087-72A909

PHOTOCATHODE ILLUMINATION IN FOOT-CANDLES

11-30-59



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

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 $51^\circ 26' \pm 5'$ 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 ".

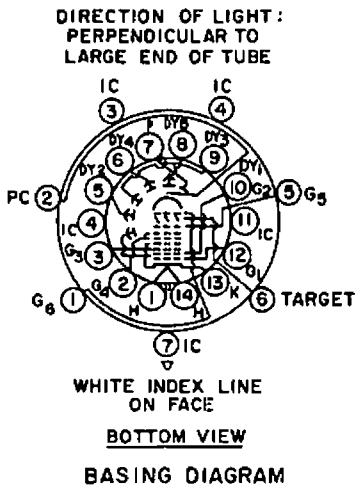
SMALL-SHELL DIHEPTAL 14-PIN BASE

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

NOTE: IN THE TUBE SYMBOL, THE SUPPRESSOR GRID CONNECTED TO THE CATHODE, AND THE FIELD-MESH GRID CONNECTED TO GRID NO.4, ARE INTENTIONALLY WITHOUT NUMBERS TO AVOID UPSETTING INDUSTRY PRACTICE OF ASSOCIATING FUNCTIONAL CAMERA CONTROL KNOBS WITH SPECIFIC GRID NUMBERS. FOR EXAMPLE, BEAM-FOCUS CONTROL IS GENERALLY ASSOCIATED WITH KNOB IDENTIFIED AS G₄ (GRID NO.4).

KEYED JUMBO ANNULAR 7-PIN BASE

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



CATHODE RAY TUBE DEPARTMENT

Syracuse, N. Y.