

1" - DIAMETER

MAGNETIC FOCUS

MAGNETIC DEFLECTION

For Live-Scene, or Film Pickup with Black-and-White or Color Cameras. Features High Resolution with High Sensitivity and Low Lag. Grid No.3 and Grid No.4 Have Separate Base Terminals.

General:

Heater, for Unipotential Cathode:

Voltage (AC or DC) $6.3 \pm 10\%$ volts
Current at 6.3 volts. 0.6 amp

Direct Interelectrode Capacitance:^a

Target to all other electrodes. 4.6 pf

Spectral Response See Curve

Photoconductive Layer:

Maximum useful diagonal of rectangular image (4 x 3 aspect ratio). 0.62"

Orientation of quality rectangle—Proper orientation is obtained when the horizontal scan is essentially parallel to the straight sides of the masked portions of the faceplate. The straight sides are parallel to the plane passing through the tube axis and short pin. The masking is for orientation only and does not define the proper scanned area of the photoconductive layer.

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length. $6.250" \pm 0.125"$

Greatest Diameter. $1.125" \pm 0.010"$

Operating Position. Any

Weight (Approx.). 2 oz

Bulb. T8

Focusing Coil Cleveland Electronics^{b,c} No. VF-115-12, or equivalent

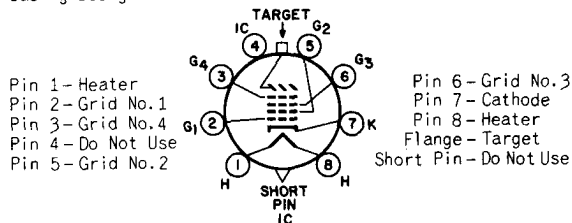
Deflecting Yoke Cleveland Electronics^{b,c} No. VY-111-3, or equivalent

Alignment Coil. Cleveland Electronics^{b,c} No. VA-118, or equivalent

Base. Small-Button Ditetra 8-Pin, (JEDEC No. E8-11)

Socket. Cinch^d No. 54A18088, or equivalent

Basing Designation for BOTTOM VIEW. 8ME



Maximum Ratings, Absolute-Maximum Values:*For scanned area of 1/2" x 3/8"*

Grid-No.4 Voltage.	1000 max.	volts
Grid-No.3 Voltage.	1000 max.	volts
Grid-No.2 Voltage.	750 max.	volts
Grid-No.1 Voltage:		
Negative bias value.	300 max.	volts
Positive bias value.	0 max.	volts
Peak Heater-Cathode Voltage:		
Heater negative with		
respect to cathode	125 max.	volts
Heater positive with		
respect to cathode	10 max.	volts
Target Voltage	100 max.	volts
Dark Current	0.25 max.	μ a
Peak Target Current ^g	0.55 max.	μ a
Faceplate:		
Illumination	1000 max.	fc
Temperature.	71 max.	°C

Typical Operation and Performance Data:*For scanned area of 1/2" x 3/8" and
faceplate temperature of 30° to 35° C*

	Low-Voltage Operation	High-Voltage Operation	
Grid-No.4 (Decelerator)			
Voltage.	500	750	volts
Grid-No.3 (Beam-Focus Electrode) Voltage ^f . . .	300 ^g	450 ^g	volts
Grid-No.2 (Accelerator)			
Voltage.	300	300	volts
Grid-No.1 Voltage for			
Picture Cutoff ^h	-45 to -100	-45 to -100	volts
Lag ^j , Typical.	20	20	%
Average "Gamma" of Transfer Character- istic for signal- output current between 0.02 μ a and 0.2 μ a	0.65	0.65	
Visual Equivalent Sig- nal-to-Noise Ratio (Approx.) ^k	300:1	300:1	
Minimum Peak-to-Peak Blanking Voltage:			
When applied to			
grid No.1.	75	75	volts
When applied to			
cathode.	20	20	volts
Limiting Resolution:			
At center of picture . .	900	1000	TV lines
At corner of picture . .	600	700	TV lines



	Low-Voltage Operation	High-Voltage Operation	
Amplitude Response to a 400 TV Line Square- Wave Test Pattern at Center of Picture.	35	45	%
Field Strength at Center of Focusing Coil ^f	41 ± 4	52 ± 4	gauss
Peak Deflecting-Coil Current:			
Horizontal	180	220	ma
Vertical	33	40	ma
Field Strength of Adjustable Alignment Coil ^m	0 to 4	0 to 4	gauss

*Maximum-Sensitivity Operation -
0.1 Footcandle on Faceplate*

Faceplate Illumination (Highlight).	0.1	fc
Target Voltage ^{n, p}	35 to 70	volts
Dark Current ^q	0.2	μa
Signal-Output Current: ^r Typical.	0.14	μa

*Intermediate-Sensitivity Operation -
0.5 Footcandle on Faceplate*

Faceplate Illumination (Highlight).	0.5	fc
Target Voltage ^{n, p}	30 to 60	volts
Dark Current ^q	0.10	μa
Signal-Output Current: ^r Typical.	0.27	μa

*Average-Sensitivity Operation -
1.0 Footcandle on Faceplate*

Faceplate Illumination (Highlight).	1.0	fc
Target Voltage ^{n, p}	20 to 40	volts
Dark Current ^q	0.02	μa
Signal-Output Current: ^r Typical.	0.20	μa
Minimum.	0.15	μa

*High-Light Level Operation -
10 Footcandles on Faceplate*

Faceplate Illumination (Highlight).	10	fc
Target Voltage ^{n, p}	10 to 22	volts
Dark Current ^q	0.005	μa
Signal-Output Current: ^r Typical.	0.3	μa

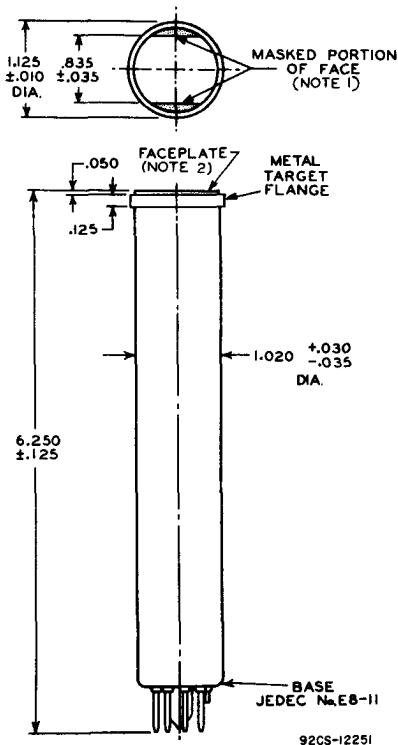


- ^a This capacitance, which effectively is the output impedance of the 8507, is increased when the tube is mounted in the deflecting-yoke and focusing-coil assembly. The resistive component of the output impedance is in the order of 100 megohms.
- ^b Cleveland Electronics Inc., 1974 East 61st Street, Cleveland, Ohio.
- ^c These components are chosen to provide tube operation with minimum beam-landing error when mounted in the recommended position along the tube axis.
- ^d Cinch Manufacturing Corporation, 1026 S. Homan Avenue, Chicago 24, Illinois.
- ^e Video amplifiers must be designed to handle target currents of this magnitude to avoid amplifier overload or picture distortion.
- ^f Beam focus is usually attained by varying the focus-coil current to obtain a field-strength value within the range shown under *Typical Operation and Performance Data*. If the field-strength of the focus coil is fixed, beam focus is obtained within a ± 10 per cent range of the grid-No.4 and grid No.3 voltages. However, the recommended ratio of 0.6 between grid No.3 and grid No.4 must be maintained as these voltages are varied.
- ^g In general, grid No.3 should be operated above 250 volts and be 0.6 of grid-No.4 voltage.
- ^h With no blanking voltage on grid No.1.
- ^j Defined as the per cent of initial value of signal-output current 1/20 second after illumination is removed. Values shown are for initial signal-output current of 0.2 microampere and a dark current of 0.02 microampere.
- ^k Measured with high-gain, low-noise, cascode-input-type amplifier having bandwidth of 5 Mc and a peak signal-output current of 0.35 microampere. Because the noise in such a system is predominately of the high-frequency type, the visual equivalent signal-to-noise ratio is taken as the ratio of the highlight video-signal current to rms noise current, multiplied by a factor of 3.
- ^m The alignment coil should be located on the tube so that its center is at a distance of 3-11/16 inches from the face of the tube, and be positioned so that its axis is coincident with the axis of the tube, the deflecting yoke, and the focusing coil.
- ⁿ The target voltage for each 8507 must be adjusted to that value which gives the desired operating dark current.
- ^p Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.
- ^q The deflecting circuits must provide extremely linear scanning for good black-level reproduction. Dark-current signal is proportional to the scanning velocity. Any change in scanning velocity produces a black-level error in direct proportion to the change in scanning velocity.
- ^r Defined as the component of the highlight target current after the dark-current component has been subtracted.

OPERATING CONSIDERATIONS

The *resolution capability* of the 8507 at the center of the picture is about 1000 TV lines and about 700 TV lines at the corner. This high resolution is obtained when the 8507 is operated with a grid-No.4 voltage of 750 volts and a grid-No.3 voltage of 450 volts. When the 8507 is operated at a grid-No.4 voltage of 500 volts and a grid-No.3 voltage of 300 volts, its resolution is about 900 TV lines at the center and 600 TV lines at the corner of the picture.

The *target connection* is made by a suitable spring contact bearing against the edge of the metal ring at the face end of the tube. This spring contact may conveniently be provided as part of the focusing-coil design.



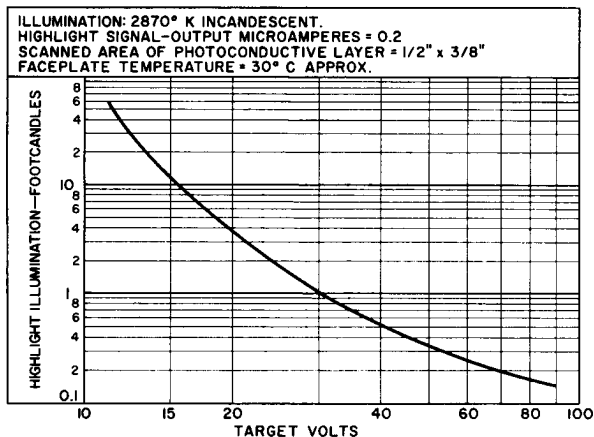
DIMENSIONS IN INCHES

Note 1: Straight sides of masked portions are parallel to the plane passing through tube axis and short index pin.

Note 2: Faceplate thickness is $0.094" \pm 0.012"$.

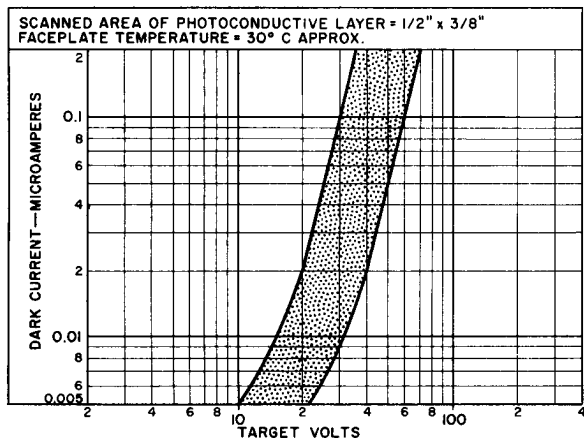


TYPICAL CHARACTERISTIC



92CS-12236

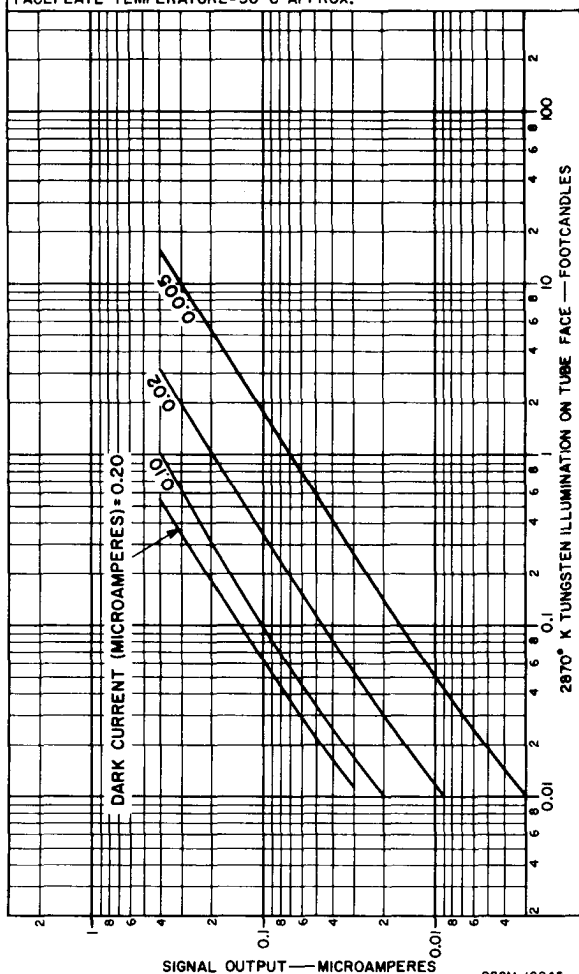
DARK-CURRENT RANGE



92CS-12235

TYPICAL LIGHT TRANSFER CHARACTERISTICS

ILLUMINATION: UNIFORM OVER PHOTOCONDUCTIVE LAYER.
 SCANNED AREA OF PHOTOCONDUCTIVE LAYER = $1/2" \times 3/8"$
 FACEPLATE TEMPERATURE = 30°C APPROX.



92CM-12245

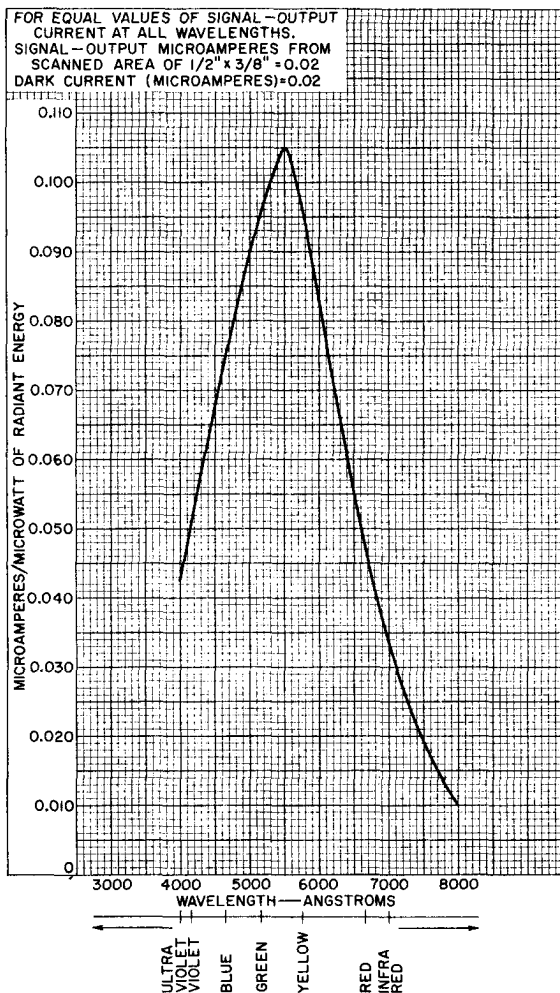


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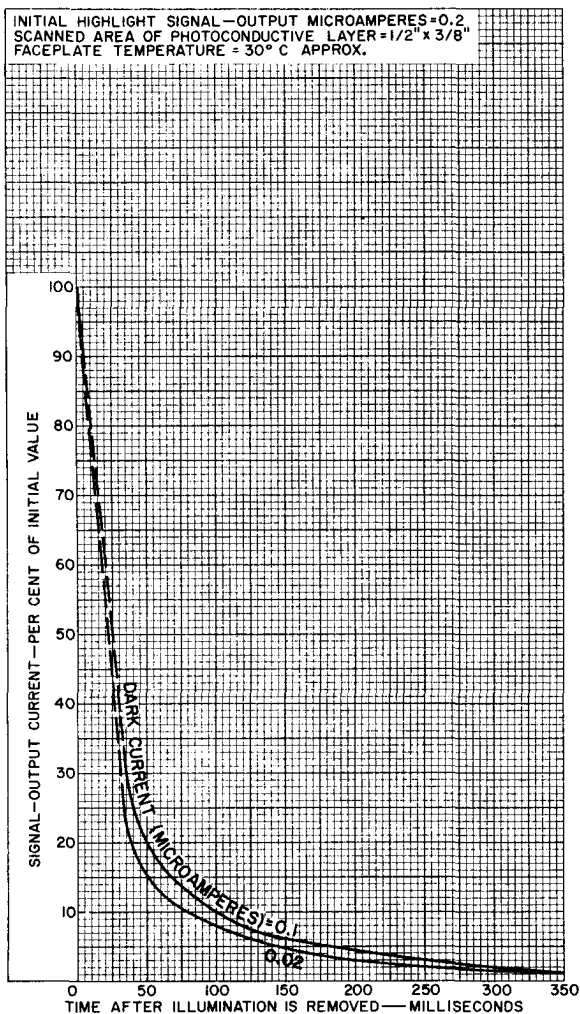
TYPICAL SPECTRAL-SENSITIVITY CHARACTERISTIC



92CM-11619



TYPICAL PERSISTENCE CHARACTERISTICS

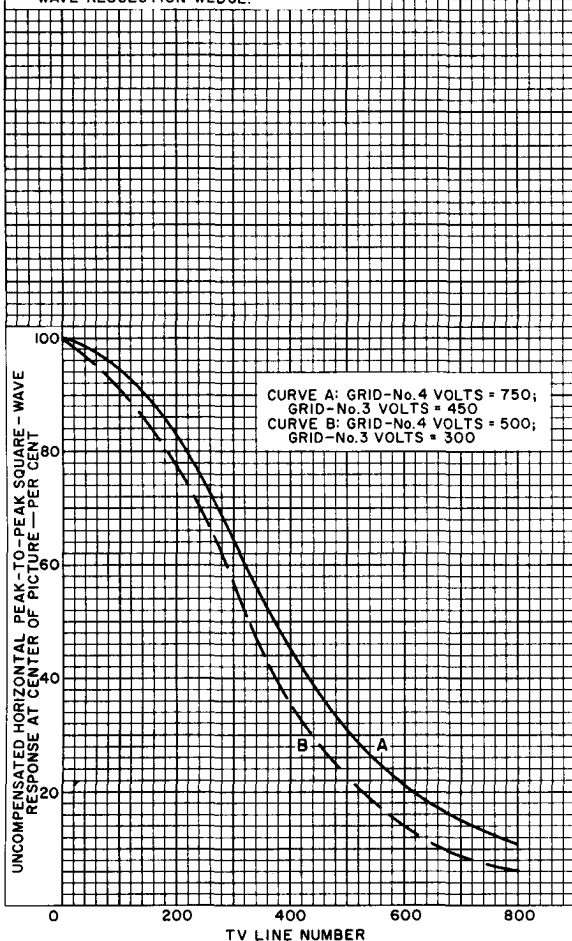


92CM-11615



TYPICAL HORIZONTAL SQUARE-WAVE RESPONSE CHARACTERISTICS

HIGHLIGHT TARGET MICROAMPERES = 0.35
DARK CURRENT (MICROAMPERES) = 0.02
TEST PATTERN: TRANSPARENT SQUARE-
WAVE RESOLUTION WEDGE.



92CM-12232

