

Vidicon

For Color Television Film Pickup Service

- Electrostatic-Focus, Magnetic-Deflection
- Low-Power "Dark Heater" — 0.6 Watt
- Separate Mesh Connection
- Precision Outer-Diameter Glass Bulb
- Tested to Stringent Signal Uniformity Specifications

General Data

Dimensions See Dimensional Outline

Direct Interelectrode Capacitance^a:

Target to all other electrodes 5 pF

Focusing Method Electrostatic

Deflection Method Magnetic

Heater Power 0.6 W

Maximum Useful 0.375 x 0.5 in

Picture Size (12.70 x 9.52 mm)

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 tubes and short

axis index pin.

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

Socket Cinch^{b'}

No. 133-98-11-015,
or equivalent

Weight 2.8 (79.5 g) oz

Operating Position Any

Deflection Alignment Assembly^c Cleveland
Electronics No.
VYA-300, or equivalent

Maximum Ratings, Absolute-Maximum Values:^d

Grid-No.6 & 3 Voltage ^e	1350	V
Grid-No.5 Voltage	1000	V
Grid-No.4 Voltage	400	V
Grid-No.2 Voltage ^f	850	V
Grid-No.1 Voltage:		
Negative bias value	300	V
Positive bias value	0	V
Peak Heater-Cathode Voltage:		
Heater negative with respect to cathode	125	V
Heater positive with respect to cathode	10	V
Heater Voltage	$6.3 \pm 5\%$	V
Target Voltage	125	V
Target Dark Current	0.20	μA
Peak Target Current ^g	0.60	μA
Faceplate:		
Illumination ^h	5000	fc
Temperature	71	$^{\circ}\text{C}$

Typical Operation and Performance Data

Grid-No.6 (Decelerator)		
& 3 Voltage ^e	750	V
Grid-No.5 Voltage ^e	325 to 450	V
Grid-No.4 (Beam-Focus Electrode) Voltage		
90 to 150	V	
Grid-No.2 (Accelerator)		
Voltage ^f	300	V
Grid-No.1 Voltage		
(For Picture Cutoff) ⁱ	-45 to -100	V
Signal-To-Noise Ratio		
(Approximate) ^m	300:1	
Typical Resolution:		
Center	700	TV Lines

Limiting Resolution:

Center horizontal	500 (min.)	TV Lines
Center vertical	400 (min.)	TV Lines

Amplitude Response to 400

TV Line Square-Wave Test

Pattern at Center of Picture ^t	30	%
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Average "Gamma" of Transfer

Characteristic	0.65
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Lag-Per Cent of

Initial Value of Signal-Output Current

1/20 Second after Illumination

is Removed ⁿ	20	%
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Typical Sensitivity

Faceplate Illumination	4	fc
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Target Voltage ^{p,q}	15 to 30	V
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Dark Current ^{q,r}	0.010	μ A
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Signal Output Current

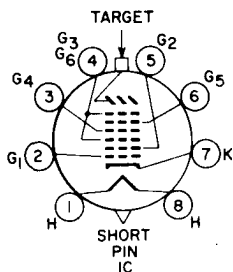
(Typical) ^s	0.30	μ A
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Notes

- ^a This capacitance, which effectively is the output impedance of the vidicon, is increased when the tube is mounted in the deflecting-yoke assembly. The resistive component of the output impedance is in order of 100 megohms.
- ^b Made by Alden Products Co., 9140 North Main St., Brockton 64, Massachusetts.
- ^{b'} Made by Cinch Manufacturing Co., 1026 S. Homan Ave., Chicago 24, Illinois.
- ^c Made by Cleveland Electronics Inc., 2000 Highland Road, Twinsburg, Ohio 44087.
- ^e Grid-No.6 & 3 voltage must always be greater than grid-No.5 voltage. The maximum voltage difference between these electrodes, however, should not exceed 800 volts. The recommended ratio of grid-No.5 to grid-No.6 & 3 voltage is 6/10 to 5/10; best geometry being provided when the ratio is 6/10, and most uniform signal output when the ratio is 5/10. The operator should select the ratio within this range which provides the desired performance.

- f The power dissipation at grid No.2 should not exceed one watt, a condition normally met when the tube is operated at the specified maximum grid-No.2 rating and when the specified peak target current rating is not exceeded. However, if the vidicon is operated continuously with grid-No.1 voltage near or approaching zero bias, grid-No.2 voltage should not exceed 350 volts dc maximum.
- g Video amplifiers must be designed properly to handle target currents of this magnitude to avoid amplifier overload or picture distortion.
- h For condition where "white light" is uniformly diffused over entire tube face.
- i With no blanking voltage on grid No.1.
- m Measured with high-gain, low-noise, cascode-input-type amplifier having bandwidth of 5 MHz 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.
- n For initial signal-output current of 0.2 microampere and a dark current of 0.02 microampere.
- p Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.
- q The target voltage for each vidicon must be adjusted to that value which gives the desired operating dark current.
- r 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.
- s Defined as the component of the highlight target current after the dark-current component has been subtracted.
- t This typical capability may be limited by conditions external to the tube such as test pattern material, optics and/or yoke.

Basing Diagram (Bottom View)



DIRECTION OF LIGHT:
INTO FACE END OF TUBE

8LN

Pin 1: Heater

Pin 2: Grid No.1

Pin 3: Grid No.4

Pin 4: Grids No.3
& No.6

Pin 5: Grid No.2

Pin 6: Grid No.5

Pin 7: Cathode

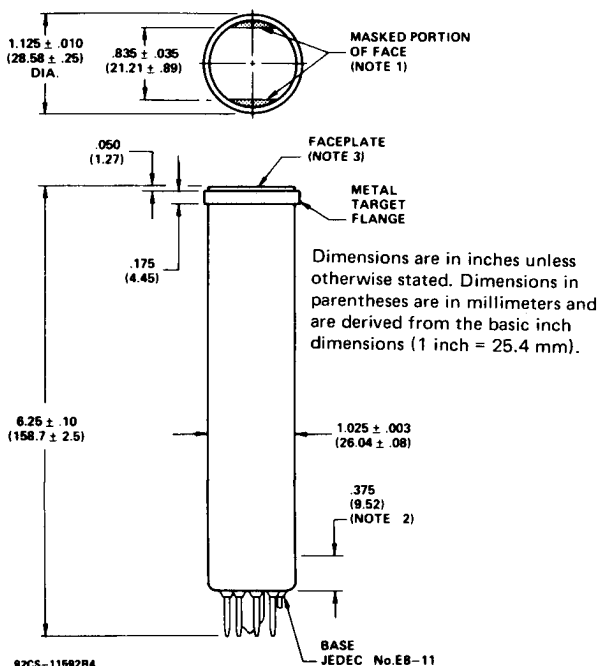
Pin 8: Heater

Flange: Target

Short Index Pin:

Internal Connection —
Make No Connection

Dimensional Outline

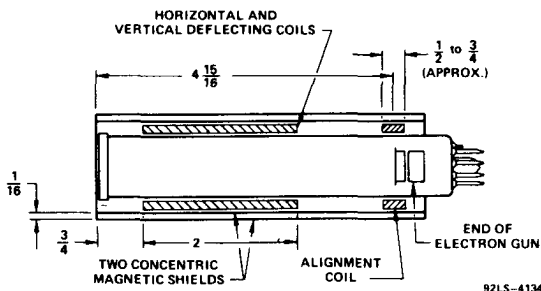


Note 1 — Straight sides of masked portions are parallel to the plane passing through tube axis and short index pin.

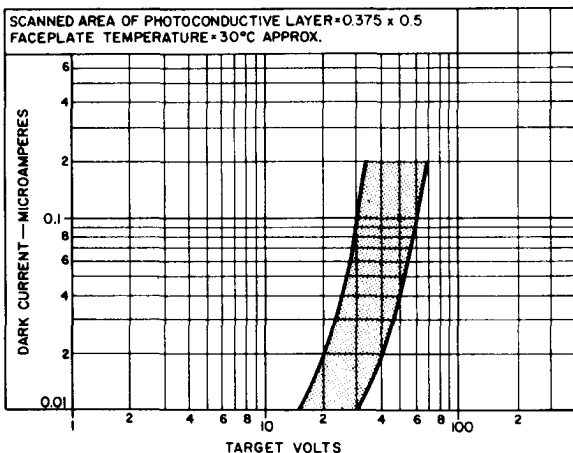
Note 2 — Within this distance, diameter of bulb is 1.025" + 0.003" - 0.030". Tube is acceptable regarding camber when it can be inserted into a 1"-long cylinder gauge which has an inner diameter of 1.0280" + 0.0011" - 0.0000". The gauge must pass along the tube length from the base to the metal target flange.

Note 3 — Faceplate is Corning No.7056 glass having a thickness of 0.094" $\pm$ 0.012".

Recommended Location of Deflecting Yoke and Alignment Coil to Obtain Optimum Geometry and Optimum Output Signal Uniformity

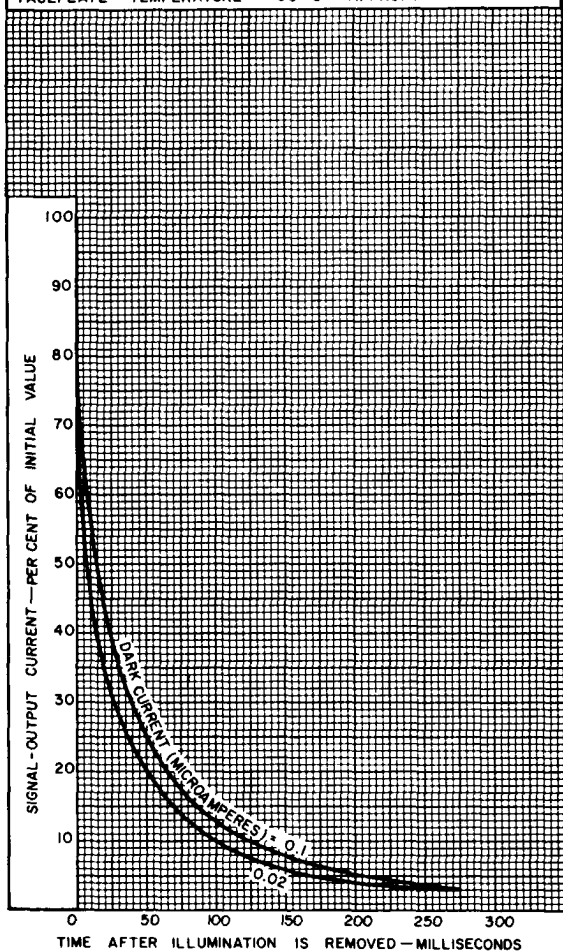


Typical Range of Dark Current



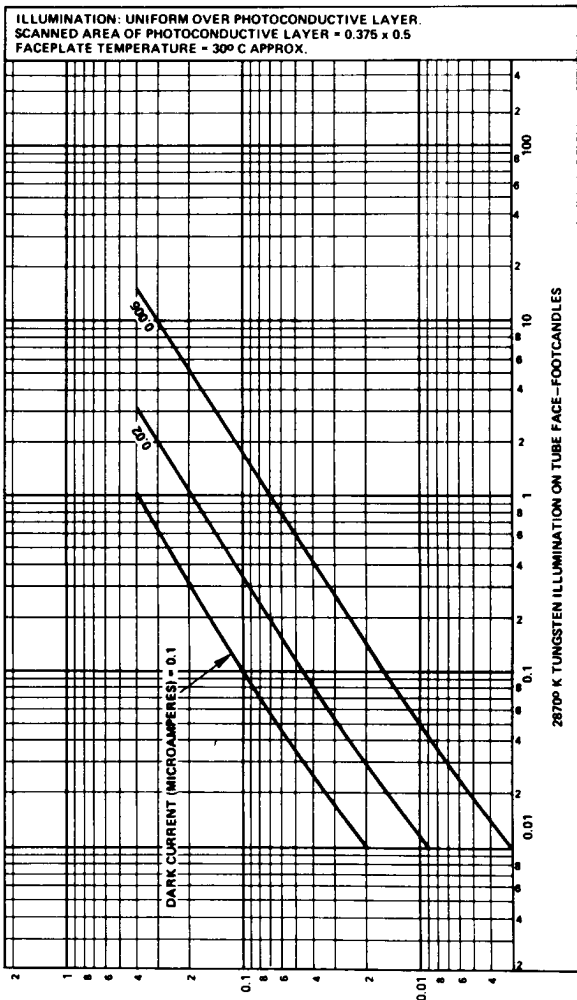
Typical Persistence Characteristics

INITIAL HIGHLIGHT SIGNAL - OUTPUT MICROAMPERES = 0.3
SCANNED AREA OF PHOTOCONDUCTIVE LAYER = 0.375×0.5
FACEPLATE TEMPERATURE = 30°C APPROX.



92LM-2171R1

Light Transfer Characteristics



92CS-12245R1

Typical Spectral Sensitivity Characteristic

