MAGNETIC FOCUS

1" - DIAMETER

MAGNETIC DEFLECTION

For High-Resolution Film Pickup with Black-and-White or Color Cameras. Grid No.3 and Grid No.4 Have Separate Base Terminals.

General:

Heater, for Unipotential Cathode:
Voltage (AC or DC) . 6.3 ±10% volts
Current at 6.3 volts . 0.6 amp
Direct Interelectrode Capacitance:
Target to all other electrodes . 4.6 pf
Spectral Response . See accompanying Typical Spectral Sensitivity Characteristic Curves

Photoconductive Layer:
Maximum useful diagonal of rectangular image (4 x 3 aspect ratio) . 0.62"
Focusing Method . Magnetic
Deflection Method . Magnetic
Overall Length . 6.250" ± 0.125"
Greatest Diameter . 1.125" ± 0.010"
Operating Position . Any
Weight (Approx.) . 2 oz
Bulb . Tubular 3B
Focusing Coil . Cleveland Electronics . No.VF-115-12, or equivalent
Deflecting Yoke . Cleveland Electronics . No.VY-111-3, or equivalent
Alignment Coil . Cleveland Electronics . No.VA-11B, or equivalent
Socket . Cinch No.54A1808B, or equivalent
Base . Small-Button Ditetra 8-Pin, (JEDEC No.E8-11)
Basing Designation for BOTTOM VIEW . 8ME

Pin 1 - Heater
Pin 2 - Grid No.1
Pin 3 - Grid No.4
Pin 4 - Do Not Use
Pin 5 - Grid No.2
Pin 6 - Grid No.3
Pin 7 - Cathode
Pin 8 - Heater
Flange - Target
Short Pin - Do Not Use

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

Grid-No.4 Voltage . 1000 volts
Grid-No.3 Voltage . 1000 volts
Grid-No.2 Voltage . 750 volts
Grid-No.1 Voltage:
- Negative bias value: 300 volts
- Positive bias value: 0 volts

Peak Heater-Cathode Voltage:
- Heater negative with respect to cathode: 125 volts
- Heater positive with respect to cathode: 10 volts

Target Voltage: 125 volts

Dark Current: 0.25 µA

Peak Target Current: 0.55 µA

Faceplate:
- Illumination: 1000 fc
- Temperature: 71 ºC

**Typical Operation and Performance Data:**

*For scanned area of 1/8" x 3/8" and faceplate temperature of 30º to 35º C*

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Low-Voltage</th>
<th>High-Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid-No.4 (Decelerator)</td>
<td>500</td>
<td>750</td>
</tr>
<tr>
<td>Grid-No.3 (Beam-Focus) Electrode Voltage</td>
<td>300</td>
<td>450</td>
</tr>
<tr>
<td>Grid-No.2 (Accelerator) Voltage</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Grid-No.1 Voltage for Picture Cutoff</td>
<td>-45 to -100</td>
<td>-45 to -100</td>
</tr>
</tbody>
</table>

Average "Gamma" of Transfer Characteristic for signal-output current between 0.02 µA and 0.2 µA: 0.65

Visual Equivalent Signal-to-Noise Ratio (Approx.): 300:1

Lag—Typical Value for minimum lag operation: 7.5 %

Minimum Peak-to-Peak Blanking Voltage:
- When applied to grid No.1: 75 volts
- When applied to cathode: 20 volts

Limiting Resolution:
- At center of picture: 900 TV lines
- At corner of picture: 600 TV lines

Field Strength at Center of Focusing Coil: 41 ± 4 gauss

Amplitude Response to a 400 TV Line Square-Wave Test Pattern at Center of Picture: 35 %

Peak Deflecting–Coil Current:
- Horizontal: 180 ma
- Vertical: 33 ma

Field Strength of Adjustable Alignment Coil: 0 to 4 gauss
Average-Sensitivity Operation for Live-Scene Pickup
10 Footcandles on Faceplate

Faceplate Illumination (Highlight) .................. 10 fc
Target Voltage \( p, q \) ....................... 25 to 60 volts
Dark Current \( r \) .................................. 0.02 \( \mu \)A
Signal-Output Current \( s \) (Typical) ............... 0.3 \( \mu \)A

Minimum-Lag Operation for Film Pickup
100 Footcandles on Faceplate

Faceplate Illumination (Highlight) .................. 100 fc
Target Voltage \( p, q \) ....................... 12 to 30 volts
Dark Current \( r \) .................................. 0.004 \( \mu \)A
Signal-Output Current \( s \) (Typical) ............... 0.3 \( \mu \)A

\( a \) This capacitance, which effectively is the output impedance of the 8572, is increased when the tube is mounted in the deflecting-yoke and focusing-alignment assembly. The resistive component of the output impedance is in the order of 100 megohms.

\( b \) Proper orientation of quality rectangle is obtained when the horizontal scan is essentially parallel to the plane passing through the axis and short pin. The masking is for orientation only and does not define the proper scanned area of photoconductive layer. Final orientation should be such that the image also fits inside of any internal mask of the mesh assembly.

\( c \) Cleveland Electronics Inc., 1974 East 61st St., Cleveland, Ohio.

\( d \) These components are chosen to provide tube operation with minimum beam-leading error when mounted in the recommended position along the tube axis.

\( e \) Cinch Manufacturing Corporation, 1026 S. Homan Avenue, Chicago 24, Illinois.

\( f \) Video amplifiers must be designed to handle target currents of this magnitude to avoid amplifier overload or picture distortion.

\( g \) 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 \(+10\) 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.

\( h \) In general, grid No.3 should be operated above 250 volts and be 0.6 of grid-No.4 voltage.

\( i \) With no blanking voltage on grid No.1.

\( j \) Measured with high-gain, low-noise, cascade-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.

\( k \) 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 0.3 microampere and a dark current of 0.004 microampere.

\( l \) The alignment coil should be located on the tube so that its center is at a distance of 3-1/16 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.

\( m \) The target voltage for each 8572 must be adjusted to that value which gives the desired operating dark current.

\( n \) Indicated range for each type of service serves only to illustrate the operating target-voltage range normally encountered.

\( o \) The deflecting circuits must provide extremely linear scanning for good black-level reproduction. Dark current signal is not proportional to the scanning velocity. Any change in scanning velocity produces a black-level error in direct proportion to the change in scanning velocity.

\( p \) Defined as the component of the highlight target current after the dark-current component has been subtracted.
OPERATING CONSIDERATIONS

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.

COMPONENT LOCATIONS

Recommended Location and Length of Deflecting, Focusing, and Alignment Components to obtain Minimum Beam-Landing Error

DIMENSIONS IN INCHES

Note: Cross-hatching indicates wound portion of focusing coil.
**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" ± 0.012".

**DIMENSIONS IN INCHES**
RANGE OF DARK CURRENT

SCANNED AREA OF PHOTOCONDUCTIVE LAYER = 1/2" x 3/8"
FACEPLATE TEMPERATURE = 30°C APPROX.

LIGHT TRANSFER CHARACTERISTICS

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

RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.
TYPICAL PERSISTENCE CHARACTERISTICS

INITIAL HIGHLIGHT SIGNAL—OUTPUT MICROAMPERES = 0.3
SCANNED AREA OF PHOTOCONDUCTIVE LAYER = 1/2" x 3/8"
FACEPLATE TEMPERATURE = 30° C APPROX.

TIME AFTER ILLUMINATION IS REMOVED — MILLISECONDS

SIGNAL—OUTPUT CURRENT—PER CENT OF INITIAL VALUE

0.004
0.02
0.1
0.5
1
2
3
4
5
6
7
8
9
10
20
30
40
50
60
70
80
90
100

92CM-12580
TYPICAL SPECTRAL SENSITIVITY CHARACTERISTIC

CURVE A: FOR EQUAL VALUES OF SIGNAL-OUTPUT CURRENT AT ALL WAVELENGTHS.
SIGNAL-OUTPUT MICROAMPERES FROM SCANNED AREA OF \( \frac{\lambda_2}{3} \) DARK CURRENT (MICROAMPERES) = 0.02
CURVE B: SPECTRAL CHARACTERISTIC OF AVERAGE HUMAN EYE.
CURVE C: FOR EQUAL VALUES OF SIGNAL-OUTPUT CURRENT WITH RADIANT FLUX FROM TUNGSTEN SOURCE AT 2870° K.

WAVELENGTH (ANGSTROMS)

MICROAMPERES/MICROWATT OF RADIANT ENERGY (CURVE A)

RANGE OF MAXIMUM VALUE

RE gHESITIVITY (CURVES B & C)

ULTRAVIOLET
VIOLET
BLUE
GREEN
YELLOW
RED
INFRARED

92CM-7783R2

DATA 4
RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.
UNCOMPENSATED HORIZONTAL SQUARE-WAVE RESPONSE

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

CURVE A: GRID-No.4 VOLTS = 750;
GRID-No.3 VOLTS = 450
CURVE B: GRID-No.4 VOLTS = 500;
GRID-No.3 VOLTS = 300

UNCOMPENSATED HORIZONTAL PEAK-TO-PEAK SQUARE-WAVE RESPONSE AT CENTER OF PICTURE PER CENT

TV LINE NUMBER
TYPICAL CHARACTERISTIC

ILLUMINATION: 2870°K INCANDESCENT.
HIGHLIGHT SIGNAL-OUTPUT MICROAMPERES = 0.3
SCANNED AREA OF PHOTOCONDUCTIVE LAYER = 1/2" x 3/8"
FACEPLATE TEMPERATURE = 30°C APPROX.