



6849

6849

IMAGE ORTHICON

*For extremely low-light-level pickup
in industrial and scientific-research applications*

MAGNETIC FOCUS

MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage. $6.3 \pm 10\%$ ac or dc volts

Current. 0.6amp

Direct Interelectrode Capacitance (Approx.):

Anode to all other electrodes. 12 μf

Photocathode, Semitransparent:

Response See accompanying Spectral-
Sensitivity-Characteristic curve

Rectangular image (4 x 3 aspect ratio):

Useful size of 1.6" max. diagonal

Orientation of Proper orientation is obtained when
the vertical scan is essentially
parallel to the plane passing
through the center of the faceplate
and pin 7 of the shoulder base.

Focusing Method. Magnetic

Deflection Method. Magnetic

Overall Length $15\text{-}3/16" \pm 1/4"$ Greatest Diameter of Bulb. $3" \pm 1/16"$ Minimum Deflecting-Coil Inside Diameter. $2\text{-}3/8"$

Deflecting-Coil Length 5"

Focusing-Coil Length 10"

Alignment-Coil Length. $15/16"$ Photocathode Distance Inside End of Focusing Coil. . . . $1/2"$ Operating Position: Any except with diheptal base up and tube
axis at angle of less than 20° from vertical

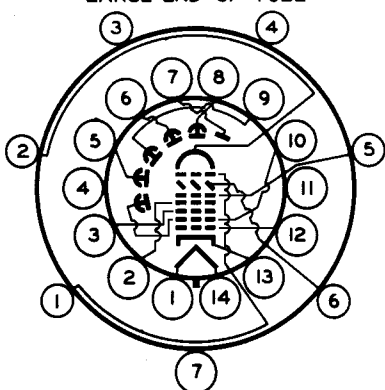
Weight (Approx.) 1 lb 6 oz

End Base Small-Shell Diheptal 14-Pin (JETEC No. B14-45)

BOTTOM VIEW

- 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

DIRECTION OF LIGHT:
PERPENDICULAR TO
LARGE END OF TUBE



WHITE INDEX LINE
ON FACE



6849

IMAGE ORTHICON

Shoulder Base	Keyed Jumbo Annular 7-Pin
Pin 1—Grid No.6	Pin 5—Grid No.5
Pin 2—Photocathode	
Pin 3—Internal Connection—Do Not Use	Pin 6—Target
Pin 4—Internal Connection—Do Not Use	Pin 7—Internal Connection—Do Not Use

Maximum Ratings, Absolute Values:**PHOTOCATHODE:**

Voltage	-550 max.	volts
Illumination	50 max.	ft-c

OPERATING TEMPERATURE:

Of any part of bulb	50 max.	°C
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
--	--------	----

GRID-No.6 VOLTAGE	-550 max.	volts
-----------------------------	-----------	-------

TARGET VOLTAGE:

Positive value.	10 max.	volts
Negative value.	10 max.	volts

GRID-No.5 VOLTAGE	150 max.	volts
-----------------------------	----------	-------

GRID-No.4 VOLTAGE	300 max.	volts
-----------------------------	----------	-------

GRID-No.3 VOLTAGE	400 max.	volts
-----------------------------	----------	-------

GRID-No.2 & DYNODE-No.1 VOLTAGE	350 max.	volts
---	----------	-------

GRID-No.1 VOLTAGE:

Negative bias value	125 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

ANODE-SUPPLY VOLTAGE*	1350 max.	volts
---------------------------------	-----------	-------

VOLTAGE PER MULTIPLIER STAGE.	350 max.	volts
---------------------------------------	----------	-------

Typical Operation and Characteristics:

Photocathode Voltage (Image Focus).	-400 to -540	volts
---	--------------	-------

Grid-No.6 Voltage (Accelerator)—

75% of photocathode voltage	-300 to -405	volts
---------------------------------------	--------------	-------

Target Voltage ^o	0 to 3	volts
---------------------------------------	--------	-------

Grid-No.5 Voltage (Decelerator)	0 to 125	volts
---	----------	-------

Grid-No.4 Voltage (Beam Focus).	130 to 180	volts
---	------------	-------

Grid-No.3 Voltage [#]	225 to 330	volts
--	------------	-------

Grid-No.2 & Dynode-No.1 Voltage	300	volts
---	-----	-------

Grid-No.1 Voltage for Picture Cutoff.	-45 to -115	volts
---	-------------	-------

* Ratio of dynode voltages is shown under *Typical Operation*.

^o Adjustable from -3 to +5 volts with blanking voltage off.

[#] Adjust to give the most uniformly shaded picture near maximum signal.



6849

6849

IMAGE ORTHICON

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
Anode Current (DC)	3	μ a
Signal-Output Current (Peak to peak) . .	0.01 to 5	μ a
Target-Temperature Range	35 to 45	$^{\circ}$ C
Minimum Peak-to-Peak Blanking Voltage. .	5	volts
Field Strength at Center of Focusing Coil .	75	gausses
Field Strength of Alignment Coil (Approx.)	0 to 3	gausses

▲ 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.

OPERATING CONSIDERATIONS

When the equipment design or operating conditions are such that the *maximum temperature rating* or *maximum temperature difference* as given under *Maximum Ratings* will be exceeded, provision should be made to direct a blast of cooling air from the diheptal-base end of the tube along the entire length of the bulb surface, i.e., through the space between the bulb surface and the surrounding deflecting-coil assembly and its extension. Any attempt to effect cooling of the tube by circulating even a large amount of air around the focusing coil will do little good, but a small amount of air directly in contact with the bulb surface will effectively drop the bulb temperature. For this purpose, a small blower is satisfactory, but it should be run at low speed to prevent vibration of the 6849 and the associated amplifier equipment. Unless vibration is prevented, distortion of the picture may occur.

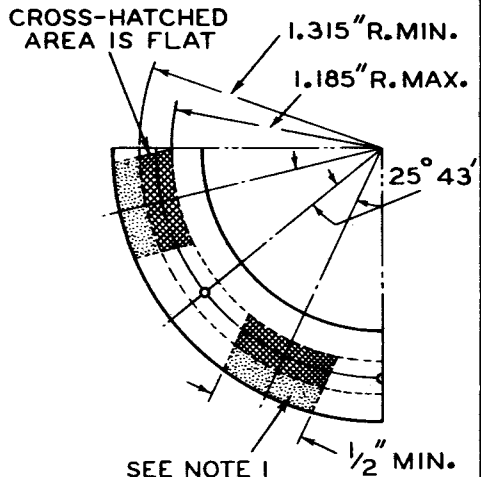
To keep the operating temperature of the large end of the tube from falling below 35° C, some form of controlled heating should be employed. Ordinarily, adequate heat will be supplied by the focusing coil, deflecting coils, and associated amplifier tubes so that the temperature can be controlled by the amount of cooling air directed along the bulb surface. If, in special cases, a target heater is required, it should fit between the focusing coil and the bulb near the shoulder of the tube, and be non-inductively wound.

Resolution in excess of 450 lines at the center of the picture can be produced by the 6849 under the higher light-level conditions. With decreasing illumination levels, the resolution decreases. To utilize such resolution capability in the horizontal direction with the standard scanning rate of 525 lines, it is necessary to use a video amplifier having a bandwidth of at least 6 megacycles. The maximum resolution obtainable is limited by the mesh-screen portion of the target.



IMAGE ORTHICON

DETAIL OF BOTTOM VIEW OF JUMBO ANNULAR BASE

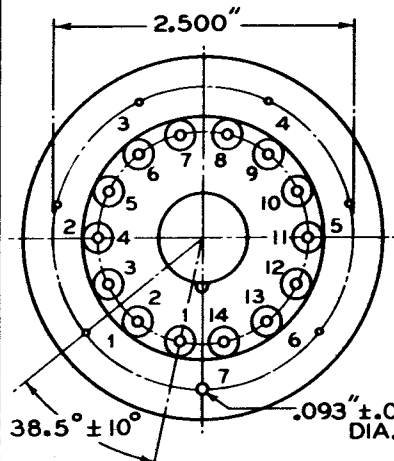
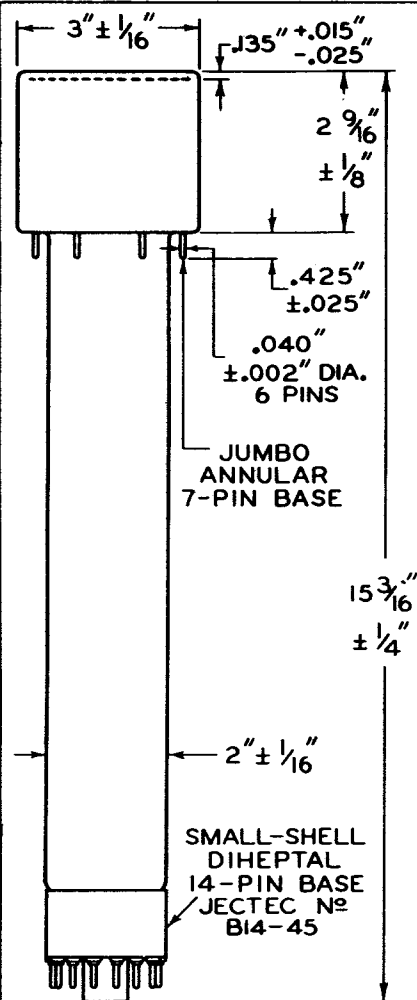


NOTE 1: DOTTED AREA IS FLAT OR EXTENDS TOWARD DIHEPTAL-BASE END OF TUBE BY 0.060" MAX.

ANNULAR-BASE GAUGE

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 GAUGE WITH:

- SIX HOLES HAVING DIAMETER OF $0.065" \pm 0.001"$ AND ONE HOLE HAVING DIAMETER OF $0.150" \pm 0.001"$. ALL HOLES HAVE DEPTH OF $0.265" \pm 0.001"$. 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 $2.500" \pm 0.001"$.
- SIX STOPS HAVING HEIGHT OF $0.187" \pm 0.001"$, CENTERED BETWEEN PIN HOLES, TO BEAR AGAINST FLAT AREAS OF BASE.
- RIM EXTENDING OUT A MINIMUM OF $1/8"$ FROM $2-13/16"$ DIAMETER AND HAVING HEIGHT OF $0.126" \pm 0.001"$.
- NECK-CYLINDER CLEARANCE HOLE HAVING DIAMETER OF $2.200" \pm 0.001"$.



ENLARGED BOTTOM VIEW

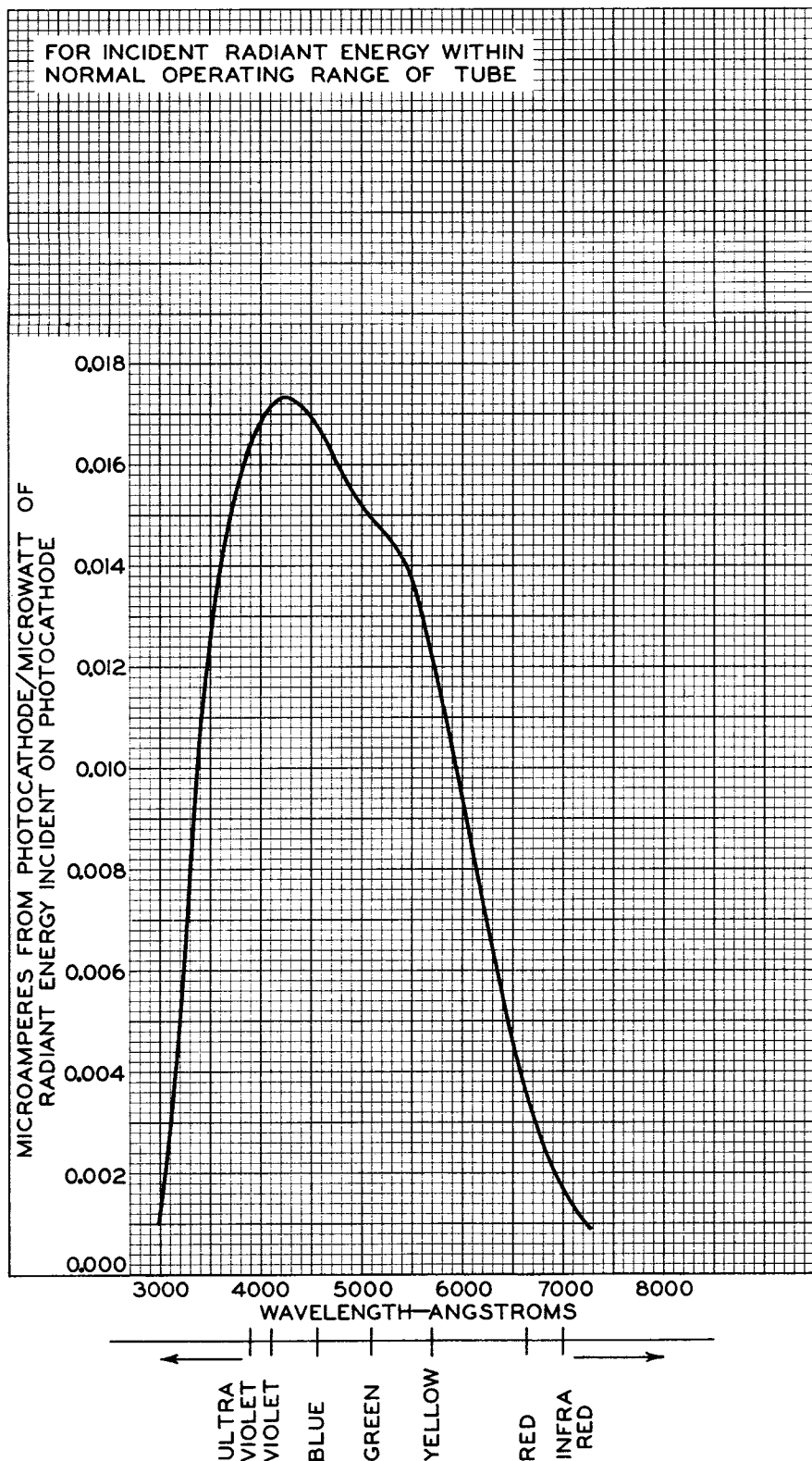
92CM-8293R2



6849

6849

SPECTRAL-SENSITIVITY CHARACTERISTIC



TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9199

6849



6849

IMAGE ORTHICON

BASIC LIGHT-TRANSFER CHARACTERISTIC

