

Image Orthicon

MAGNETIC FOCUS

MAGNETIC DEFLECTION

VERY HIGH SIGNAL-TO-NOISE RATIO

For High-Quality Black-and-White Studio TV Cameras. The 7389-A is Unilaterally Interchangeable with Type 7389.

DATA

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:

Anode to all other electrodes 12 μ uf

Spectral Response S-10

Wavelength of Maximum Response 4500 \pm 300 angstroms

Photocathode, Semitransparent:

Rectangular image (4 x 3 aspect ratio):

Useful size of 1.6" max. diagonal

Note: The size of the optical image focused on the photocathode should be adjusted so that its maximum diagonal does not exceed the specified value. The corresponding electron image on the target should have a size such that the corners of the rectangle just touch the target ring.

Orientation of . . Proper orientation is obtained when the vertical scan is essentially parallel to the plane passing through center of faceplate and the grid-No.6 envelope terminal. The horizontal and vertical scan should start at the corner of the picture between the grid-No.6 and the photocathode envelope terminals.

Target-to-Mesh Spacing 0.001 in.

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length 19.375" \pm 0.310"

Greatest Diameter of Bulb 4.500" \pm 0.094"

Minimum Deflecting-Coil Inside Diameter 3.2"

Deflecting-Coil Length 7"

Focusing-Coil Length 15"

Alignment-Coil:

Position on neck . . . Centerline of magnetic field should be located 9.25" from the flat area of the shoulder.

Operating Position See *Operating Considerations*

Weight (Approx.) 2.3 lbs

Envelope Terminals 5

BOTTOM VIEW[▲]

Terminal Over Pin 2 - Field Mesh

Terminal Over Pin 4 - Photocathode (PC)

Terminal On Side

Of Envelope

Opposite Base Key - Grid No.6 (G₆)

[▲] See basing diagram on next page.



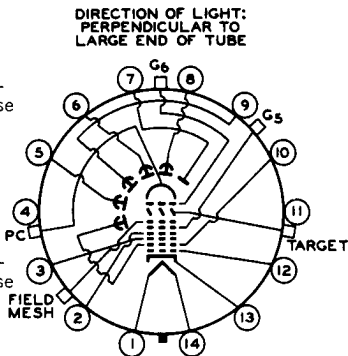
7389-A

Terminal Over Pin 9—Grid No.5 (G₅)
Terminal Over Pin 11—Target

End Base. Small-Shell Diheptal 14-Pin
(JEDEC Group 5, No.814-45)

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



Maximum and Minimum Ratings, Absolute-Maximum Values:

PHOTOCATHODE:

Voltage. -700 max. volts
Illumination 50 max. fc

OPERATING TEMPERATURE:

Any part of bulb 65 max. °C
Of bulb at large end of tube
(Image section). 35 min. °C

TEMPERATURE DIFFERENCE:

Between image section and any part
of bulb hotter than image section. 5 max. °C

GRID-No.6 VOLTAGE. -700 max. volts

TARGET VOLTAGE:

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

FIELD-MESH VOLTAGE* 30 max. volts

GRID-No.5 VOLTAGE. 300 max. volts

GRID-No.4 VOLTAGE. 350 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* 1650 max. volts

VOLTAGE PER MULTIPLIER STAGE 350 max. volts



Typical Operating Values:[♦]

Photocathode Voltage	-600	volts
Grid-No.6 Voltage (Image focus) Approx. 50% of photocathode voltage [♣]	-250 to -350	volts
Target Voltage Above Cutoff [♣]	2 to 3	volts
Field Mesh Voltage [♣]	15 to 25	volts
Grid-No.5 Voltage (Decelerator)	40	volts
Grid-No.4 Voltage (Beam Focus)	70 to 90	volts
Grid-No.3 Voltage [♣]	250 to 275	volts
Grid-No.2 & Dynode-No.1 Voltage	280	volts
Grid-No.1 Voltage for Picture Cutoff.	-45 to -115	volts
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
Target Temperature Range.	35 to 45	°C
Minimum Peak-to-Peak Blanking Voltage	5	volts
Field Strength of Focusing Coil: [♣] At center of scanning section (Approx.)	60	gausses
In plane of photocathode (Approx.):	120	gausses
Field Strength of Alignment Coil.	0 to 3	gausses

Performance Data:

With conditions shown under Typical Operating Values, target voltage adjusted to 3 volts above cutoff, and with the camera lens set to bring the picture highlights 1/2 stop above the "knee" of the Basic Light-Transfer-Characteristic Curve except as otherwise specified

Min. Average Max.

Cathode Radiant Sensitivity at 4500 angstroms.	-	0.028	-	$\mu\text{a}/\mu\text{W}$
Anode Current (DC)	-	30	-	μa
Signal-Output Current (Peak to Peak)	5	-	40	μa
Ratio of Peak-to-Peak High- light Video-Signal Current to RMS Noise Current for Bandwidth of 4.5 Mc.	-	95:1	-	
Photocathode Illumination at 2870° K Required to Reach "Knee" of Light Transfer Characteristic.	-	0.075	0.15	fc
Amplitude Response at 400 TV Lines per Picture Height (Per cent of large-area black to large-area white).	40	56	-	%

♣ With respect to grid No.4.

* Dynode-voltage values are shown under *Typical Operating Values*.

♣ With 7389-A operated in RCA TK-12 camera at fixed photocathode voltage.

♣ Adjust for optimum focus.

♣ The target supply voltage should be adjustable from -5 to 5 volts.



7389-A

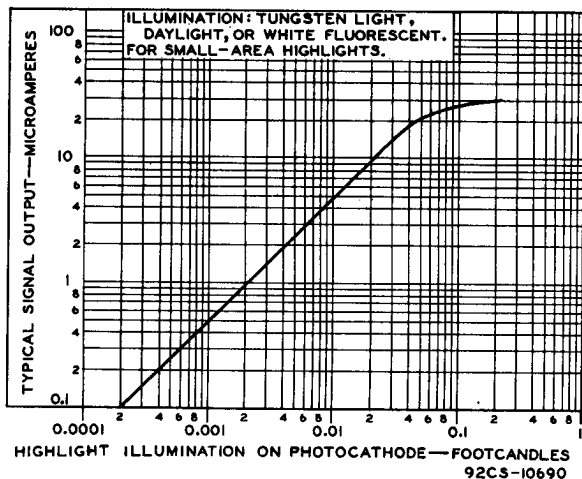
- * Adjust to give the most uniformly shaded picture near maximum signal.
- Direction of current should be such that a north-seeking pole is attracted to the image end of the focusing coil, with the indicator located outside of and at the image end of the focusing coil.
- # Measured with amplifier having flat frequency response.

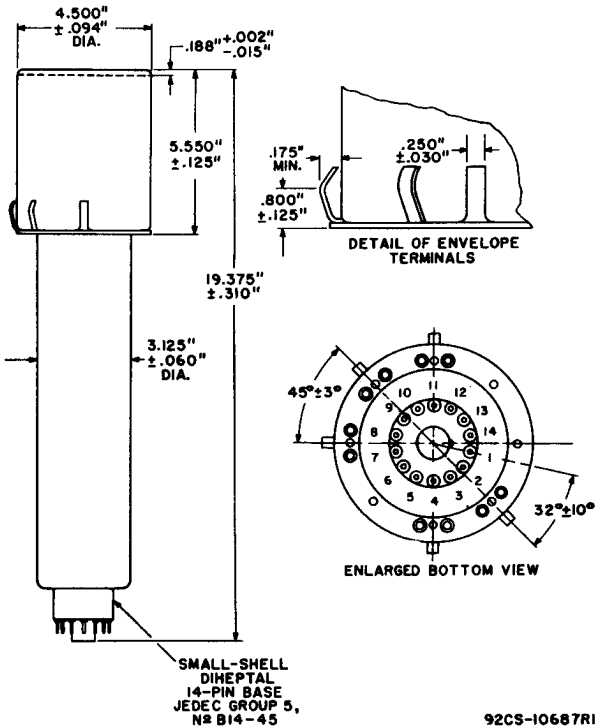
OPERATING CONSIDERATIONS

The *operating position* of the 7389-A should preferably be such that any loose particles in the neck of the tube will not fall down and strike or become lodged on the target. Therefore, it is recommended that the tube never be operated in a vertical position with the Diheptal-base end up nor in any other position where the axis of the tube with base up makes an angle of less than 20° with the vertical.

SPECTRAL-SENSITIVITY CHARACTERISTIC
of Photosensitive Device having S-10 Response
is shown at the front of this Section

BASIC LIGHT-TRANSFER CHARACTERISTIC





92CS-10687R1

