

Image Orthicon

"MICRODAMP" CONSTRUCTION FOR REDUCED MICROPHONICS
FIELD MESH FOR REDUCED "WHITE EDGE" EFFECTS

MAGNETIC FOCUS

MAGNETIC DEFLECTION

For High-Quality Black-and-White Studio TV Cameras,
Live Pickup, and Magnetic Tape Recording Requiring
High-Signal-to-Noise Ratio. The 7389B is Unilaterally
Interchangeable with the 7389 and 7389A.

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 pf

Target-to-Mesh Spacing 0.001 inch

Spectral Response S-10

Wavelength of Maximum Response 4500 ± 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.

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

Socket Cinch^a Part No.3M14, or equivalent



7389B

Envelope Terminals. 5

BOTTOM VIEW

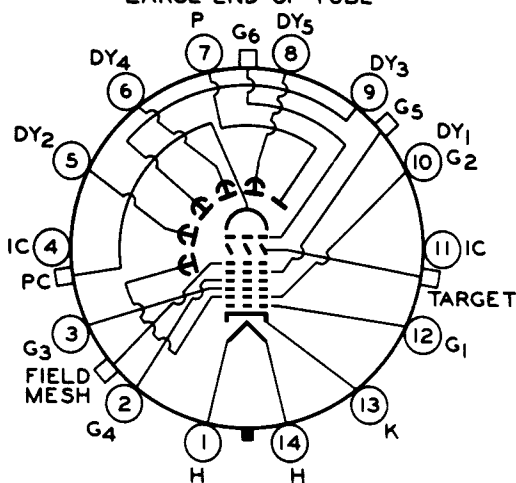
Terminal Over Pin 2—Field Mesh
Terminal Over Pin 4—Photocathode (PC)
Terminal On Side Of Envelope
Opposite Base Key—Grid No.6 (G_6)
Terminal Over Pin 9—Grid No.5 (G_5)
Terminal Over Pin 11—Target

End Base. Small-Shell Diheptal 14-Pin
(JEDEC Group 5, No.B14-45)

BOTTOM VIEW

DIRECTION OF LIGHT:
PERPENDICULAR TO
LARGE END OF TUBE

Pin 1—Heater
Pin 2—Grid No.4
Pin 3—Grid No.3
Pin 4—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—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:^b

Any part of bulb 65 max. °C
Of bulb at larg 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^c. 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 ^d	1650 max.	volts
Voltage Per Multiplier Stage	350 max.	volts

Typical Operating Values:^e

Photocathode Voltage	-600	volts
Grid-No.6 Voltage (Image focus) Approx. 70% of photocathode voltage ^f	-370 to -470	volts
Target Voltage Above Cutoff ^g	2.3	volts
Field-Mesh Voltage ^c	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 ^h	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
Recommended-Target-Temperature Range: ^b	35 to 45	°C
Minimum Peak-to-Peak Blanking Voltage	5	volts
Field Strength of Focusing Coil (Approx.): ^j		
At center of scanning section:	60	gausses
In plane of photocathode	120	gausses
Field Strength of Alignment Coil	0 to 3	gausses

Performance Data:

With conditions shown under Typical Operating Values including Recommended Target-Temperature Range, target voltage adjusted to 2.3 volts above cutoff, and with the camera lens set to bring the picture highlights 1/2 stop above the "knee" of the accompanying Basic Light-Transfer-Characteristic Curve

	Min.	Typ.	Max.	
Cathode Radiant Sensitivity				
at 4500 angstroms.	-	0.030	-	a/w
Luminous Sensitivity	30	60	-	μa/lm
Anode Current (DC)	-	30	-	μa
Signal-Output Current (Peak to Peak)	10	-	40	μa
Ratio of Peak-to-Peak High- light Video-Signal Current to RMS Noise Current for Bandwidth of 4.5 Mc.	85:1	95:1	-	
Photocathode Illumination at 2870° K Required to bring Picture Highlights 1/2 Stop above "Knee" of Light Transfer Character- istic.	-	0.070	0.130	fc
Amplitude Response at 400 TV Lines per Picture Height (Per cent of large-area black to large-area white) ^k	60	75	-	%



7389B

	Min.	Typ.	Max.
Uniformity: ^m			
Ratio of Shading (Back-ground) Signal to Highlight Signal.	-	0.10	0.15
Decrease from Peak Highlight Signal Level of Signal from any Point on Scanned Area of Target	-	12	25 %

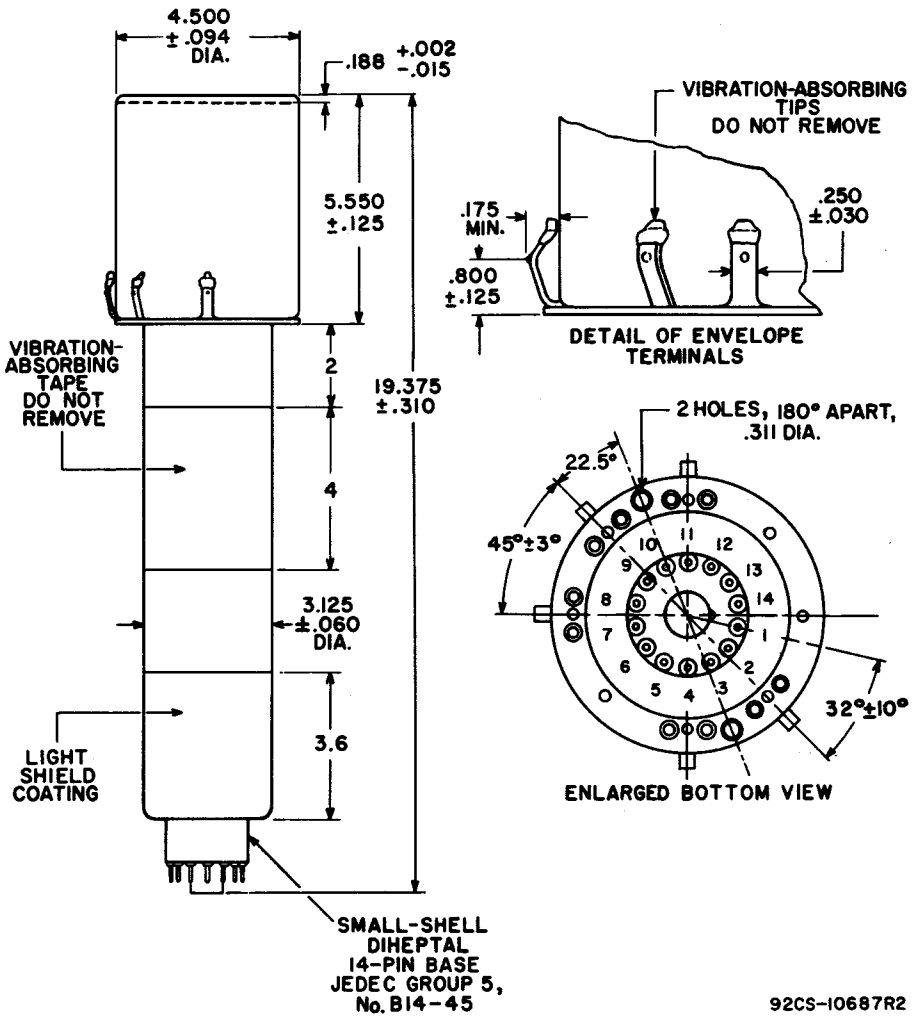
- ^a Cinch Manufacturing Corporation, 1026 South Homan Avenue, Chicago 24, Illinois.
- ^b Operating outside the *Recommended Target-Temperature Range* shown under *Typical Operating Values* will not damage the 7389B provided the *Maximum Temperature Ratings* of the tube are not exceeded. Optimum performance, however, is only obtained when the tube is operated within the *Recommended Target-Temperature Range*.
- ^c With respect to grid No. 4.
- ^d Dynode-voltage values are shown under *Typical Operating Values*.
- ^e With 7389B operated in RCA TK-60 camera at fixed photocathode voltage.
- ^f Adjust for optimum focus.
- ^g The target supply voltage should be adjustable from -5 to 5 volts.
- ^h Adjust to give the most uniformly shaded picture near maximum signal.
- ^j 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.
- ^k Measured with amplifier having flat frequency response.
- ^m With uniform illumination on photocathode.

OPERATING CONSIDERATIONS

The tube should 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





DIMENSIONS IN INCHES

92CS-10687R2



BASIC LIGHT-TRANSFER CHARACTERISTIC

