4492

Image Orthicon

Magnetic Focus 4-½-Inch Dia. Magnetic Deflection
For use in the luminance channel of suitably designed 4-tube color TV cameras in studio or outdoor service

GENERAL

Heater, for Unipotential Cathode:		
Voltage (AC or DC)	6.3 ± 10%	V
Current at 6.3 volts	0.6	A
Direct Interelectrode Capacitance:		
Anode to all other electrodes	12	pF
Target-to-Mesh Spacing	0.002	in
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 in 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 the center of the faceplate and the grid-No.6 terminal. The horizontal and vertical scan should start at the corner of the picture between the grid No.6 and the photocathode terminals.

Focusing Method	Magnetic
Deflection Method	Magnetic
Overall Length	19.375 in ±0.310 in
Greatest Diameter of Bulb	4.500 in ±0.094 in
Envelope Terminals	5
End Base	Small-Shell Diheptal 14-Pin Base (JEDEC Group 5, No.B14-45)
Socket	Cinch Part No.3M14, or equivalent

Operating Position . . . 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 the base up makes an angle of less than 20° with the vertical.

Weight (Approx.)	2.3 lb
Minimum Deflecting-Coil Inside Diameter	3.2 in
Deflecting-Coil Length	7 in
Focusing-Coil Length	15 in
Alignment Coil:	
Position on neck. . . .	Centerline of magnetic field should be located 9.25" from the flat area of the shoulder.

MAXIMUM AND MINIMUM RATINGS, ABSOLUTE-MAXIMUM VALUES

Photocathode:		
Voltage	-700 max.	V
Illumination	50 max.	fc

Operating Temperature:[b]		
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.	V
Target Voltage:		
Positive value	10 max.	V
Negative value	10 max.	V
Field-Mesh Voltage[c]	30 max.	V
Grid-No.5 Voltage	300 max.	V
Grid-No.4 Voltage	350 max.	V
Grid-No.3 Voltage	400 max.	V
Grid-No.2 & Dynode-No.1 Voltage	350 max.	V
Grid-No.1 Voltage: Negative bias value	125 max.	V
Positive bias value	0 max.	V
Voltage Per Multiplier Stage	350 max.	V
Anode-Supply Voltage[d]	1650 max.	V
Peak Heater-Cathode Voltage:		
Heater negative with respect to cathode	125 max.	V
Heater positive with respect to cathode	10 max.	V

TYPICAL OPERATING VALUES[e]

Photocathode Voltage	-600	V
Grid-No.6 Voltage (Image Focus)		
Approx. 70% of Photocathode Voltage[f]	-370 to -470	V
Target Voltage Above Cutoff[g]	2.3	V
Field-Mesh Voltage[c]	15 to 25	V
Grid-No.5 Voltage (Decelerator)	40	V
Grid-No.4 Voltage (Beam Focus)	70 to 90	V
Grid-No.3 Voltage[h]	250 to 275	V
Grid-No.2 & Dynode-No.1 Voltage	280	V
Grid-No.1 Voltage for Picture Cutoff	-45 to -115	V
Dynode-No.2 Voltage	600	V
Dynode-No.3 Voltage	800	V
Dynode-No.4 Voltage	1000	V
Dynode-No.5 Voltage	1200	V
Anode Voltage	1250	V
Recommended Target Temperature Range[b]	35 to 45	°C
Minimum Peak-to-Peak Blanking Voltage	5	V
Field Strength of Focusing Coil:[i]		
At center of scanning section (Approx.)	60	G
In plane of photocathode (Approx.)	120	G
Field Strength of Alignment Coil	0 to 3	G

PERFORMANCE DATA

With conditions shown under Typical Operating Values including Recommended Target Temperature Range; target voltage adjusted to 2.3 volts above cutoff; with camera lens set to bring picture highlights a maximum of one stop over the knee of the light transfer charac-

teristic; and operation in a 525-line 60-cycle TV system.

	Typical	
Signal-Output Current (Peak to Peak)	20	μA
Ratio of Peak-to-Peak Highlight Video-Signal Current to RMS Noise Current for Bandwidth of 4.5 MHz[k]	59:1[k]	
Photocathode Illumination at 2870°K Required to bring Picture Highlights to the "Knee" of Light Transfer Characteristic	0.02	fc
Amplitude Response at 400 TV Lines per Picture Height (Per cent of large-area black to large-area white)[m]	75	%
Highlight Signal Variation (Per cent of peak signal)	15	%
Background Signal Variation (Per cent of peak signal)	7.5	%

[b] Operation outside of the *Recommended Target Temperature Range* shown under *Typical Operating Values* will not damage the 4492 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 4492 operated in RCA TK-42 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.

[i] 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.

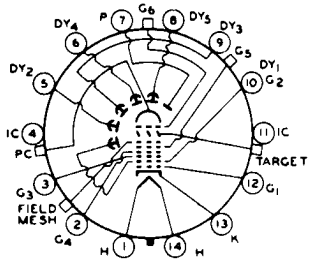
[k] Signal-to-noise ratio is dependent upon tube operating conditions and on the method of measurement. Significant factors affecting this ratio include target voltage, bandwidth, system line number and frame time, and the choice of reference signal black level. Two common test conditions and resultant difference in signal-to-noise ratio are shown on reverse side.

	Method A	Method B
Bandwidth	4.5 MHz	5.1 MHz
Scan Line Number	525	625
Field Rate	60	50
Black Level	Picture Black	"Capped" Black
Target Voltage	2.3 V	3.0 V
Signal-to-Noise Ratio	59:1	83:1

[m] Measured with amplifier having flat frequency response.

TERMINAL DIAGRAM (Bottom View)

DIRECTION OF LIGHT: PERPENDICULAR TO LARGE END OF TUBE



ENVELOPE TERMINALS

Terminal Over Pin 2 - Field Mesh

Terminal Over Pin 4 - Photocathode

Terminal On Side Of Envelope Opposite Base Key - Grid No.6

Terminal Over Pin 9 - Grid No.5

Terminal Over Pin 11 - Target

SMALL-SHELL DIHEPTAL 14-PIN BASE

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

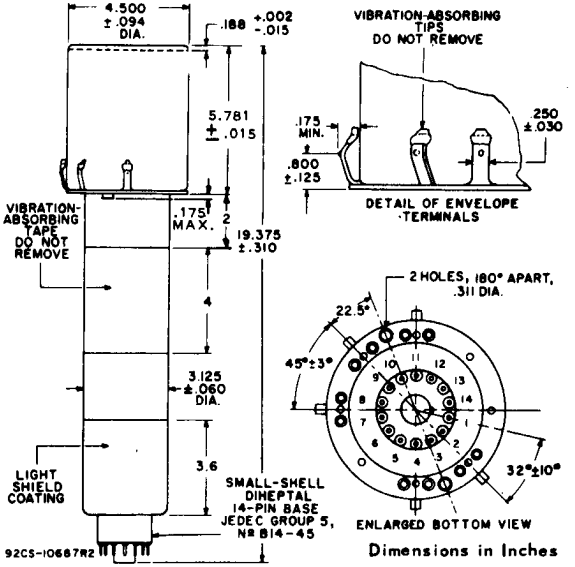
Pin 11 - Internal Connection—Do Not Use

Pin 12 - Grid No.1

Pin 13 - Cathode

Pin 14 - Heater

DIMENSIONAL OUTLINE



Dimensions in Inches