

Image Orthicon

MAGNETIC FOCUS

MAGNETIC DEFLECTION

HIGH SENSITIVITY

For Outdoor and Studio Pickup. The 4414/7611 is Unilaterally Interchangeable with Types 5820, 5820A, and 7611^a.

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 pf

Spectral Response S-10

Wavelength of Maximum Response. 4500 ± 300 angstroms

Photocathode, Semitransparent:

Rectangular image (4 x 3 aspect ratio):

Useful size of. 1.8" 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 face-plate and pin 7 of the shoulder base.

Focusing Method Magnetic

Deflection Method Magnetic

Overall Length. $15.20" \pm 0.25"$

Greatest Diameter of Bulb $3.00" \pm 0.06"$

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. . . 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.). 1 lb 6 oz

Shoulder Base Keyed Jumbo Annular 7-Pin

BOTTOM VIEW[▲]

Pin 1-Grid No.6

Pin 2-Photocathode

Pin 3-Do Not Use

Pin 4-Do Not Use

Pin 5-Grid No.5

Pin 6-Target

Pin 7-Do Not Use

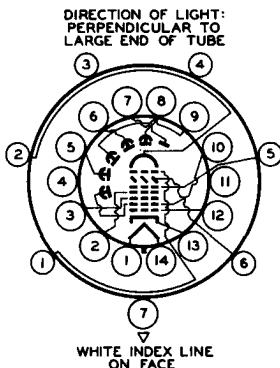
[▲] See basing diagram on next page.



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

BOTTOM VIEW

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	-550 max.	volts
Illumination.	50 max.	fc

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

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

GRID-No.5 VOLTAGE	150 max.	volts
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GRID-No.4 VOLTAGE	300 max.	volts
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GRID-No.3 VOLTAGE	400 max.	volts
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GRID-No.2 & DYNODE-No.1 VOLTAGE	350 max.	volts
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GRID-No.1 VOLTAGE:

Negative-bias value	125 max.	volts
Positive-bias value	0 max.	volts

VOLTAGE PER MULTIPLIER STAGE.	350 max.	volts
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ANODE SUPPLY VOLTAGE ^b	1350 max.	volts
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PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode	125 max.	volts
Heater positive with respect to cathode	10 max.	volts

Typical Operating Values:

Photocathode Voltage (Image Focus). . . .	-400 to -540	volts
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Grid-No.6 Voltage (Accelerator)—		
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Approx. 75% of photocathode voltage . .	-300 to -405	volts
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Target Cutoff Voltage ^c	-3 to 1	volts
Grid-No.5 Voltage (Decelerator)	0 to 125	volts
Grid-No.4 Voltage (Beam Focus)	140 to 180	volts
Grid-No.3 Voltage ^d	225 to 330	volts
Grid-No.2 & Dynode-No.1 Voltage	300	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
Minimum Peak-to-Peak Blanking Voltage	5	volts
Field Strength at Center of Focusing Coil ^e	75	gausses
Field Strength of Alignment Coil.	0 to 3	gausses

Performance Data:^f

With conditions shown under Typical Operating Values and with camera lens set to bring the picture highlights one stop above the "knee" of the accompanying Basic Light-Transfer-Characteristic Curve

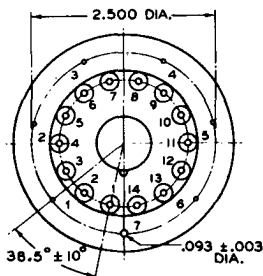
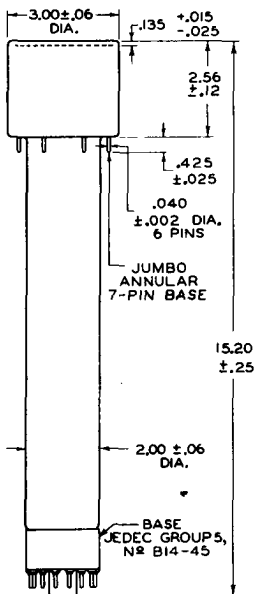
	Min.	Average	Max.	
Cathode Radiant Sensitivity at 4500 angstroms	-	0.030	-	a/w
Luminous Sensitivity.	30	60	-	μ a/lm
Anode Current (DC).	-	30	-	μ a
Signal-Output Current (Peak-to-Peak).	3	8	24	μ a
Ratio of Peak-to-Peak High- light Video-Signal Current to RMS Noise Current for Bandwidth of 4.5 Mc	35:1	-	-	
Photocathode Illumination at 2870° K Required to Bring Picture Highlights One Stop Above "Knee" of Light Transfer Characteristic.	-	0.02	0.04	fc
Peak-to-Peak Response to Square-Wave Test Pattern at 400 TV Lines per Picture Height (Per cent of large- area black to large-area white) ^g	35	-	-	%
Uniformity: Ratio of Shading (Back- ground) Signal to High- light Signal.	-	0.12	0.15	
Variation of Highlight Signal (Per cent of maximum highlight signal) ^h	-	20	25	%



- ^a The 4414/7611 when operated within the temperature range of 35° to 45° C is unilaterally interchangeable with types 5820, 5820A, and 7611.
- ^b Dynode-voltage values are shown under *Typical Operating Values*.
- ^c Normal setting of target voltage is +2 volts from target cutoff. The target supply voltage should be adjustable from -3 to 5 volts.
- ^d Adjust to give the most uniformly shaded picture near maximum signal.
- ^e 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.
- ^f With 4414/7611 operated in properly adjusted RCA TK-31 camera.
- ^g Measured with amplifier having flat frequency response.
- ^h Variation of response over scanned area.

**SPECTRAL-SENSITIVITY CHARACTERISTIC
OF PHOTOSENSITIVE DEVICE HAVING S-10 RESPONSE
is shown at front of this Section**

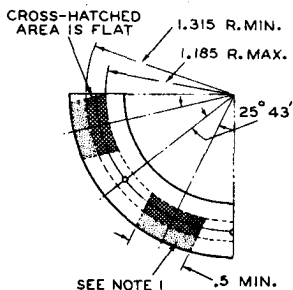




ENLARGED BOTTOM VIEW

ALL DIMENSIONS IN INCHES

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 ± 0.001 AND ONE HOLE HAVING DIAMETER OF 0.150 ± 0.001 . ALL HOLES HAVE DEPTH OF 0.265 ± 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 ± 0.001 ".
- SEVEN STOPS HAVING HEIGHT OF 0.187 ± 0.001 ", CENTERED BETWEEN PIN HOLES TO BEAR AGAINST FLAT AREAS OF BASE.
- RIM EXTENDING OUT A MINIMUM OF 0.125 " FROM 2.812 " DIAMETER AND HAVING HEIGHT OF 0.126 ± 0.001 ".
- NECK-CYLINDER CLEARANCE HOLE HAVING DIAMETER OF 2.200 ± 0.001 ".

92CM-8293R3



RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

DATA 3
6-63

BASIC LIGHT-TRANSFER CHARACTERISTIC

