MAGNETIC FOCUS

For Outdoor and Studio Pickup. The 5820A is Unilaterally Interchangeable with Type 5820.

DATA

General:
Heater, for Unipotential Cathode:
Voltage (AC or DC) .................. 6.3 ± 10% volts
Current at 6.3 volts .................. 0.6 amp
Direct Inter electrode Capacitance:
Anode to all other electrodes ........ 12 µf
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" ± 0.25"
Greatest Diameter of Bulb ............ 3.00" ± 0.06"
Minimum Deflecting-Coil Inside Diameter .......... 2-3/8"
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 Dineptal-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 - Internal Connection—Do Not Use
Pin 4 - Internal Connection—Do Not Use
Pin 5 - Grid No.5
Pin 6 - Target
Pin 7 - Internal Connection—Do Not Use

* See biasing 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 = 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: -550 max. volts
- Illumination: 50 max. fc

OPERATING TEMPERATURE:
- Of any part of bulb: 50 max. °C
- Of bulb at large end of tube: 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:
- Photocathode Voltage (Image Focus): -400 to -540 volts
- Grid-No. 6 Voltage (Accelerator):
  - Approx. 75% of photocathode voltage: -300 to -405 volts
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 Operation and with camera lens set to bring the picture highlights one stop above the "knee" of the light transfer characteristic

<table>
<thead>
<tr>
<th>Min.</th>
<th>Average</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\mu)A/(\mu)W</td>
<td>(\mu)A/lumen</td>
<td>(\mu)A</td>
</tr>
</tbody>
</table>

Cathode Radiant Sensitivity
at 4500 angstroms .......... – 0.03 – \(\mu\)A/\(\mu\)W

Luminous Sensitivity .......... 30 60 – \(\mu\)A/lumen

Anode Current (DC) .......... – 30 – \(\mu\)A

Signal-Output Current
(Peak-to-peak) .............. 3 8 24 \(\mu\)A

Ratio of Peak-to-Peak High-
light Video-Signal Current
to RMS Noise Current for
Bandwidth of 4.5 Mc ........... 35:1 45:1 –

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 60 – %

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 %

\(^b\) Dynode-voltage values are shown under Typical Operation.

\(^c\) 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.

\(^e\) Indicates a change.

\(^f\) Indicates a change.

\(^g\) Indicates a change.

\(^h\) Indicates a change.
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.

With 5820A operated in properly adjusted RCA TK-31 camera.

Measured with amplifier having flat frequency response.

Variation of response over scanned area.

SPECTRAL-SENSITIVITY CHARACTERISTIC
OF PHOTOSENSITIVE DEVICE HAVING S-10 RESPONSE
is shown at front of this Section
NOTE 1: DOTTED AREA IS FLAT OR EXTENDS TOWARD DIHEPTAL-END OF TUBE BY 0.060" MAX.

ANNULAR-BASE GAUGE
ANGULAR VARIATIONS BETWEEN PINS AS WELL AS ECCENTRICITY OF NECK CYLINDER WITH RESPECT TO PHOTO-CATHODE CYLINDER ARE HELD TO TOLERANCES SUCH THAT PINS AND NECK CYLINDER WILL FIT FLAT-PLATE GAUGE WITH:

a. 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°26' ± 5' ON CIRCLE DIAMETER OF 2.500" ± 0.001".

b. SEVEN HOLES HAVING HEIGHT OF 0.187" ± 0.001", CENTERED BETWEEN PIN HOLES TO BEAR AGAINST FLAT AREAS OF BASE.

c. RIM EXTENDING OUT A MINIMUM OF 0.125" FROM 2.812" DIAMETER AND HAVING HEIGHT OF 0.126" ± 0.001".

d. NECK-CYLINDER CLEARANCE HOLE HAVING DIAMETER OF 2.200" ± 0.001".
BASIC LIGHT-TRANSFER CHARACTERISTIC

ILLUMINATION: TUNGSTEN LIGHT, DAY-LIGHT, OR WHITE FLUORESCENT. FOR SMALL-AREA HIGHLIGHTS.

TYPICAL SIGNAL OUTPUT—MICROAMPERES

HIGHLIGHT ILLUMINATION ON PHOTOCATHODE—FOOTCANDLES

92CS-7296R2