The type 10UP — is a 10 inch aluminized electrostatic focus and magnetic deflection cathode-ray tube suitable for radar applications. A low-voltage electrostatic focus lens is employed, designed to operate at near cathode potential to afford substantially automatic focus, independent of accelerator voltage variations. In addition, the 10UP7A employs a high resolution gun.

The 10UP — utilizes a metallized screen for greater light output, improved contrast, and to minimize screen charging effects.

**MECHANICAL DATA**

**BASE:** Small Shell Duodecal 6-Pin  
**CAP:** Recessed Small Cavity  
**TERMINAL CONNECTIONS:**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heater</td>
<td>11</td>
<td>Cathode</td>
</tr>
<tr>
<td>2</td>
<td>Grid #1</td>
<td>12</td>
<td>Heater</td>
</tr>
<tr>
<td>3</td>
<td>Grid #2</td>
<td>3 and</td>
<td>Grids #3 and #5 (Collector)</td>
</tr>
<tr>
<td>4</td>
<td>Grid #3</td>
<td>5</td>
<td>Diode</td>
</tr>
<tr>
<td>6</td>
<td>Grid #4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Grid #5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**GENERAL DATA**

<table>
<thead>
<tr>
<th>Phosphor</th>
<th>Fluorescence</th>
<th>Phosphorescence</th>
<th>Persistence</th>
<th>Focusing Method</th>
<th>Deflecting Method</th>
<th>Deflection Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>#7</td>
<td>Blue</td>
<td>Yellow</td>
<td>Long</td>
<td>Electrostatic</td>
<td>Magnetic</td>
<td>50°</td>
</tr>
<tr>
<td></td>
<td>Blue</td>
<td>Orange</td>
<td>Medium – Long</td>
<td>Electrostatic</td>
<td>Magnetic</td>
<td>50°</td>
</tr>
</tbody>
</table>

**ELECTRICAL DATA**

**HEATER CHARACTERISTICS:**

- Heater Voltage:  
- Heater Current: 0.6 ± 0.10% amps.  
- Peak Heater – Cathode Voltage:  
  - Heater Negative with Respect to Cathode: 180 volts DC  
  - Heater Positive with Respect to Cathode: 180 volts DC

**DIRECT INTERELECTRODE CAPACITANCES:** (µfd's) (approx.)

- Grid #1 to all other electrodes: 6.5 µfd
- Cathode to all other electrodes: 5 µfd

**DESIGN CENTER MAXIMUM RATINGS:**

- Collector Voltage: 12,000 volts DC  
- Grid #4 Voltage (Focusing Electrode): -500 to +1000 volts DC  
- Grid #2 Voltage: 700 volts DC  
- Grid #1 Voltage:  
  - Negative – Bias Value: 180 volts DC  
  - Positive – Bias Value: 0 volts DC  
  - Positive – Peak Value: 0 volts DC

**CHARACTERISTICS AND TYPICAL OPERATION:**

- Collector Voltage:  
  - 10,000 volts DC  
- Grid #4 Voltage (Focusing Electrode): -150 to +150 volts DC  
- Grid #2 Voltage: 300 volts DC  
- Grid #1 Voltage: -28 to -72 volts DC  
- Line Width: 0.013 inch max.  
- Spot Position ( undeflected): 0.50 inch

**MAXIMUM CIRCUIT VALUES:**

- Grid #1 Circuit Resistance: 1.5 max. Megohm

**TENTATIVE DATA**

**INDUSTRIAL TUBE DIVISION**
* At or near this rating, the effective resistance of the collector supply should be adequate to limit the collector input power to 6 watts.

▲ Collector, Grids #3 and #6 are connected internally and referred to as Collector. Brilliance and definition decrease with decreasing collector voltages. In general collector voltage should not be less than 7,000 volts.

◊ Cathode should be returned to one side or to the mid-tap of the heater transformer winding.

● With grid #1 voltage adjusted to produce a collector current of 100 μA, with the pattern adjusted for best overall focus. Measured with a 525-line interlaced and synchronized 6 X 8 inch pattern, with interlaced line blanking (current measured before applying blanking).

⊕ Visual extinction of focused 6 X 8 inch raster pattern.

■ Measured with a 525-line interlaced and synchronized pattern with interlaced line blanking. Pattern width adjusted to 90% of minimum useful scene diameter. 18 – 100 μA, measured before applying blanking. Line width is the merged raster height divided by the number of lines (222.5) measured in center of tube face. The line width under this condition will be 0.015 inch maximum (current measured before applying ∘).

□ The center of the undeflected, focused spot will fall within a circle of 1/2 inch radius concentric with the center of the tube face, with tube shielded.
CATHODE RAY TUBE

MINIMUM USEFUL SCREEN DIAMETER 9"

COLLECTOR TERMINAL
RECESS SMALL CAVITY
CAP (J1-21)

REFERENCE LINE
ANTI-CORONA
COATING

NOTE 1 Reference line is determined by
position where 1.5000" ± .003"
diameter ring gauge 2" long will
rest on bulb cone.

CAUTION
Do not handle tube by the part of the bulb having the
Anti-Corona Coating.

Small Shell
Duodecal
6-Pin Base
(B6-63)

10° Maximum Collector Contact

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