General:
Heater, for Unipotential Cathode:
Voltage............. 6.3 ± 10% .... ac or dc volts
Current............. 0.6 ........... amp

Direct Interelectrode Capacitances (Approx.):
Grid No.1 to All Other Electrodes... 8.0 ........... µf
DJ1 to DJ2 ........... 2.5 ........... µf
DJ3 to DJ4 ........... 2.5 ........... µf
DJ1 to All Other Electrodes........ 11.0 ........... µf
DJ2 to All Other Electrodes........ 8.0 ........... µf
DJ3 to All Other Electrodes........ 7.0 ........... µf
DJ4 to All Other Electrodes........ 8.0 ........... µf

Phosphor (For Curves, see front of this Section) .... No.1
Fluorescence .................. Green
Persistence .................. Medium

Focusing Method ............ Electrostatic
Deflection Method ............ Electrostatic
Overall Length .............. 14-3/4" ± 3/8"
Greatest Diameter of Bulb .......... 5-1/4" ± 3/32"
Minimum Useful Screen Diameter .... 4-1/2"
Mounting Position ........... Any
Base ......................... Small-Shell Duodecal 12-Pin

Basing Designation for BOTTOM VIEW .............. 12E

Pin 1-Heater
Pin 2-Grid No.1
Pin 3-Cathode
Pin 4-Anode No.1
Pin 5-Internal Con. Do Not Use
Pin 6-Deflecting Electrode DJ3
Pin 7-Deflecting Electrode DJ4
Pin 8-Anode No.2, Grid No.2
Pin 9-Deflecting Electrode DJ2
Pin 10-Deflecting Electrode DJ1
Pin 11-Internal Con. Do Not Use
Pin 12-Heater

DJ1 and DJ2 are nearer the screen
DJ3 and DJ4 are nearer the base

With DJ1 positive with respect to DJ2, the spot is deflected toward pin 4. With DJ3 positive with respect to DJ4, the spot is deflected toward pin 1.

The angle between the trace produced by DJ1 and DJ2 and its intersection with the plane through the tube axis and pin 1 does not exceed 10°.

The angle between the trace produced by DJ3 and DJ4 and the trace produced by DJ1 and DJ2 is 90° ± 30°.
**Maximum Ratings, Design-Center Values:**

- **ANODE-No. 2 VOLTAGE** ........... 2500 max. volts
- **ANODE-No. 1 VOLTAGE** ........... 1000 max. volts
- **GRID-No. 1 (CONTROL ELECTRODE) VOLTAGE:**
  - Negative bias value .................. 200 max. volts
  - Positive bias value .................. 0 max. volts
  - Peak positive value .................. 2 max. volts
- **PEAK VOLTAGE BETWEEN ANODE No. 2 AND ANY DEFLECTING ELECTRODE** ........... 500 max. volts
- **PEAK HEATER-CATHODE VOLTAGE:**
  - Heater negative with respect to cathode .... 125 max. volts
  - Heater positive with respect to cathode .... 125 max. volts

**Equipment Design Ranges:**

*For any anode-No. 2 voltage (E_b2) between 1000* and 2500 volts*

- **Anode-No. 1 Voltage** ........... 17% to 32% of E_b2 ....... volts
- **Max. Grid-No. 1 Voltage for Visual Cutoff** ....... 4.5% of E_b2 ....... volts
- **Anode-No. 1 Current for Any Operating Condition** ...... -15 to +10 ...... microamp
- **Deflection Factors:**
  - DJ1 & DJ2 .................. 28 to 38.5 v dc/in./kv of E_b2
  - DJ3 & DJ4 .................. 23 to 31 v dc/in./kv of E_b2

**Examples of Use of Design Ranges:**

*For anode-No. 2 voltages of 1000 and 2000 volts*

- **Anode-No. 1 Voltage** ........... 170 - 320 340 - 640 ...... volts
- **Max. Grid-No. 1 Voltage for Visual Cutoff** ...... -45 -90 ...... volts
- **Deflection Factors:**
  - DJ1 & DJ2 .................. 28 - 38.5 56 - 77 volts dc/in.

**Maximum Circuit Values:**

- **Grid-No.1-Circuit Resistance** ........... 1.5 max. megohms
- **Resistance in Any Deflecting Electrode Circuit** ........... 5.0 max. megohms

*Recommended minimum value.

**It is recommended that the deflecting-electrode-circuit resistances be approximately equal.**

**Anode No.2 and grid No.2, which are connected together within tube, are referred to herein as anode No.2.**
TYPICAL CIRCUIT

R1 R2: 2.5 Megohms, 0.5 Watt
R3: 6 Megohms, 3 Watts
R4: 2-Megohm Potentiometer
R5: 1 Megohm, 0.5 Watt
R6: 0.5-Megohm Potentiometer
R7: 0.5-Megohm, 0.5 Watt
R8: Not less than 2000 Ohms per volt of positive signal
R9: 5-Megohms, 0.5 Watt
R10-R11, R12-R13: Dual Potentiometers, R10, R11, R12, R13: 0.5 Megohm
R14 R15 R16 R17: 2.2 Megohms, 0.5 Watt
C1: 0.1 μF, 2500 Volts
C2: 1 μF, 200 Volts
C3: 0.0001 μF, 2500 Volts
C4 C5 C6 C7: 0.1 μF, 600 Volts

The license extended to the purchaser of tubes appears in the License Notice accompanying them. Information contained herein is furnished without assuming any obligations.
$\xi$ of bulb will not deviate more than 2° in any direction from the perpendicular erected at the center of bottom of the base.

**NOTE 1:** This base may be superseded by an alternate base which will fit the same socket but which will have a flared shell indicated by the dashed lines and dimensioned approximately as follows:

\[ A = 1.85^{\circ} \text{ max.}, \quad B = 0.500^{\circ}, \quad C = 0.200^{\circ} \text{ min.}, \quad D = 0.925^{\circ}. \]

92CH-6763
AVERAGE CHARACTERISTICS

E_f = 6.3 VOLTS
ANODE-N°1 VOLTS ADJUSTED FOR FOCUS

RELATIVE LINE BRIGHTNESS

1000 1500 2000 2500
ANODE-N°2 VOLTS

NOV. 7, 1946
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY
92CM-6808
AVERAGE CHARACTERISTICS

$E_F = 6.3$ VOLTS
ANODE-Nº1 VOLTS ADJUSTED FOR FOCUS
ANODE-Nº2 VOLTS=2000
--- ANODE-Nº2 CURRENT
--- FLUORESCENT-SCREEN CURRENT (SEE TEXT)

NOV. 11, 1946
TUBE DEPARTMENT
RADIO CORPORATION OF AMERICA, HAVERSTON, NEW JERSEY
92CM-6810
Oscillograph Tube

ELECTROSTATIC FOCUS

For Extremely Low-Speed Recurrent, or Medium-Speed Non-Recurrent Image Displays

The 5UP7 is the same as the 5UP1 except for the following items:

GENERAL
Phosphor (For curves, see front of this section) P7
Fluorescence White
Phosphorescence Yellowish-Green
Persistence Very-Long

ELECTROSTATIC DEFLECTION

5UP11

Oscillograph Tube

ELECTROSTATIC FOCUS

For Photographic Recording and Visual Observations

The 5UP11 is the same as the 5UP1 except for the following items:

GENERAL
Phosphor (For curves, see front of this section) P11
Fluorescence Actinic-Blue
Phosphorescence Actinic-Blue
Persistence Medium-Short

ELECTROSTATIC DEFLECTION

5UP31

Oscillograph Tube

ELECTROSTATIC FOCUS

For Low- or Medium-Speed Non-Recurring Image Displays

The 5UP31 is the same as the 5UP1 except for the following items:

GENERAL
Phosphor (For curves see type 7VP31) P31
Fluorescence Green
Phosphorescence Green
Persistence Medium-Short (Approx. 38 µsec)

a Persistence of useable brightness can be obtained with an anode-No. 2 voltage of as low as 1500 volts.

b Time for initial brightness to decay to 10% point.

c Phosphorescence may have a useful brightness for over a minute under conditions of adequate excitation and low-ambient illumination.

RADIO CORPORATION OF AMERICA
Electronic Components and Devices
Harrison, N. J.

DATA 9-65