

April 23, 1956

Page 1

Television Picture Tube Types 14NP4 & 14NP4-A

Rectangular Glass Construction
 External Conductive Coating
 Magnetic Deflection

Electrostatic Focus

90° Deflection

Spherical Faceplate

12-1/8" 9-5/8" Picture Size

The 14NP4 and 14NP4A are electrostatic-focus, directly-viewed picture tubes of rectangular glass construction. A new bulb design permits 90° deflection with a resulting reduction of the overall length of approximately two inches as compared with previously available 14-inch tubes. The faceplates are spherical and they are made of neutral gray glass. Both types have an external conductive coating; the 14NP4A has a metal-backed screen for increased picture brightness.

GENERAL DATA

Electrical:

Cathode.	.Coated Unipotential
Heater:	
Voltage.	6.3 ac or dc Volts
Current.	0.6 Ampere
Direct Interelectrode Capacitances:	
Grid 1 to all other electrodes	6 μ f
Cathode to all other electrodes.	5 μ f
External Conductive Coating to Anode	
Maximum	750 μ f
Minimum	500 μ f
Screen:	
Phosphor.	No. 4 Sulfide Type
Fluorescence.	White
Persistence	Short
Focusing Method.	Low-Voltage Electrostatic
Deflection Method.	Magnetic
Horizontal Angle (Approx.)	80°
Vertical Angle (Approx.)	65°
Diagonal Angle (Approx.)	90°
Ion-Trap Gun	External Single-Field Magnet

Mechanical:

Mounting Position.	.Any
Screen Dimensions (Tentative)	
Height	9-5/8" min.
Width.	12-1/8" min.
Diagonal	13-1/16" min.
Projected Area	106 sq. in. min. (tentative)
Faceplate:	Spherical
Glass	Natural Filter
Transmission (Approx.)	.78 per cent
Bulb Dimensions	
Height	10-9/16" $\pm$ 1/8"
Width	13-1/16" $\pm$ 1/8"
Diagonal	14" $\pm$ 1/8"
Overall Length	14-1/4" $\pm$ 3/8"
Neck Length	6-9/16" $\pm$ 3/16"

Anode Terminal. Recessed Small Cavity Cap (JETEC J1-21)
 Base Small Shell Duodecal 6-Pin (JETEC B6-63)
 Bulb Number. J112A1

MAXIMUM RATINGS

Design Center Values

Anode Voltage # 14000 max. Volts
 Grid 4 Voltage:
 Positive Value 1000 max. Volts
 Negative Value 500 max. Volts
 Grid 2 Voltage 500 max. Volts
 Grid 1 Voltage:
 Negative Bias Value 180 max. Volts
 Positive Bias Value 0 max. Volts
 Positive Peak Value 0 max. Volts
 Peak Heater-Cathode Voltage:
 Heater Negative with Respect to Cathode
 During Warm-up Period of 15 sec. max. 410 max. Volts
 After Equipment Warm-up Period 180 max. Volts
 Heater Positive with respect to Cathode 180 max. Volts

TYPICAL OPERATING CONDITIONS

For Anode Voltage #. 10,000 12,000 Volts
 For Grid 2 Voltage 250 300 Volts
 Grid 4 Voltage for Focus
 with Anode Current of 100
 uampere -50 to +350 -50 to +350 Volts
 Grid 1 Voltage for Visual
 Extinction of
 Focused Raster. -24 to -64 -28 to -72 Volts
 Ion-Trap Magnet (Rated Strength)†. 28 30 Gauss

LIMITING CIRCUIT VALUES

Grid 1 Circuit Resistance*. 1.5 max. Megohms
 Grid 2 Circuit Resistance*. 0.1 min. Megohms
 Focus Electrode Circuit Resistance. 0.1 min. Megohms

*Protective resistance in the G2 and Focus Electrode circuits is advisable to prevent damage to the tube.

#Brilliance and definition decrease with decreasing anode voltage. In general, the anode voltage should not be less than 9,000 volts.

†It is recommended that the magnet slug be located on the same side of the tube neck as pin 6.

- NOTE 1: The plane through the tube axis and the base pin No. 6 may vary from the plane through the tube axis and the bulb terminal by an angular tolerance of $\pm 30^\circ$ measured about the tube axis. The bulb terminal is on the same side of the tube as pin No. 6.
- NOTE 2: With the tube neck inserted through the flared end of REFERENCE-Line Gauge (JETEC No. 116) and with the tube seated in the gauge, the reference line is determined by the intersection of the plane cc' (face of the flared end) of the gauge with the glass funnel.
- NOTE 3: The socket should not be mounted rigidly but it should be allowed to move freely and it should have flexible leads. The bottom circumference of the base shell will lie within a circle concentric with the bulb axis and having a diameter of $2 \frac{3}{4}$ ".
- NOTE 4: External conductive coating must be grounded.
- NOTE 5: Contact area of external conductive coating 2" min. x 2" min. located $2" \pm \frac{1}{4}"$ from Reference Line 90° counterclockwise from anode button as viewed from base end of tube.

[illegible]

WESTINGHOUSE ELECTRONIC TUBE DIVISION