

GENERAL DATA FOR CATHODE RAY TUBES
(JETEC Standard)

NORTH AMERICAN PHILIPS CO., INC.
DOBBS FERRY, N. Y.
ELECTRONIC TUBE DIV.

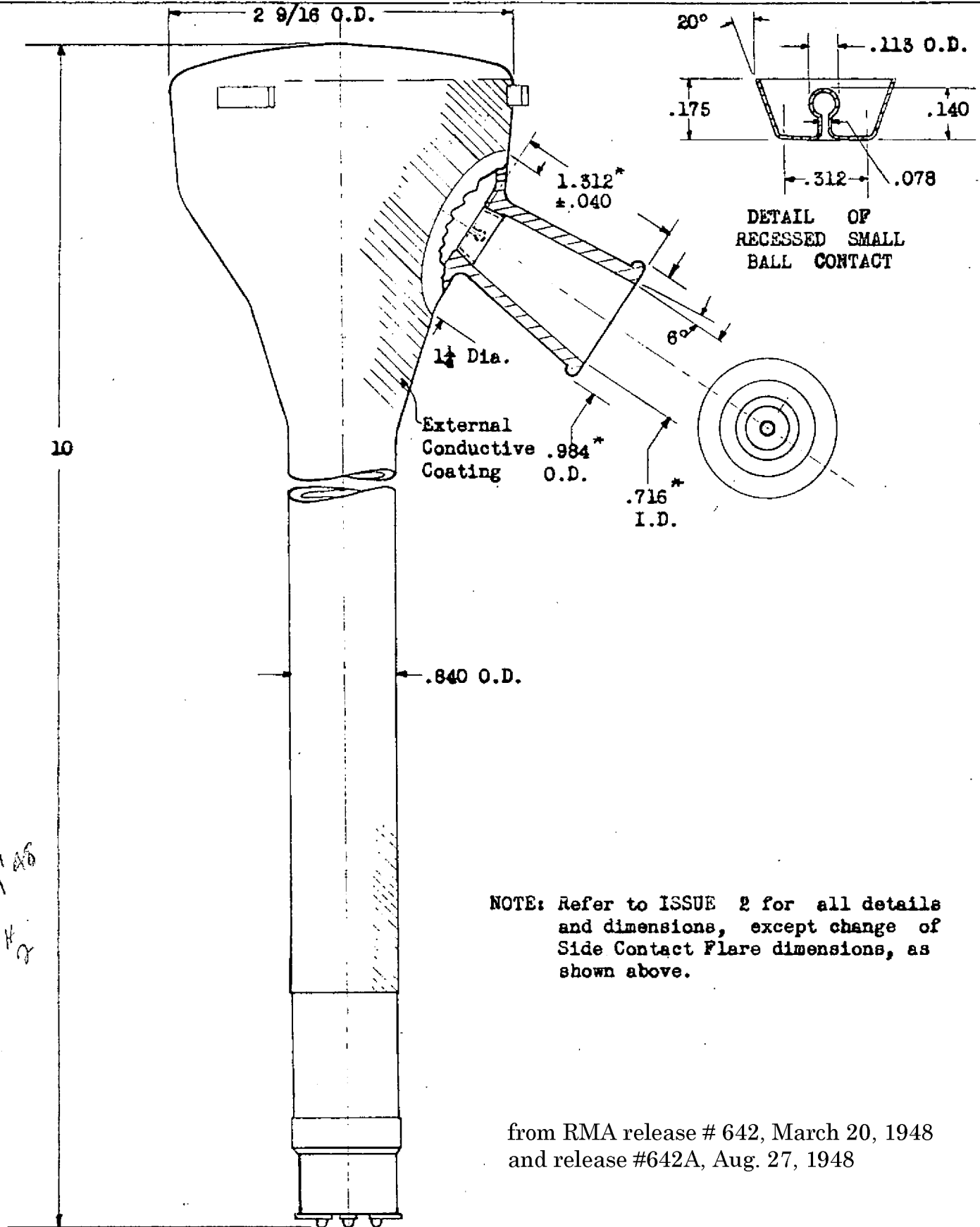
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DATE 6-28-48
SUPERSEDES 1-29-48

COMPLETE TUBE OUTLINE

PROCESS NO. _____

ISSUE 2a

SUBJECT **3NP4 PROJECTION TELEVISION TUBE**
Electromagnetic Focus & Deflection



NOTE: Refer to ISSUE 2 for all details and dimensions, except change of Side Contact Flare dimensions, as shown above.

from RMA release # 642, March 20, 1948
and release #642A, Aug. 27, 1948

GENERAL DATA FOR CATHODE RAY TUBES (JETEC STANDARD FORM)

NORTH AMERICAN PHILIPS CO., INC.

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DATE 6-18-48

SUPERSEDES Issue 2

PROCESS NO. _____

ISSUE 2a

SUBJECT **SNP4 PROJECTION TUBE**
Electromagnetic Focus & Deflection

DESCRIPTIVE PARAGRAPH

The SNP4 is a small projection television cathode ray tube with aluminized screen, capable of projecting a large picture. Space requirement for the tube is small.

GENERAL CHARACTERISTICS

Electrical

* Heater Voltage 6.3 $\pm 10\%$ Volts
 * Heater Current .6 $\pm 10\%$ Amperes

* Focusing Method Electromagnetic
 * Deflecting Method Electromagnetic
 * Max. Deflecting Angle 42°
 * Phosphor No. 4, aluminized
 * Fluorescence White
 * Phosphorescence _____
 * Persistence Medium

/ Direct Interelectrode Capacitances, Nominal
 Cathode to all other electrodes 7.75 uuf
 Grid #1 to all other electrodes 14.5 uuf
 D1 to D2 _____ uuf
 D3 to D4 _____ uuf
 D1 to all other electrodes except D2 _____ uuf
 D2 to all other electrodes except D1 _____ uuf
 D3 to all other electrodes except D4 _____ uuf
 D4 to all other electrodes except D3 _____ uuf
 External Conductive Coating to Anode #2 (375 max uuf
275 min uuf

Mechanical

* Overall Length 10 $\pm \frac{3}{8}$ Inches
 * Greatest Diameter of Bulb (including face lugs) 2 25/32 $\pm \frac{1}{32}$ Inches
 * Minimum Useful Screen Diameter _____ Inches
 / Bulb Contact JETEC Designation Recessed small ball cap
 * Base JETEC Designation 5 Contact, radial
 / Basing JETEC Designation _____
 / Base Alignment _____ trace Aligns
 with Pin # _____ and tube axis $\pm$ _____ Degrees
 Positive voltage on D1 deflects beam approx. toward Pin # _____.
 Positive voltage on D3 deflects beam approx. toward Pin # _____.
 / Bulb contact alignment. (Electrostatic-Deflection Types).
 _____ Contact aligns with trace of _____ $\pm$ _____ Degrees.
 _____ Contact on same side as Pin # _____.
 / Bulb contact alignment (Magnetic-Deflection Types)
Side Contact aligns with Base Contact #5 $\pm$ 10° Degrees

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SUBJECT **6NP4 PROJECTION TELEVISION TUBE**
Electromagnetic Focus & Deflection

PROCESS NO. _____

ISSUE 2

MAXIMUM RATINGS Design Center Values—

- * Anode No. 3 Voltage (accelerator High-Volt. Electr.) _____ Max Volt DC
- * Anode No. 2 Voltage _____ Max Volt DC
- * Ratio Anode No. 3 Voltage to Anode No. 2 Voltage _____ Max
- * Anode No. 1 Voltage 25,000 Max Volt DC
- * Grid No. 2 Voltage _____ Max Volt DC
- * Grid No. 1 Voltage _____
- Negative-Bias Value -125 Max Volt DC
- Positive-Bias Value _____ Max Volt DC
- Positive-Peak Value 2 Max Volt
- * Peak Heater-Cathode Voltage¹ _____
- Heater Negative with respect to cathode 175 Max Volt DC
- Heater Positive with respect to cathode 175 Max Volt DC

/ Peak Voltage between Anode No. 2 and any Deflection Electrode _____ Max Volt

TYPICAL OPERATING CONDITIONS (Magnetic-Deflection Types)

- * Anode No. 2 Voltage _____ Volts DC
- * Anode No. 1 Voltage _____ to 20,000 Volts DC
- * Grid No. 2 Voltage _____ Volts DC
- * Grid No. 1 Voltage² _____ to 50 Volts DC
- * Focusing Coil Current³ (DC) 150 Approx. Milliamperes
- / Spot Position (Undelected) 45 Maximum Millimeters
- / Ion Trap Current Standard Coil# _____ Approx. Milliamperes

TYPICAL OPERATING CONDITIONS (Electrostatic-Deflection Types)

- * For Anode No. 3 Voltage of _____ Volts
- * For Anode No. 2 Voltage of _____ Volts
- * Anode No. 1 Voltage _____ to _____ to _____ Volts
- * Grid No. 1 Voltage² _____ to _____ to _____ Volts
- * Deflection Factors:
 - D1 and D2 _____ to _____ to _____ Volts DC Per Inch
 - D3 and D4 _____ to _____ to _____ Volts DC Per Inch
- o Anode No. 1 Voltage _____ % to _____ % of Eb2 Volts
- o Grid No. 1 Voltage for Visual cut-off of Spot _____ % to _____ % of eb2 Volts
- / Anode No. 1 Current for any operating condition _____ to ± _____ Microamperes

GENERAL DATA FOR CATHODE RAY TUBES (JETEC STANDARD FORM)

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SUBJECT SNP4 PROJECTION TELEVISION TUBE
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o Deflection Factors:

No. 3rd Anode or Eb3 = Eb2

D1 and D2 _____ to _____ Volts DC per inch per Kilovolt of Eb2.

D3 and D4 _____ to _____ Volts DC per inch per Kilovolt of Eb2.

Eb3 = Twice Eb2

D1 and D2 _____ to _____ Volts DC per inch per Kilovolt of Eb2.

D3 and D4 _____ to _____ Volts DC per inch per Kilovolt of Eb2/

/ Spot Position (Undelected)⁵ _____ Maximum MillimetersMAXIMUM CIRCUIT VALUES:

/ Grid No. 1 Circuit Resistance _____ 1.5 Max Megohms

/ Resistance in any Deflecting-Electrode Circuit _____ Max Megohms

ADDITIONAL

- / Tube outline with essential dimensions and tolerances
- / Basing drawings and connections.
- o Average Characteristic Curves.

CATHODE RAY TUBE CHARACTERISTICS NOTES

1. Cathode should be returned to one side or to the mid-tap of the heater transformer winding.
2. Visual extinction of undeflected focused spot.
3. For standard focus coil# (WAP) #P9.000.07, or equivalent, with the combined grid-No. 1 - bias voltage and video-signal voltage adjusted to produce a high-light brightness of 1700 foot lamberts on a 36 X 48 picture area. Distance (D) shall be 2.78 inches. If other than the standard focus coil is used the rating is then given in ampere turns.
4. It is recommended that the deflecting-electrode-circuit resistances be approximately equal.
5. Connect free deflecting electrodes to second anode.

Notes in brackets are for the aid of those persons filling in the data and will not appear on the final sheets.

Reservation requires minimum of *.

Registration requires minimum of * plus/.

JETEC Data requires minimum of * plus / plus o.

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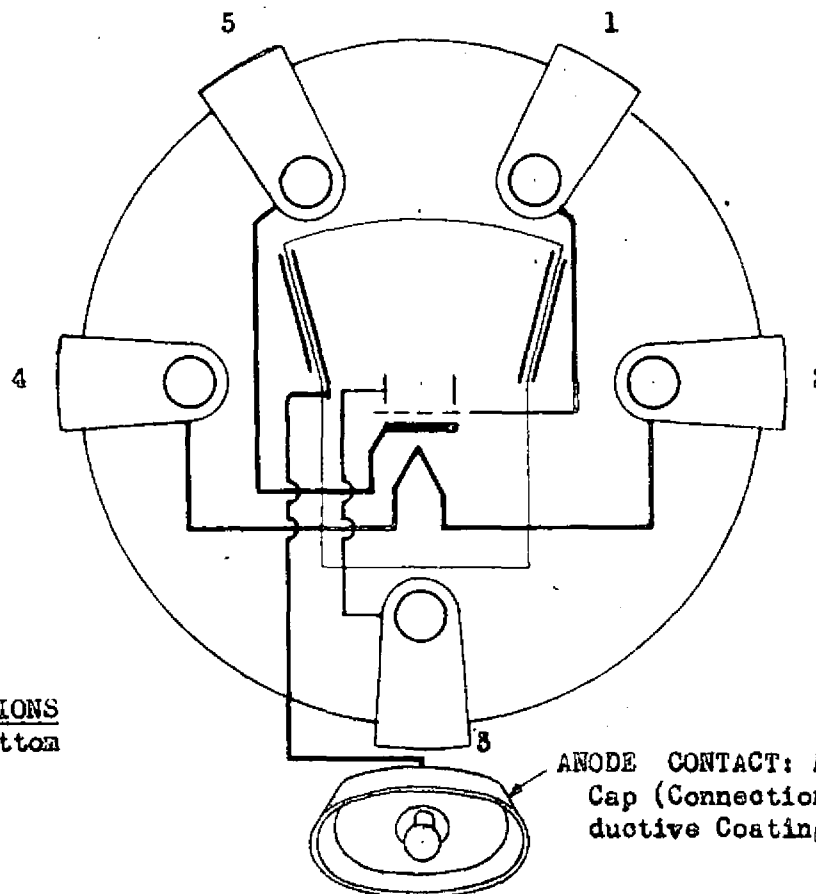
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 BASING DIAGRAM
SUBJECT **3NP4 PROJECTION TELEVISION TUBE**
Electromagnetic Focus & Deflection



BASE CONNECTIONS
As Viewed From Bottom

<u>BASE CONTACT NO.</u>	<u>DESCRIPTION</u>	<u>MAXIMUM VOLTAGE RATINGS</u>
1	Grid	-125 to 2 Volts D.C.
2	Heater	6.3 Volts $\pm 10\%$ A.C. or D.C.
3	Shield	(Base contact grounded)
4	Heater	6.3 Volts $\pm 10\%$ A.C. or D.C.
5	Cathode	All Element Voltages with Respect to Cathode

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CATHODE RAY TUBE TYPE 3NP4

The 3NP4 is a magnetic focus and magnetic deflection projection tube for television application designed primarily for use with reflective optical systems. It has an external conductive coating

GENERAL CHARACTERISTICS

Electrical Data

Heater Voltage	6.3	volts
Heater Current	0.6 10%	amperes
Focusing Method	Magnetic	
Deflecting Method	Magnetic	
Deflecting angle (approximate)	42	degrees
Phosphor	No. 4	
Fluorescence	White	
Persistence	Medium	

Direct Interelectrode Capacitance (approximate)	6	
Cathode to all other electrodes	14	
Grid to all other electrodes	275 - 375	
External Conductive Coating to Anode		
Direct Interelectrode Capacitance (approximate)		
Cathode to all other electrodes	6	uuf
Grid to all other electrodes	14	uuf
External Conductive Coating to Anode	275 to 375	uuf

Mechanical Data

Basing	See Drawing	
Overall Length	19 3/8	inches
Greatest Diameter of Bulb (including face lugs)	2 25/32 1/32	inches
Minimum useful Screen Diameter	2 3/16	inches
Bulb Contact	J1-22	
Base	(See Drawing) 5 Contact	
Bulb Contact Alignment		
J1-22 Contact aligns with Base Contact #3	10	degrees

MAXIMUM RATINGS

Design Center Values

Anode Voltage	25,000 Max.	volts D-C
Grid Voltage		
Negative - Bias Value	125 Max.	volts D-C
Positive - Bias Value	0 Max.	volts D-C
Positive - Peak Value	2 Max.	volts D-C
Peak Heater - Cathode Voltage ¹		
Heater Negative with respect to cathode	175 Max.	volts D-C
Heater Positive with respect to cathode	10 Max.	volts D-C

TYPICAL OPERATING CONDITIONS

Anode Voltage	24,000	volts D-C
Grid Voltage ²	- 36 to -84	volts D-C
Focusing Coil Current ³	Approx. 120	ma. D-C
Spot Position (Undelected)	3 Max.	millimeters

MAXIMUM CIRCUIT VALUES

Grid Circuit Resistance	1.5 Max.	megohms
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NOTES

1. Cathode should be returned to one side or to the mid-tap of the heater transformer winding
2. Visual extinction of undeflected focused spot.
3. Focus Coil (see attached data) with combined grid-bias voltage and video signal adjusted, produces a high-light brightness of 1700 foot lamberts on a 36 mm X 48 mm picture area. Distance (D) shall be 2.78 inches.



August 5, 1949

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