

19CUP4

Television Picture Tube

PHILCO - LANSDALE DIVISION

CATHODE RAY TUBE

DATA SHEET

Tentative

Description

The 19CUP4 is a 19" - 114° direct view rectangular glass picture tube having an aluminized screen, spherical faceplate, non ion trap gun, internal shielding and is designed to operate with electrostatic focus and magnetic deflection.

It is a "HiGm" tube designed to operate in cathode drive service under low G2 voltage conditions. The tube base is short and provides straight through leads oriented by an indexing lug.

Electrical Data

|                                                |                 |
|------------------------------------------------|-----------------|
| Focusing Method. . . . .                       | Electrostatic   |
| Deflection Method. . . . .                     | Magnetic        |
| Deflection Angle, approximate                  |                 |
| Horizontal . . . . .                           | 102 Degrees     |
| Vertical . . . . .                             | 85 Degrees      |
| Diagonal . . . . .                             | 114 Degrees     |
| Direct Interelectrode Capacitance, approximate |                 |
| Cathode to All . . . . .                       | 4.0uuf          |
| Grid #1 to All . . . . .                       | 6.0uuf          |
| External Coating Capacitance . . . . .         | 1300 Min. uuf   |
|                                                | 1700 Max. uuf   |
| Heater Voltage . . . . .                       | 6.3 Volts       |
| Heater Current at 6.3 Volts . . . . .          | 0.45±5% Amperes |
| Heater Warm-up Time (Note 1). . . . .          | 11 Seconds      |

Optical Data

|                                                    |               |
|----------------------------------------------------|---------------|
| Phosphor Number. . . . .                           | Aluminized P4 |
| Fluorescent Color. . . . .                         | White         |
| Persistence. . . . .                               | Medium Short  |
| Faceplate                                          |               |
| Light Transmission at Center, Approximate. . . . . | 77 Percent    |

Continued:

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### Mechanical Data

|                                            |                        |
|--------------------------------------------|------------------------|
| Overall Length . . . . .                   | 11 5/8±1/4-3/16 Inches |
| Neck Length . . . . .                      | 4 3/8±1/8-1/16 Inches  |
| Greatest Dimensions of Bulb                |                        |
| Diagonal . . . . .                         | 18 5/8±1/8 Inches      |
| Width . . . . .                            | 16 13/32±1/8 Inches    |
| Height . . . . .                           | 13 11/32±1/8 Inches    |
| Minimum Useful Screen Dimensions . . . . . | 172 Sq. Inches         |
| (maximum assured dimensions)               |                        |
| Diagonal . . . . .                         | 17 9/16 Inches         |
| Width . . . . .                            | 15 1/8 Inches          |
| Height . . . . .                           | 12 Inches              |
| Bulb . . . . .                             | J149A2                 |
| Base . . . . .                             | B7-208                 |
| Basing . . . . .                           | 8HR                    |
| Anode Contact . . . . .                    | J1-21                  |
| Anode Contact Aligns with Pin #4 ±30°      |                        |

### CATHODE DRIVE SERVICE

Voltages are positive with respect to Grid #1 unless indicated otherwise.

### Maximum Ratings      (Design Maximum Values)

|                                          |                                  |
|------------------------------------------|----------------------------------|
| Anode Voltage (Note 2) . . . . .         | 22,000 Volts DC                  |
| Grid #4 Voltage . . . . .                | -550 Min. to +1100 Max. Volts DC |
| Grid #2 Voltage . . . . .                | 80 Volts DC                      |
| Cathode Voltage                          |                                  |
| Positive-Bias Value . . . . .            | 154 Max. Volts DC                |
| Positive-Peak Value . . . . .            | 220 Max. Volts                   |
| Negative-Bias Value . . . . .            | 0 Max. Volts DC                  |
| Negative-Peak Value . . . . .            | 2 Max. Volts                     |
| Peak-Heater-Cathode Voltage              |                                  |
| Heater Negative with Respect to Cathode  |                                  |
| During Warm-up Period not to exceed      |                                  |
| 15 seconds . . . . .                     | 450 Max. Volts                   |
| After Equipment Warm-up Period . . . . . | 200 Max. Volts                   |
| Heater Positive with Respect to          |                                  |
| Cathode . . . . .                        | 200 Max. Volts                   |

Continued:

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### Typical Operating Conditions

|                                     |                             |
|-------------------------------------|-----------------------------|
| Anode Voltage . . . . .             | 16,000 Volts DC             |
| Grid #4 Voltage for Focus . . . . . | -100 Volts to +300 Volts DC |
| Grid #2 Voltage . . . . .           | 65 Volts DC                 |
| Cathode Voltage (Note 3) . . . . .  | +41 to +56 Volts DC         |

### Maximum Circuit Values

Grid #1 Circuit Resistance . . . . . 1.5 Max. Megs.

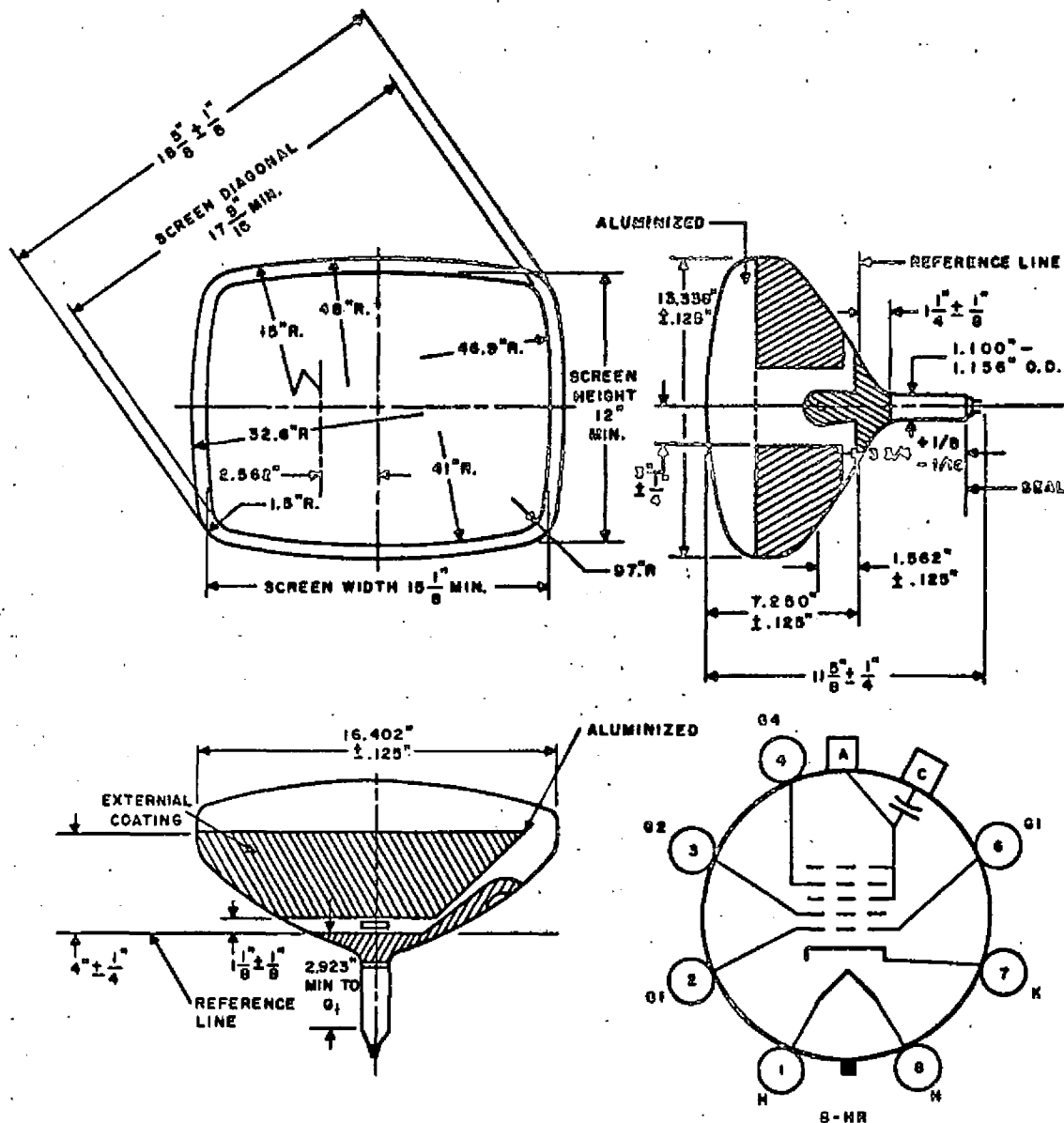
### Notes

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.
2. Anode, Grid #3, and Grid #5 are connected together within the tube and are referred to herein as anode.
3. For visual extinction of the focused raster. For cutoff. Undeflected focus spot, the absolute value of the bias between cathode and grid will increase by about 4 volts.

March 1963

# PHILCO CORPORATION - LANSDALE DIVISION

## Outline Drawing 19CUP4 Television Picture Tube



### MECHANICAL NOTES

1. The reference line is determined by reference line gauge JEDEC #126.
2. The area around the button is covered with an insulating coating.
3. Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. The design of the socket should be such that the circuit wiring cannot impress lateral strains through the socket contacts on the base pins. Bottom circumference of the base wafer will fall within a circle concentric with bulb axis and having a diameter of  $1\frac{3}{4}$  inches.

### WARNING

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at anode voltages higher than 10,000 volts.