RCA-17CDP4 is a very short, directly viewed rectangular, glass picture tube of the low-voltage electrostatic-focus and magnetic-deflection type. It has a spherical Filterglass faceplate, an aluminized screen 14-3/4" x 11-11/16" with slightly curved sides and rounded corners and a minimum projected screen area of 155 square inches.

The 17CDP4 utilizes an 8.4-volt, 450 milliampere heater having a controlled warm-up time to insure dependable performance in television receivers employing a series heater-string arrangement.

Designed with a 110°-diagonal deflection angle, the 17CDP4 has a very short length—a length approximately 3" shorter than types having the same size faceplate and 90° deflection. As a result, this tube establishes new concepts for cabinet styling and for the design of more compact TV receivers utilizing 17"-type picture tubes.

The 17CDP4 has a neck diameter of only 1-1/8" which not only makes possible the use of a deflecting yoke having high deflection sensitivity but also permits deflection of the beam through the wide deflection angle with only slightly more power than is required to scan a tube with 90° deflection angle.

The 17CDP4 utilizes a new electron gun of the "straight" type having improved focus and a unique pre-focus lens system to maintain image sharpness over the entire screen area. This new electron gun eliminates the need for an ion-trap magnet.

Another design feature of the 17CDP4 is an integral glass-button base having straight-through leads fitted with an indexing plug. This basing arrangement eliminates any possibility of loose base-pin connections. In addition, the 17CDP4 has an external conductive bulb coating which with the internal conductive coating forms a supplementary filter capacitor.

Table: RCA-17CDP4 Tentative Data

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screen size</td>
<td>14-3/4&quot; x 11-11/16&quot;</td>
</tr>
<tr>
<td>Bulb diagonal length</td>
<td>16-11/16&quot;</td>
</tr>
<tr>
<td>Max. neck height</td>
<td>12-13/16&quot;</td>
</tr>
<tr>
<td>Screen area</td>
<td>155 sq. in.</td>
</tr>
</tbody>
</table>

RCA-17CDP4 KINESCOPE
Low-Voltage Electrostatic Focus
110° Magnetic Deflection
Aluminized Screen
Very Short Rectangular Glass Type
for Series Heater-String Operation
100° Magnetic Deflection
TENTATIVE DATA
GRID-DRIVE SERVICE

Unless otherwise specified, voltage values are positive with respect to cathode.

Maximum and Minimum Ratings, Design-Center Values:

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTR® VOLTAGE</td>
<td>0</td>
<td>16000 max. volts</td>
</tr>
<tr>
<td>GRID-No.4 VOLTAGE</td>
<td>0</td>
<td>12000 min. volts</td>
</tr>
<tr>
<td>Negative value</td>
<td>1000 max. volts</td>
<td></td>
</tr>
<tr>
<td>GRID-No.2 VOLTAGE</td>
<td>500 max. volts</td>
<td></td>
</tr>
<tr>
<td>Negative value</td>
<td>500 max. volts</td>
<td></td>
</tr>
<tr>
<td>GRID-No.1 VOLTAGE</td>
<td>200 max. volts</td>
<td></td>
</tr>
<tr>
<td>Negative value</td>
<td>140 max. volts</td>
<td></td>
</tr>
<tr>
<td>Negative bias value</td>
<td>0 max. volts</td>
<td></td>
</tr>
<tr>
<td>Positive bias value</td>
<td>2 max. volts</td>
<td></td>
</tr>
<tr>
<td>PEAK HEATER-CATHODE VOLTAGE</td>
<td>180 max. volts</td>
<td></td>
</tr>
<tr>
<td>Heater with respect to cathode</td>
<td>180 max. volts</td>
<td></td>
</tr>
</tbody>
</table>

Equipment Design Ranges:

With any ultr-to-grid-No.1 voltage (E_{c1}) between 12000 and 16000 volts and grid-No.2 to grid-No.1 voltage (E_{c2}) between 200 and 500 volts:

- Grid-No.4 Voltage for Focus: 0 to 400 volts
- Grid-No.3 Voltage (E_{c3}) for Visual Extinction of Focused Raster: 0 to 400 volts
- Grid-No.1 video Drive from Raster Cutoff (Black Level): 0 to 8 gauss
- White-level value (Peak positive): Same value as determined for E_{c3}, except video drive is a positive voltage
- Grid-No.4 Current: -25 to +25 μAmp
- Grid-No.2 Current: -15 to +15 μAmp
- Field Strength of Adjustable Centering Magnet*: 0 to 8 gauss

Examples of Use of Design Ranges:

With ultr-to-grid-No.1 voltage of 14000 16000 volts and grid-No.2 to grid-No.1 voltage of 300 400 volts:

- Grid-No.1 Voltage for Focus: 0 to 400 volts
- Grid-No.1 Voltage for Visual Extinction of Focused Raster: -28 to -72 -36 to -94 volts
- Grid-No.1 video Drive from Raster Cutoff (Black Level): 0 to 8 gauss
- White-level value: 28 to 72 -36 to 94 volts

Maximum Circuit Values:

- Grid-No.1-Circuit Resistance: 1.5 max. megohms

CATHODE-DRIVE SERVICE

Unless otherwise specified, voltage values are positive with respect to grid No. 1.

Maximum and Minimum Ratings, Design-Center Values:

<table>
<thead>
<tr>
<th>Component</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULTR® TO-GRID-No.1 VOLTAGE</td>
<td>0</td>
<td>16000 max. volts</td>
</tr>
<tr>
<td>GRID-No.4 TO-GRID-No.1 VOLTAGE</td>
<td>0</td>
<td>12000 min. volts</td>
</tr>
<tr>
<td>Positive value</td>
<td>1000 max. volts</td>
<td></td>
</tr>
<tr>
<td>Negative value</td>
<td>500 max. volts</td>
<td></td>
</tr>
<tr>
<td>GRID-No.2 TO-GRID-No.1 VOLTAGE</td>
<td>640 max. volts</td>
<td></td>
</tr>
<tr>
<td>GRID-No.2 TO-CATHODE VOLTAGE</td>
<td>500 max. volts</td>
<td></td>
</tr>
</tbody>
</table>

CATHODE-TO-GRID-No.1 VOLTAGE:

- Positive peak value: 200 max. volts
- Positive bias value: 140 max. volts
- Negative bias value: 0 max. volts
- Negative peak value: 2 max. volts

PEAK HEATER-CATHODE VOLTAGE:

- Heater negative with respect to cathode: 180 max. volts
- Heater positive with respect to cathode: 180 max. volts

Equipment Design Ranges:

With any ultr-to-grid-No.1 voltage (E_{c1}) between 12000 and 16000 volts and grid-No.2 to grid-No.1 voltage (E_{c2}) between 225 and 600 volts:

- Grid-No.4 to Grid-No.1 Voltage (E_{c4}) for Focus: 0 to 400 volts
- Cathode-to-Grid-No.1 Voltage (E_{c1}) for Visual Extinction of Focused Raster: See Raster-Cutoff-Range Chart
- Cathode-to-Grid-No.1 Video Drive from Raster Cutoff (Black Level): White-level value. Same value as determined for E_{c3}, except video drive is a negative voltage
- Grid-No.4 Current: -25 to +25 μAmp
- Grid-No.2 Current: -15 to +15 μAmp
- Field Strength of Adjustable Centering Magnet*: 0 to 8 gauss

Maximum Circuit Values:

- Grid-No.1-Circuit Resistance: 1.5 max. megohms

- The "ultr" in a cathode-ray tube is the electrode to which is applied the highest dc voltage for accelerating the electron in the beam prior to its deflection. In the ICDP4, the ultr function is performed by grid No.5. Since grid No.5, grid No.3, and collector are connected together within the ICDP4, they are collectively referred to simply as "ultr" for convenience in presenting data and curves.

- Grid drive is the operating condition in which the video signal varies the grid-No.1 potential with respect to cathode.

- The grid-No.4 voltage or grid-No.4-to-grid-No.1 voltage required for focus of any individual tube is independent of ultr current and will remain essentially constant for values of ultr voltage (or ultr-to-grid-No.1 voltage) or grid-No.2 voltage (or grid-No.2-to-grid-No.1 voltage) within design ranges shown for these items.

- Distance from Reference Line for suitable PM centering magnet should not exceed 2½ in. Excluding extraneous field, the center of the undeflected focused spot will fall within a circle having 5/16-inch radius concentric with the center of the tube face. It is to be noted that the earth's magnetic field can cause as much as 1/2-inch deflection of the spot from the center of the tube face.

- Cathode drive is the operating condition in which the video signal varies the cathode potential with respect to grid No.1 and the other electrodes.
OPERATING CONSIDERATIONS

The maximum ratings in the tabulated data are working design-center maximums established according to the standard design-center system of rating electron tubes. Tubes so rated will give satisfactory performance in equipment designed so that these maximum ratings will not be exceeded when the equipment is operated from ac or dc power-line supplies whose normal voltage including normal variations falls within ±10 per cent of line-center voltage value of 117 volts.

In television receivers employing series-heater strings, a resistor in series with the string of tubes will minimize voltage surges across any individual tube during starting. The resistor should preferably have a negative temperature characteristic.

X-Ray Warning. When operated at ulterior voltages up to 16 kilovolts, the 17CDP4 does not produce any harmful x-ray radiation. However, because the rating of this type permits operation at voltages as high as 17.6 kilovolts (absolute maximum value), shielding of the 17CDP4 for x-ray radiation may be needed to protect against possible injury from prolonged exposure at close range whenever the operating conditions involve voltages in excess of 16 kilovolts.

The base pins of the 17CDP4 fit the Eightar 8-contact socket, such as Ucinite Part No. 115446, or equivalent. The design of the socket should be such that the circuit wiring cannot impress lateral strains through the socket contacts on the base pins.

![Test Circuit for Determining Heater Warm-Up Time](image_url)

Fig. 1 — Test Circuit for Determining Heater Warm-Up Time.

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Devices and arrangements shown or described herein may use patents of RCA or others. Information contained herein is furnished without responsibility by RCA for its use and without prejudice to RCA's patent rights.
Fig. 2 - Raster-Cutoff Range for Type 17CDP4 in Grid-Drive Service.

Fig. 3 - Raster-Cutoff Range for Type 17CDP4 in Cathode-Drive Service.
Fig. 4 - Average Drive Characteristics of Type 17CDP4.

Fig. 5 - Average Drive Characteristics of Type 17CDP4.

NOTE 2: WITH TUBE NECK INSERTED THROUGH FLARED END OF REFERENCE-LINE GAUGE JETEC No. 126 AND WITH TUBE SEATED IN GAUGE, THE REFERENCE LINE IS DETERMINED BY THE INTER-SECTION OF THE PLANE CC' OF THE GAUGE WITH THE GLASS FUNNEL.

NOTE 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 CIRCUITRY CANNOT IMPRESS LATERAL STRAINS THROUGH THE SOCKET CONTACTS ON THE BASE PINS. BOTTOM CIRCUM-ERENCE OF BASE WAFFER WILL FALL WITHIN A CIRCLE CONCENTRIC WITH BULB AXIS AND HAVING A DIAMETER OF 1-3/4".

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

NOTE 5: TO CLEAN THIS AREA, W IPE ONLY WITH SOFT DRY LINT-LESS CLOTH.

NOTE 6: MEASURED 2-9/32" ± 1/32" FROM THE PLANE TANGENT TO THE SURFACE OF THE FACEPLATE AT THE TUBE AXIS.

NOTE 7: BULGE AT SPLICE-LINE SEAL MAY INCREASE THE IN-DICATED MAXIMUM VALUE FOR ENVELOPE WIDTH, DIAGONAL, AND HEIGHT BY NOT MORE THAN 1/8", BUT AT ANY POINT AROUND THE SEAL, THE BULGE WILL NOT PROTRUDE MORE THAN 1/8" BEYOND THE ENVELOPE SURFACE AT THE LOCATION SPECIFIED FOR DIMENSIONING THE ENVELOPE WIDTH, DIAGONAL, AND HEIGHT.

NOTE 8: THE TUBE SHOULD BE SUPPORTED ON BOTH SIDES OF THE BULGE. THE MECHANISM USED SHOULD PROVIDE CLEARANCE FOR THE MAXIMUM DIMENSIONS OF THE BULGE.
REFERENCE-LINE AND NECK-FUNNEL-CONTOUR GAUGE
JETEC No. 126

REFERENCE LINE IS DETERMINED BY PLANE C'-C WHEN GAUGE IS SEATED AGAINST FUNNEL.

SMALL-BUTTON EIGHTAR BASE

8 PINS
0.040" ± 0.002"

NOTE 1: BASE-PIN POSITIONS ARE HELD TO TOLERANCES SUCH THAT THE BASE WILL FIT A FLAT-PLATE GAUGE HAVING A THICKNESS OF 3/8" AND EIGHT EQUALLY SPACED HOLES OF 0.050" ± 0.0005" DIAMETER LOCATED ON A 0.600" ± 0.0005" DIAMETER CIRCLE. THE GAUGE IS ALSO PROVIDED WITH A CENTER HOLE TO PROVIDE 0.010" DIAMETRIC CLEARANCE FOR THE LUG AND KEY. PIN FIT IN THE GAUGE SHALL BE SUCH THAT THE ENTIRE LENGTH OF PINS WILL, WITHOUT UNDUE FORCE, ENTER INTO AND DISSOLVE FROM THE GAUGE.

NOTE 2: THIS DIMENSION AROUND THE PERIPHERY OF ANY INDIVIDUAL PIN MAY VARY WITHIN THE LIMITS SHOWN.

JETEC No. | No. OF PINS | PINS
--- | --- | ---
B9-181 | 8-Pin | 1, 2, 3, 4, 5, 6, 7, 8
B7-182 | 7-Pin STYLE A | 2, 3, 4, 5, 6, 7, 8
B7-183 | 7-Pin STYLE B | 1, 2, 3, 4, 5, 6, 7, 8

CAP: ULTIR (Grid No. 3, Grid No. 5, Collector)
C: EXTERNAL CONDUCTIVE COATING

SOCKET CONNECTIONS
Bottom View

PIN 1: HEATER
PIN 2: GRID NO.1
PIN 3: GRID NO.2
PIN 4: GRID NO.4
PIN 5: GRID NO.1
PIN 7: CATHODE
PIN 8: HEATER

.020" MAX.
.040" MAX.
.035" MAX.
.015" MIN.
.005" MIN.
.062" - .070" DIA.
.083" - .093" DIA.
.040" DIA.
.020" MAX.

DETAIL