

PHILCO CORPORATION

A SUBSIDIARY OF *Ford Motor Company*.

4XP11
4XP16

LANSDALE DIVISION

Ultra-High Resolution

Cathode Ray Tube

CATHODE RAY TUBE

DATA SHEET

Description

The Philco type 4XP_ is an ultra-high resolution cathode ray tube of the magnetic focus and magnetic deflection type. It features an ultra-high resolution spot which is essentially constant over a radius of 0.75 inch. The tube is capable of resolving 2600 lines per inch.

The tube also features a small neck diameter which reduces power requirements for deflection and focusing. This makes the tube particularly attractive for airborne applications where minimum weight is desirable.

The optical quality, non-browning, flat faceplate, combined with an essentially blemish-free, metal backed screen, makes it suitable for photo-oscillographic applications. The high quality settled screen results in considerably more light output than other types of high resolution screens.

Electrical Data

Focusing Method	Magnetic
Deflection Method	Magnetic
Deflection Angle, approximate	56°
Direct Interelectrode Capacitances	
Cathode to all other electrodes	6.0 uuf
Grid No. 1 to all other electrodes	6.0 uuf
Heater Current at 6.3 Volts	600±10% ma

Optical Data

Phosphor Number	P11	P16
Fluorescent Color	Blue	Bluish Purple
Phosphorescence	Blue	Bluish Purple
Persistence	Medium Short	Very Short

Faceplate
Optical Quality, Flat, Gray, Non-browning

Mechanical Data

Overall Length	12 $\pm$ 1/4 Inches
Greatest Diameter of Tube	3 3/4 $\pm$ 3/32 Inches
Minimum Useful Screen Diameter (Projected)	2.8 Inches
Implosion Protection	None
Bulb	Modified C30 Exp. 4
Bulb Contact	J1-21
Base	B6-185
Basing	7GP
Bulb Contact Alignment	
Anode Contact Aligns with Base Lug $\pm$ 10°	

Ratings (Design Maximum System)

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

Maximum Anode Voltage (Note 1)	22,000 Volts DC
Minimum Anode Voltage (Note 2)	8,000 Volts DC
Grid No. 1 Voltage	
Maximum Negative Value	100 Volts DC
Maximum Positive Value	0 Volts DC
Maximum Positive Peak Value	0 Volts DC
Maximum Heater Voltage	7.0 Volts
Minimum Heater Voltage	5.0 Volts
Maximum Heater-Cathode Voltage (Note 3)	
Heater Negative with Respect to Cathode	
During Warm-up Period not to exceed 15 seconds . . .	410 Volts
After Equipment Warm-up Period	180 Volts
Heater Positive with Respect to Cathode.	180 Volts

Typical Operating Conditions (Grid Drive Service)

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

Anode Voltage.	10,000 Volts DC
Grid No. 1 Voltage (Note 4)	-20 to -40 Volts DC
Focus Coil Current (Note 5)	50 ma DC
Resolution:	
Line Width "A" (Note 6)	0.0004 Inch
Spot Size (Note 7)	0.0007 Inch

Maximum Circuit Values

Maximum Grid No. 1 Circuit Resistance.	1.0 Megohms
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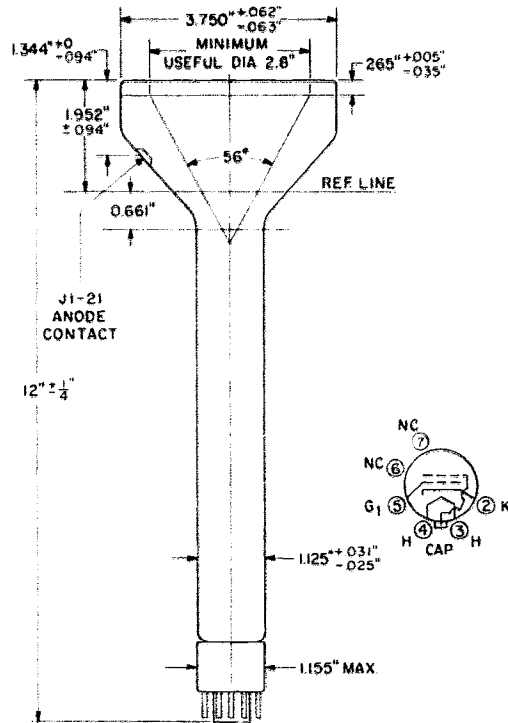
Notes

1. Anode and Grid No. 2 are connected together within the tube and are referred to herein as anode.
2. Due to the triode construction, tube performance is greatly affected by a reduction of anode voltage.
3. Cathode should be returned to one side or to the mid-tap of the heater transformer winding.
4. Visual extinction of the undeflected focused spot.
5. For Celco Focus Coil No. B1781, or equivalent, with the combined Grid No. 1 bias voltage and video-signal voltage adjusted to produce cathode current of 1.0 microampere. Distance from reference line to center of air gap on focus coil shall be 4 1/8 inches.
6. Measured with a 525 line pattern adjusted to 90% of minimum useful screen diameter at $I_k = 10\mu a$. The line width is the merged raster height divided by the number of lines (measured in the center of the tube face).
7. Measured to the half-brightness point at center of face with $I_k = 1.0\mu a$.

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Outline Drawing

4XP

Ultra High Resolution
Cathode Ray Tube

MECHANICAL NOTES

1. The reference line is determined by a 1.937" $\pm$.002" diameter ring gauge 2" long.
2. Anode contact aligns with base lug $\pm$ 10°.
3. A centering magnet should be used to center the beam in the aperture.

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 16,000 volts.

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