

**TUNG-SOL**

**CATHODE RAY**

THE 21FP4, 21FP4A AND 21FP4C ARE DIRECT-VIEW PICTURE TUBES DESIGNED FOR USE IN TELEVISION APPLICATIONS. THE 21FP4A AND 21FP4C HAVE EXTERNAL CONDUCTIVE COATINGS WITH THE 21FP4C ALSO HAVING AN ALUMINIZED SCREEN. IN ALL OTHER RESPECTS THESE TUBES ARE IDENTICAL. THEIR COMMON FEATURES INCLUDE:

<b>ELECTROSTATIC FOCUS</b>	<b>MAGNETIC DEFLECTION</b>
<b>UNIPOTENTIAL CATHODE</b>	<b>GREY FILTER FACEPLATE</b>
<b>CYLINDRICAL FACEPLATE</b>	<b>19 1/8" X 13 7/8" RASTER SIZE</b>
<b>RECTANGULAR GLASS CONSTRUCTION</b>	<b>EXTERNAL SINGLE FIELD ION TRAP</b>

**ELECTRICAL DATA**

FOCUSING METHOD		ELECTROSTATIC
DEFLECTING METHOD		MAGNETIC
DEFLECTION ANGLE (APPROX.):		
HORIZONTAL	65	DEGREES
DIAGONAL	70	DEGREES
DIRECT INTERELECTRODE CAPACITANCES (APPROX.):		
CATHODE TO ALL OTHER ELECTRODES	5	$\mu\text{f}$
GRID #1 TO ALL OTHER ELECTRODES	6	$\mu\text{f}$
MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	21FP4A & 750	$\mu\text{f}$
MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	21FP4C 500	$\mu\text{f}$

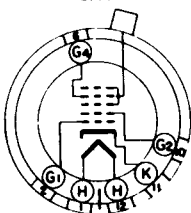
**OPTICAL DATA**

PHOSPHOR NUMBER	SULFIDE TYPE	NO. 4
FLUORESCENT COLOR		WHITE
PHOSPHORESCENT COLOR		WHITE
PERSISTENCE		MEDIUM
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	66	PERCENT

**MECHANICAL DATA**

OVERALL LENGTH	23 ± 3/8	INCHES
GREATEST DIMENSIONS OF BULB:		
DIAGONAL	21 1/4 ± 3/16	INCHES
WIDTH	20 1/4 ± 3/16	INCHES
HEIGHT	15 9/16 ± 3/16	INCHES
MINIMUM USEFUL SCREEN DIMENSIONS:		
WIDTH	19 1/8	INCHES
HEIGHT	13 7/8	INCHES
BULB CONTACT	RECESSED SMALL CAVITY CAP	J1-21
BASE	SMALL SHELL DUODECAL 6 PIN	B6-63
BASING	21FP4A & 21FP4C-12L	21FP4 12M
BULB CONTACT ALIGNMENT		
	J1-21 CONTACT ALIGNS WITH PIN POSITION #6 ± 30 DEGREES	

21FP4

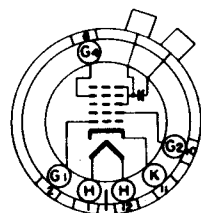


BOTTOM VIEW

**PIN CONNECTIONS**

- PIN 1 - HEATER
- PIN 2 - GRID NO. 1
- PIN 6 - GRID NO. 4
- PIN 10 - GRID NO. 2
- PIN 11 - CATHODE
- PIN 12 - HEATER
- ANODE CAP:
- GRID NO. 3,
- GRID NO. 5,
- COLLECTOR

21FP4A & 21FP4C



BOTTOM VIEW

CONTINUED ON FOLLOWING PAGE

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CONTINUED FROM PRECEDING PAGE

**RATINGS**  
 DESIGN CENTER VALUES

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.6	AMP.
MAXIMUM DC GRID #3, GRID #5, COLLECTOR VOLTAGE <sup>A</sup>	18 000	VOLTS
MAXIMUM DC GRID #4 VOLTAGE	-500 TO +1000	VOLTS
MAXIMUM DC GRID #2 VOLTAGE	500	VOLTS
MAXIMUM GRID #1 VOLTAGE:		
DC NEGATIVE-BIAS VALUE	125	VOLTS
DC POSITIVE-BIAS VALUE	0	VOLTS
POSITIVE-PEAK VALUE	2	VOLTS
MAXIMUM GRID #4 CURRENT	-15 TO +25	μAMP.
MAXIMUM GRID #2 CURRENT	-15 TO +25	μAMP.
MAXIMUM DC PEAK HEATER-CATHODE VOLTAGE:		
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

<sup>A</sup> BECAUSE THE RATING OF THIS TUBE PERMITS ANODE VOLTAGES AS HIGH AS 19.0KV, SHIELDING OF X-RAY RADIATION FROM THE TUBE MAY BE NECESSARY. THIS PRECAUTION SHOULD BE OBSERVED WHEN THE ANODE IS OPERATED IN EXCESS OF 16KV.

**TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS**

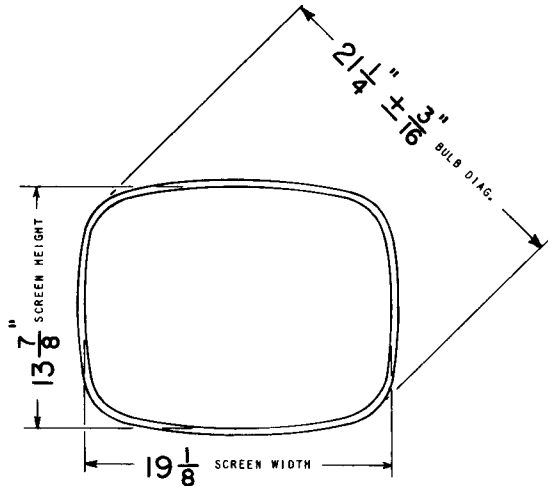
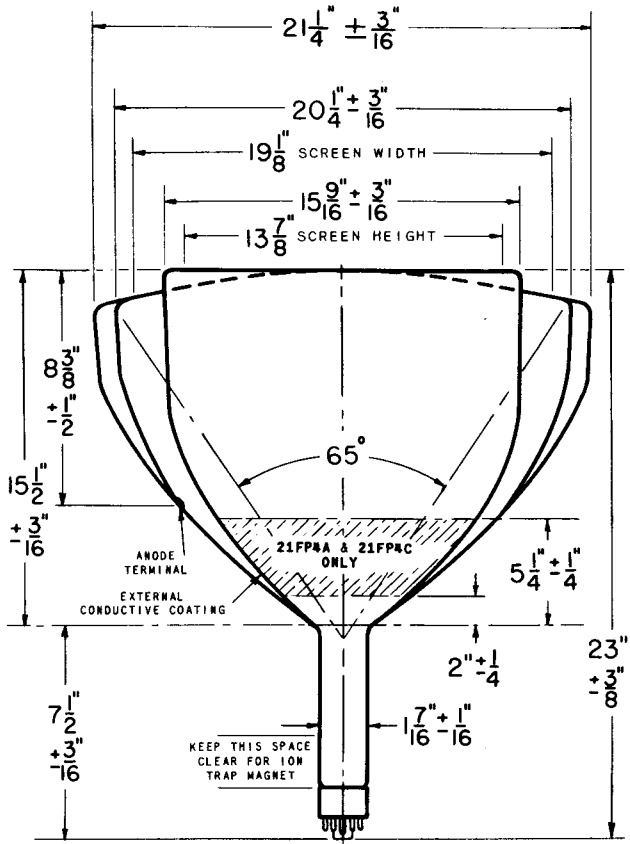
DC GRID #3, GRID #5, COLLECTOR VOLTAGE	14 000	VOLTS
DC GRID #4 VOLTAGE	-56 TO +310	VOLTS
DC GRID #2 VOLTAGE	300	VOLTS
DC GRID #1 VOLTAGE <sup>B</sup>	-33 TO -77	VOLTS
ION TRAP MAGNET (RATED STRENGTH) STANDARD COIL #111	35	GAUSSSES

<sup>B</sup> VISUAL EXTINCTION OF UNDEFLECTED FOCUSED SPOT.

**CIRCUIT VALUES**

MAXIMUM GRID #1 CIRCUIT RESISTANCE	1.5	MEGOHMS
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