

TUNG-SOL

CATHODE RAY

THE 20HP4, 20HP4A, 20HP4B, 20HP4C, AND 20HP4D ARE DIRECT VIEW PICTURE TUBES DESIGNED FOR TELEVISION APPLICATIONS. THEY ARE IDENTICAL WITH THE FOLLOWING EXCEPTIONS:

20HP4A & 20HP4D - EXTERNAL CONDUCTIVE COATINGS

20HP4C & 20HP4D - ALUMINIZED SCREENS

20HP4B - FROSTED FACEPLATE

THEIR COMMON FEATURES INCLUDE:

SPHERICAL FACEPLATE	MAGNETIC DEFLECTION
GREY FILTER FACEPLATE	UNIPOTENTIAL CATHODE
EXTERNAL SINGLE FIELD ION TRAP	12 3/4" X 17" RASTER SIZE
LOW VOLTAGE ELECTROSTATIC FOCUS	RECTANGULAR GLASS CONSTRUCTION

ELECTRICAL DATA

FOCUSING METHOD	LOW VOLTAGE ELECTROSTATIC
DEFLECTING METHOD	MAGNETIC
DEFLECTION ANGLE (APPROX.):	
HORIZONTAL	66 DEGREES
DIAGONAL	70 DEGREES
DIRECT INTERELECTRODE CAPACITANCES (APPROX.):	
CATHODE TO ALL OTHER ELECTRODES	5 μ f
GRID #1 TO ALL OTHER ELECTRODES	6 μ f
20HP4A AND 20HP4D ONLY	
MAXIMUM EXTERNAL CONDUCTIVE COATING ^A	1 500 μ f
MINIMUM EXTERNAL CONDUCTIVE COATING ^A	750 μ f

^AEXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

OPTICAL DATA

PHOSPHOR NUMBER	P4
FLUORESCENT COLOR	WHITE
PHOSPHORESCENT COLOR	WHITE
PERSISTENCE	MEDIUM
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	73 PERCENT

MECHANICAL DATA

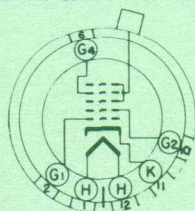
OVERALL LENGTH	21 3/4 $\pm$ 3/8	INCHES
GREATEST DIMENSIONS OF BULB:		
DIAGONAL	20 3/32 $\pm$ 3/16	INCHES
WIDTH	18 11/16 $\pm$ 3/16	INCHES
HEIGHT	14 15/16 $\pm$ 3/16	INCHES
MINIMUM USEFUL SCREEN DIMENSIONS:		
WIDTH	17	INCHES
HEIGHT	12 3/4	INCHES
BULB CONTACT	RECESSED SMALL CAVITY CAP	J1-21
BASE	SMALL SHELL DUODECAL 6 PIN	B6-63
BASING	20HP4, 20HP4B AND 20HP4C	12M
	20HP4A AND 20HP4D	12L

BULB CONTACT ALIGNMENT

J1-21 CONTACT ALIGNS WITH PIN POSITION #6 $\pm$ 30 DEGREES

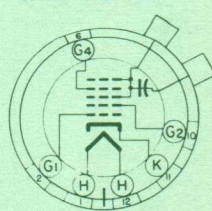
PIN CONNECTIONS

20HP4, 20HP4B & 20HP4C



BOTTOM VIEW

20HP4A & 20HP4D



BOTTOM VIEW

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

CONTINUED ON FOLLOWING PAGE

TUNG-SOL

CONTINUED FROM PRECEDING PAGE

RATINGS

DESIGN CENTER VALUES

HEATER VOLTAGE	6.3	VOLTS
HEATER CURRENT	0.6	AMP.
MAXIMUM DC ANODE VOLTAGE	16 000	VOLTS
MAXIMUM DC GRID #4 VOLTAGE (FOCUSING ELECTRODE)	-500 TO +1000	VOLTS
MAXIMUM GRID #2 VOLTAGE	500	VOLTS
MAXIMUM GRID #1 VOLTAGE:		
NEGATIVE-BIAS VALUE (DC)	125	VOLTS
POSITIVE-BIAS VALUE (DC)	0	VOLTS
POSITIVE-PEAK VALUE	2	VOLTS
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

TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

DC ANODE VOLTAGE ^B	14 000	VOLTS
DC GRID #4 VOLTAGE ^C	-56 TO +310	VOLTS
DC GRID #2 VOLTAGE	300	VOLTS
DC GRID #1 VOLTAGE ^D	-28 TO -72	VOLTS
ION TRAP MAGNET FIELD STRENGTH (APPROX.)	30	GAUSSSES

^B BRILLIANCE AND DEFINITION DECREASE WITH DECREASING ANODE VOLTAGE. IN GENERAL, THE ANODE VOLTAGE SHOULD NOT BE LESS THAN THIS VALUE.

^C WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO-SIGNAL VOLTAGE ADJUSTED TO GIVE AN ANODE CURRENT OF 100 MICROAMPERES ON A 10 3/4" X 14 1/4" PICTURE SIZE.

^D VISUAL EXTINCTION OF FOCUSED RASTER.

CIRCUIT VALUES

MAXIMUM GRID #1 CIRCUIT RESISTANCE	1.5	MEGOHMS
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RECEIVED IN U. S. A.

Technical drawing of a vacuum furnace assembly, showing dimensions and labels:

- Overall width: $20\frac{9}{32}$ MAX.
- Top width: $18\frac{7}{8}$ MAX.
- Screen width: 17" MIN.
- Screen height: $15\frac{1}{8}$ MAX.
- Inner screen height: $12\frac{3}{4}$ MIN.
- Conductive coating area for 20HP4A (top section): 66° angle.
- Conductive coating area for 20HP4D (bottom section): 66° angle.
- Vertical dimensions on the right: $7\frac{5}{8}$ MAX., $\pm\frac{1}{2}$ MAX., $14\frac{7}{16}$ MAX.
- Vertical dimensions on the left: $22\frac{1}{8}$ MAX., 4 MAX., $\pm\frac{3}{8}$ MAX., $7\frac{11}{16}$ MAX.
- Horizontal dimensions at the bottom: $2\pm\frac{1}{4}$ MAX., $1\frac{7}{16}\pm\frac{1}{16}$ MAX.
- Label: "KEEP THIS SPACE CLEAR FOR ION TRAP MAGNET" with arrows pointing to the bottom section.

