**TUNG-SOL**

# CATHODE RAY

THE 19AP4, 19AP4A, 19AP4B, 19AP4C, AND 19AP4D ARE DIRECT VIEW PICTURE TUBES DESIGNED FOR USE IN TELEVISION APPLICATIONS. THEY ARE IDENTICAL EXCEPT FOR THE FOLLOWING DIFFERENCES IN THEIR FACEPLATES.

*19AP4 - CLEAR GLASS FACEPLATE*
*19AP4A - GREY FILTER FACEPLATE*
*19AP4B - FROSTED FILTER FACEPLATE*
*19AP4C - GREY FILTER FACEPLATE ALUMINIZED SCREEN*
*19AP4D - CLEAR FROSTED FACEPLATE*

THEIR COMMON FEATURES INCLUDE:

**UNIPOTENTIAL CATHODE**
**ROUND METAL CONSTRUCTION**
**MAGNETIC FOCUS AND DEFLECTION**
**EXTERNAL SINGLE FIELD ION TRAP**
**11 3/4" X 15 3/4" RASTER SIZE**

## ELECTRICAL DATA

| | | |
|---|---|---|
| FOCUSING METHOD | | MAGNETIC |
| DEFLECTING METHOD | | MAGNETIC |
| DEFLECTION ANGLE (APPROX.) | 66 | DEGREES |
| DIRECT INTERELECTRODE CAPACITANCES, (APPROX.) | | |
| CATHODE TO ALL OTHER ELECTRODES | 5 | μμf |
| GRID #1 TO ALL OTHER ELECTRODES | 7 | μμf |

## OPTICAL DATA

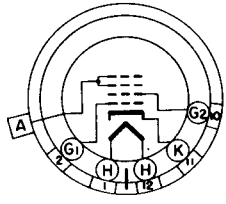
| | | |
|---|---|---|
| PHOSPHOR NUMBER | | NO. 4 |
| FLUORESCENT COLOR | | WHITE |
| PHOSPHORESCENT COLOR | | WHITE |
| PERSISTENCE | | MEDIUM |
| FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) | 66 | PERCENT |

## MECHANICAL DATA

| | | |
|---|---|---|
| OVERALL LENGTH | 21 1/2 ± 1/2 | INCHES |
| GREATEST DIAMETER OF BULB | 18 5/8 ± 1/8 | INCHES |
| MINIMUM USEFUL SCREEN DIAMETER | 17 3/8 | INCHES |
| BULB CONTACT | METAL SHELL LIP | |
| BASE | SMALL SHELL DUODECAL 5 PIN | B5-57 |
| BASING | | 12D |

## PIN CONNECTIONS

PIN 1 – HEATER
PIN 2 – GRID NO. 1
PIN 10 – GRID NO. 2
PIN 11 – CATHODE




PIN 12 – HEATER
METAL SHELL LIP: GRID NO. 3
ANODE

BOTTOM VIEW

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## RATINGS

DESIGN CENTER VALUES

| | | |
|---|---|---|
| HEATER VOLTAGE | 6.3 | VOLTS |
| HEATER CURRENT | 0.6 | AMP. |
| MAXIMUM DC ANODE VOLTAGE[A] | 19 000 | VOLTS |
| MAXIMUM DC GRID #2 VOLTAGE | 410 | VOLTS |
| MAXIMUM GRID #1 VOLTAGE | | |
| DC NEGATIVE-BIAS VALUE | 125 | VOLTS |
| DC POSITIVE-BIAS VALUE | 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 | 150 | VOLTS |
| HEATER POSITIVE WITH RESPECT TO CATHODE | 150 | VOLTS |

[A] IF THIS TUBE IS OPERATED AT VOLTAGES IN EXCESS OF 16,000 VOLTS X-RAY RADIATION SHIELDING MAY BE NECESSARY TO AVERT POSSIBLE DANGER OF PERSONAL INJURY FROM PROLONGED EXPOSURE AT CLOSE RANGE.

## TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS

| | | |
|---|---|---|
| DC ANODE VOLTAGE | 12.000 | VOLTS |
| DC GRID #2 VOLTAGE | 300 | VOLTS |
| DC GRID #1 VOLTAGE[B] | -33 TO -77 | VOLTS |
| DC FOCUSING COIL CURRENT[C] (APPROX.) | 140 ± 20% | MA. |
| DC ION TRAP CURRENT STANDARD COIL #111 (APPROX.) | 75 ± 50% | MA. |

[B] VISUAL EXTINCTION OF UNDEFLECTED FOCUSED SPOT.

[C] FOR STANDARD FOCUS COIL #106, OR EQUIVALENT, WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIGHTNESS OF 18 FOOT LAMBERTS ON A 11 3/4" X 15 3/4" PICTURE SIZE. DISTANCE FROM REFERENCE LINE TO CENTER OF AIR GAP ON FOCUS COIL SHALL BE 3.0 INCHES.

## CIRCUIT VALUES

| | | |
|---|---|---|
| MAXIMUM GRID #1 CIRCUIT RESISTANCE | 1.5 | MEGOHMS |

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