

## TUNG-SOL

## CATHODE RAY

THE 24QP4 IS A DIRECT-VIEW PICTURE TUBE DESIGNED FOR USE IN TELEVISION APPLICATIONS. ITS FEATURES INCLUDE:

|                                |                                |
|--------------------------------|--------------------------------|
| SPHERICAL FACEPLATE            | UNIPOTENTIAL CATHODE           |
| GREY FILTER FACEPLATE          | EXTERNAL CONDUCTIVE COATING    |
| MAGNETIC FOCUS & DEFLECTION    | 21 7/8" X 16 7/8" RASTER SIZE  |
| RECTANGULAR GLASS CONSTRUCTION | EXTERNAL SINGLE FIELD ION TRAP |

## ELECTRICAL DATA

|                                               |     |                  |
|-----------------------------------------------|-----|------------------|
| FOCUSING METHOD                               |     | MAGNETIC         |
| DEFLECTING METHOD                             |     | MAGNETIC         |
| DEFLECTION ANGLE (APPROX.):                   |     |                  |
| HORIZONTAL                                    | 85  | DEGREES          |
| DIAGONAL                                      | 90  | DEGREES          |
| DIRECT INTERELECTRODE CAPACITANCES (APPROX.): |     |                  |
| CATHODE TO ALL OTHER ELECTRODES               | 5   | $\mu\mu\text{f}$ |
| GRID #1 TO ALL OTHER ELECTRODES               | 6   | $\mu\mu\text{f}$ |
| MAXIMUM EXTERNAL CONDUCTIVE COATING           | 750 | $\mu\mu\text{f}$ |
| MINIMUM EXTERNAL CONDUCTIVE COATING           | 500 | $\mu\mu\text{f}$ |

## OPTICAL DATA

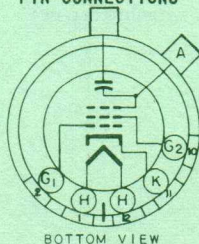
|                                                  |            |
|--------------------------------------------------|------------|
| PHOSPHOR NUMBER                                  | NO. 4      |
| FLUORESCENT COLOR                                | WHITE      |
| PHOSPHORESCENT COLOR                             | WHITE      |
| PERSISTENCE                                      | MEDIUM     |
| FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) | 72 PERCENT |

## MECHANICAL DATA

|                                                            |                            |        |
|------------------------------------------------------------|----------------------------|--------|
| OVERALL LENGTH                                             | 21 1/8 $\pm$ 3/8           | INCHES |
| GREATEST DIMENSIONS OF BULB:                               |                            |        |
| DIAGONAL                                                   | 24 $\pm$ 3/16              | INCHES |
| WIDTH                                                      | 22 11/16 $\pm$ 1/8         | INCHES |
| HEIGHT                                                     | 18 7/16 $\pm$ 1/8          | INCHES |
| MINIMUM USEFUL SCREEN DIMENSIONS:                          |                            |        |
| WIDTH                                                      | 21 7/8                     | INCHES |
| HEIGHT                                                     | 16 7/8                     | INCHES |
| BULB CONTACT                                               | RECESSED SMALL CAVITY CAP  | J1-21  |
| BASE                                                       | SMALL SHELL DUODECAL 5 PIN | 85-57  |
| BASING                                                     |                            | 12N    |
| BULB CONTACT ALIGNMENT                                     |                            |        |
| J1-21 CONTACT ALIGNS WITH PIN POSITION #6 $\pm$ 30 DEGREES |                            |        |

## PIN CONNECTIONS

PIN 1 - HEATER  
 PIN 2 - GRID NO. 1  
 PIN 10 - GRID NO. 2



PIN 11 - CATHODE  
 PIN 12 - HEATER  
 ANODE CAP

BOTTOM VIEW

CONTINUED ON FOLLOWING PAGE

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## RATINGS

DESIGN CENTER VALUES

|                                                |        |       |
|------------------------------------------------|--------|-------|
| HEATER VOLTAGE                                 | 6.3    | VOLTS |
| HEATER CURRENT                                 | 0.6    | AMP.  |
| MAXIMUM DC ANODE VOLTAGE <sup>A</sup>          | 18 000 | 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 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 19.8KV, 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 ANODE VOLTAGE                                 | 16 000        | VOLTS |
| DC GRID #2 VOLTAGE                               | 300           | VOLTS |
| DC GRID #1 VOLTAGE <sup>B</sup>                  | -28 TO -72    | VOLTS |
| DC FOCUSING COIL CURRENT <sup>C</sup> (APPROX.)  | 100 $\pm$ 20% | MA.   |
| DC ION TRAP CURRENT STANDARD COIL #111 (APPROX.) | 100 $\pm$ 50% | MA.   |

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

<sup>C</sup> FOR STANDARD FOCUS COIL #109, OR EQUIVALENT, WITH THE COMBINED GRID #1 BIAS VOLTAGE AND VIDEO SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIGHTNESS OF 20 FOOT LAMBERTS ON A 21 7/8" BY 16 7/8" PICTURE SIZE. DISTANCE FROM REFERENCE LINE TO CENTER OF AIR GAP ON FOCUS COIL SHALL BE 3.25 INCHES.

## CIRCUIT VALUES

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

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