

# Beam Pentode

**24LQ6**

**FOR TV HORIZONTAL-DEFLECTION  
AMPLIFIER APPLICATIONS**

**DARK HEATER**

**PLATE CURRENT 30 WATTS**

**NOVAR TYPE**

**OVERLOAD Pb 200 WATTS**

The 24LQ6 is a beam-power pentode primarily designed for use as the horizontal-deflection amplifier in color television receivers. Control testing gives the assurance the 24LQ6 is capable of withstanding a 200 watt plate dissipation for 40 seconds, sufficient time to permit conventional receiver protective devices to function.

The 24LQ6 has a maximum plate dissipation rating of 30 watts, a maximum grid-No. 2 input rating of 5 watts and a 0.600 ampere/24.0 volt heater having a controlled 11 second warm-up time for use in series heater-string arrangement .

## GENERAL

### ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

Heater Voltage, AC or DC ..... 24.0 Volts

Heater Current ..... 0.6 Ampere

Heater Warm Up Time ..... 11 Seconds

Direct Interelectrode Capacitances, approximate •

Grid-Number 1 to Plate (g1 to p) ..... 0.56 pf

Input: G1 to (K,G3,G2,H) ..... 22 pf

Output: P to (K,G3,G2,H) ..... 11 pf

### MECHANICAL

Operating Position ..... Any

Envelope ..... T-12

Base ....E9-88, Large Button Novar 9 Pin With Exhaust Tip

Outline Drawing ..... 12-117

Maximum Diameter ..... 1.562 "

Minimum Diameter ..... 1.438 " \*

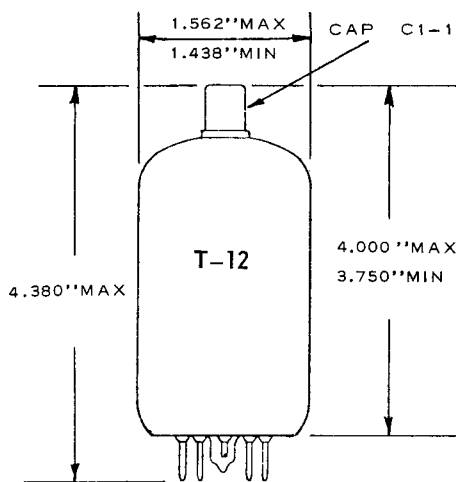
Maximum Overall Length ..... 4.380 "

Maximum Seated Height ..... 4.000 "

Minimum Seated Height ..... 3.750 "

\* Applies to the minimum diameter except in the area of the seal.

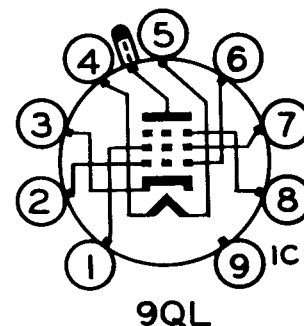
### PHYSICAL DIMENSIONS



### TERMINAL CONNECTIONS

- Pin 1 - Grid No. 2
- Pin 2 - Grid No. 1
- Pin 3 - Cathode
- Pin 4 - Heater
- Pin 5 - Heater
- Pin 6 - Grid No. 1
- Pin 7 - Grid No. 2
- Pin 8 - Grid No. 3
- Pin 9 - Internal Connection  
(Do Not Use)
- Top Cap - Plate

### BASING DIAGRAM



## MAXIMUM RATINGS

### HORIZONTAL-DEFLECTION AMPLIFIER SERVICE — DESIGN-MAXIMUM VALUES UNLESS OTHERWISE INDICATED

DC Plate-Supply Voltage . . . . .	990	Volts
Peak Positive Pulse Plate Voltage † . . . . .	7500	Volts
Peak Negative Pulse Plate Voltage . . . . .	1100	Volts
DC Grid Number 3 Voltage #. . . . .	75	Volts
Screen Voltage . . . . .	220	Volts
Peak Negative Pulse Grid Number 1 Voltage . . . . .	330	Volts
Plate Dissipation ^ . . . . .	30	Watts
Grid Number 2 Input . . . . .	5.0	Watts
Average Cathode Current . . . . .	350	Milliamperes
Peak Cathode Current . . . . .	1200	Milliamperes
Heater Cathode Voltage		
Peak . . . . .	≠200	Volts
Average . . . . .	100	Volts
Temporary Overload Plate Dissipation ‡ . . . . .	200	Watts
Bulb Temperature (at hottest point) . . . . .	250°	C
Heater Current . . . . .	560 to 640	mA

### MAXIMUM CIRCUIT VALUES

#### Grid No. 1 Circuit Resistance

For grid-No. 1—resistor bias operation . . . . .	0.47	MΩ
For plate—pulsed operation (horizontal—deflection circuits only) . . . . .	10	MΩ

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

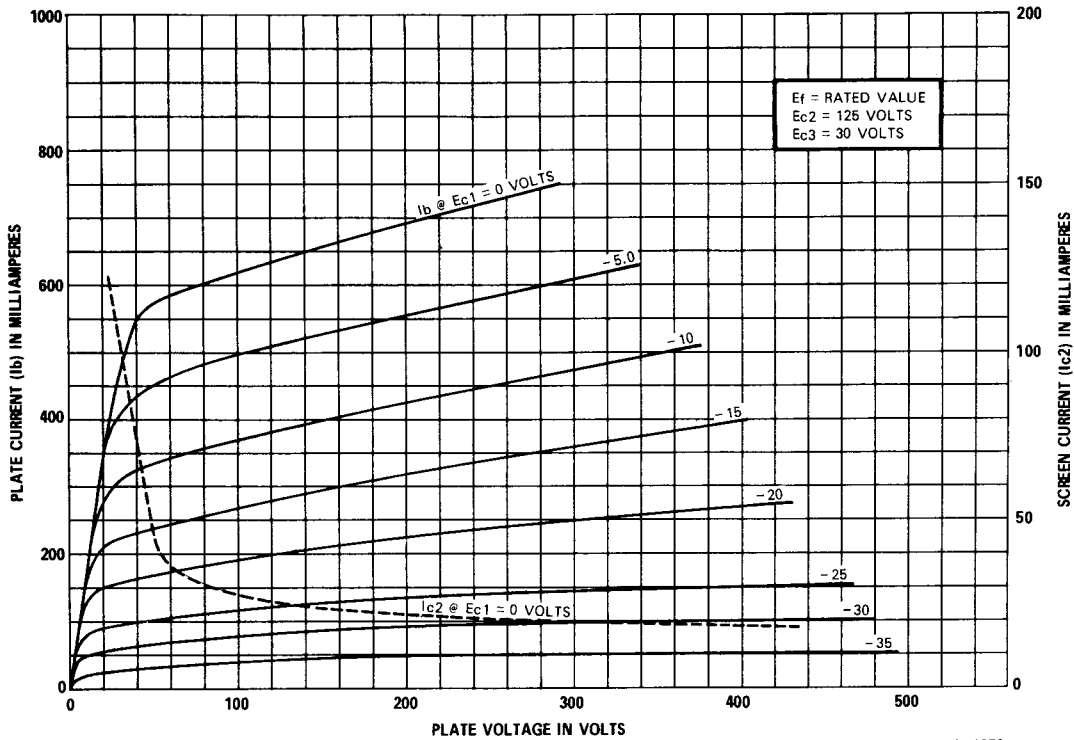
The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

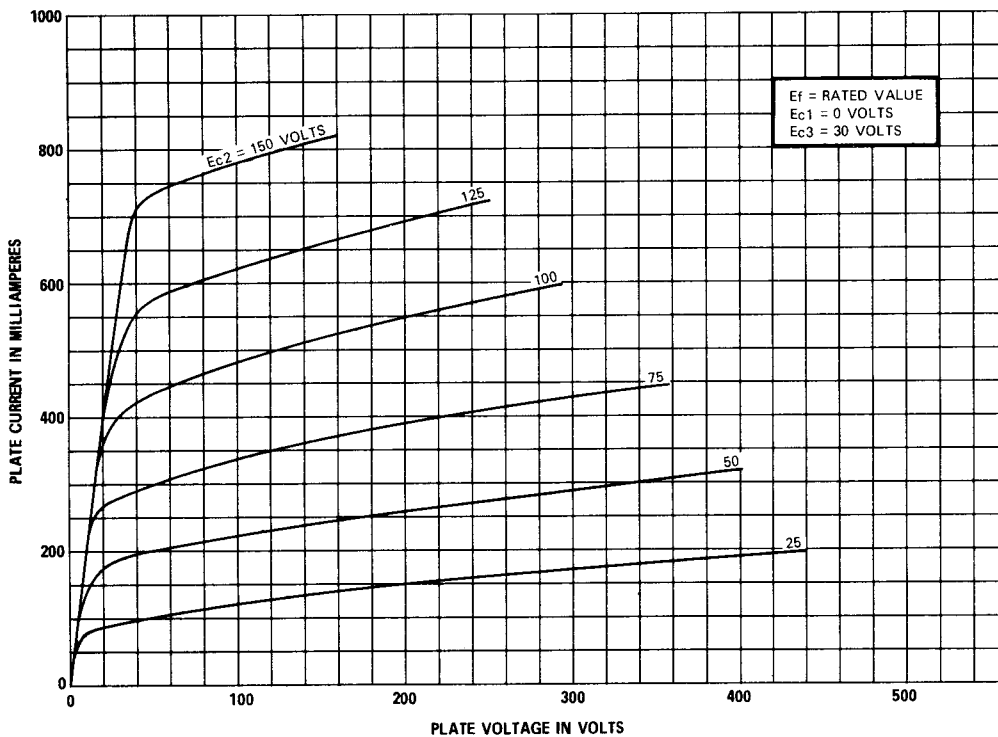
## CHARACTERISTICS AND TYPICAL OPERATION

	←-----BOGEY VALUE-----→						
Heater Voltage . . . . .							Volts
Peak Positive Pulse Plate Voltage §. . . . .	5000	— —	— —	5000	— — —	— — —	Volts
Grid Number 1 Voltage . . . . .	— —	0	-25	— —	0	-35	Volts
Screen Voltage . . . . .	125	125	125	145	145	145	Volts
DC Grid Number 3 Voltage . . . . .	30	30	30	30	30	30	Volts
Transconductance . . . . .	— —	— —	9600	— —	— —	7500	μ mho
Plate Current . . . . .	— —	580 ♦	130	— —	710 ♦	95	Milliampere
Screen Current . . . . .	— —	40 ♦	2.8	— —	55 ♦	2.4	Milliampere
Cutoff DC Grid No. 1 Voltage							
I <sub>b</sub> = 1 mA . . . . .	-120	— —	-54	-125	— —	-60	Volts
Triode Amplification Factor * . . . . .	— —	— —	3 ♦	— —	— —	2.8 ⊕	
Plate Resistance (Approximate) . . . . .	— —	— —	5800	— —	— —	7000	Ω
DC Plate Voltage . . . . .	— —	55	175	— —	60	175	Volts

## AVERAGE PLATE CHARACTERISTICS



## AVERAGE PLATE CHARACTERISTICS



## NOTES

- Measured without external shield in accordance with the current issue of EIA Standard RS-191.
- \* With grid No. 3 and grid No. 2 connected, respectively to cathode and plate at socket.
- ⊕ Conditions:  $E_b = E_{c2} = 145 \text{ V}$ ,  $E_{c1} = -35 \text{ V}$ .
- Conditions:  $E_b = E_{c2} = 125 \text{ V}$ ,  $E_{c1} = -25 \text{ V}$ .
- ♦ This value can be measured by a method involving a recurrent waveform such that the Maximum Ratings of the tube will not be exceeded.
- ‡ Total continuous or accumulated time not to exceed 40 seconds.
- † This rating is applicable when the duration of the voltage pulse does not exceed 15% of one horizontal scanning cycle. In a 525-line, 30-frame system, 15% of one scanning cycle is  $10 \mu\text{s}$ .
- # In horizontal-deflection-amplifier service, a positive voltage should be applied to grid No. 3 to reduce interference from "snivets", which may occur in both vhf and uhf television receivers, and to increase power output. A typical value is 30 V.
- ▲ An adequate bias resistor or other means is required to protect the tube in the absence of excitation.
- § Under pulse-duration condition specified in Footnote †.

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