

Cunningham RADIO TUBES

C-337



DETECTOR, AMPLIFIER

The '37 is a three-electrode general purpose tube for use in automobile receivers and in sets operated from d-c power lines. It contains a heater-cathode which is designed for d-c operation. This feature together with that of general freedom from microphonic and battery circuit disturbances makes the '37 well suited to mobile service and other applications where complete d-c operation is desirable.

CHARACTERISTICS

HEATER VOLTAGE (D. C.)	6.3	Volts
HEATER CURRENT	0.3	Ampere
PLATE VOLTAGE	90 135 180 max.	Volts
GRID VOLTAGE	-6 -9 -13.5	Volts
PLATE CURRENT	2.5 4.1 4.3	Milliamperes
PLATE RESISTANCE	11500 10000 10000	Ohms
AMPLIFICATION FACTOR	9.2 9.2 9	
MUTUAL CONDUCTANCE	800 925 900	Micromhos
GRID-PLATE CAPACITANCE	2.0	μ f.
GRID-CATHODE CAPACITANCE	3.5	μ f.
PLATE-CATHODE CAPACITANCE	2.2	μ f.
MAXIMUM OVERALL LENGTH		4 $\frac{1}{4}$ "
MAXIMUM DIAMETER		1 $\frac{9}{16}$ "
BULB (See page 42, Fig. 6)		S-12
BASE		Small 5-Pin

INSTALLATION

The base pins of the '37 fit the standard five-contact socket. The socket may be mounted to hold the tube in any position. For socket connections, see page 39, Fig. 8.

The heater of the '37 is designed to operate satisfactorily from a 6-volt automobile storage battery without a rheostat or fixed resistor despite the voltage fluctuations during the charge and discharge periods. These variations in the applied heater voltage do not seriously affect the performance or serviceability of this tube. The heater may be operated in series with the heaters of the '36, '38 or '39. This feature is especially desirable in receivers designed to operate from d-c house mains. Regardless of the number of heaters connected in series, the current in the heater circuit should be adjusted to 0.3 ampere for the normal supply voltage.

The cathode circuit in most d-c receivers is usually tied in either directly or through biasing resistors to the negative side of the heater circuit. The voltage difference thus introduced between heater and cathode should be kept as much as possible below the recommended maximum of 45 volts.

APPLICATION

As a detector, the '37 may be operated with either grid leak and condenser or with grid bias. The recommended plate voltage for the grid leak and condenser method is 45 volts. A grid leak of from 1.0 to 5.0 megohms used with a grid condenser of 0.00025 μ f. is suitable.

For grid bias detection a plate voltage of 135 volts together with a negative grid bias of approximately 15.5 volts may be used. The plate current should be adjusted to 0.2 milliampere with no a-c input signal. The grid bias voltage may con-

THE CUNNINGHAM RADIO TUBE MANUAL

veniently be obtained from the voltage drop in a resistor between the cathode and ground. The value of this self-biasing resistance is not critical, 75000 to 100000 ohms being suitable. The higher value will allow the use of a larger input signal.

As an **amplifier**, the '37 is applicable to the audio- or the radio-frequency stages of a receiver. Plate voltages and the corresponding grid voltages for amplifier service should be determined from CHARACTERISTICS and curves to obtain optimum performance and freedom from distortion.

As an **oscillator**, the recommended conditions are: Plate voltage, 45 volts (approximately); and grid bias, zero volts. It may be found desirable to use slightly lower values of plate voltage, depending upon the circuit design.

