

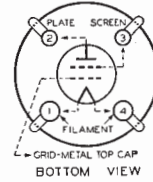


Cunningham
  
Radiotron

## Type 32

### RADIO-FREQUENCY AMPLIFIER

The 32 is a screen-grid tube recommended primarily for use as a radio-frequency amplifier in battery-operated radio receivers where economy of filament-current drain is important.



#### CHARACTERISTICS

FILAMENT VOLTAGE (D. C.) .....	2.0	Volts
FILAMENT CURRENT .....	0.060	Ampere
PLATE VOLTAGE .....	135    180 <i>max.</i>	Volts
SCREEN VOLTAGE (Maximum) .....	67.5    67.5	Volts
GRID VOLTAGE .....	-3    -3	Volts
PLATE CURRENT .....	1.7    1.7	Milliamperes
SCREEN CURRENT (Maximum) .....	0.4    0.4	Milliampere
PLATE RESISTANCE .....	0.95    1.2	Megohms
AMPLIFICATION FACTOR .....	610    780	
MUTUAL CONDUCTANCE .....	640    650	Micromhos
GRID-PLATE CAPACITANCE (With shield-can) .....	0.015 <i>max.</i>	$\mu\mu\text{f}$
INPUT CAPACITANCE .....	5.3	$\mu\mu\text{f}$
OUTPUT CAPACITANCE .....	10.5	$\mu\mu\text{f}$
BULB (For dimensions, see Page 151, Fig. 12) .....		ST-14
CAP. ....		Small Metal
BASE .....		Medium 4-Pin

#### INSTALLATION

For **socket** mounting and **filament** operation, refer to INSTALLATION for type 30.

The **screen voltage** may be obtained from a tap on the plate battery or a bleeder circuit across the supply battery in whole or in part. Never attempt to obtain the screen voltage for the 32 by connecting the screen through a series resistor to a high-voltage source. The results will not be satisfactory because of voltage-drop variation produced by the different screen currents of individual tubes.

**Volume control** may be effected by variation of the screen voltage between 0 and 67.5 volts. The variation must, however, be made by a potentiometer shunted across the screen-voltage supply and not by a high-resistance rheostat.

Complete **shielding** of all stages is recommended if maximum gain per stage is to be obtained.

#### APPLICATION

As a **radio-frequency amplifier**, the 32 is operated as shown under CHARACTERISTICS. Neither the plate voltage nor the screen voltage is critical. In general, properly designed radio-frequency transformers are preferable to interstage coupling impedances, especially in cases where a high impedance B-supply may cause oscillation below radio frequencies.

As a **detector**, the 32 may be operated either with grid leak and condenser or with grid bias. For grid-bias detection, suitable operating conditions are: Plate-supply voltage, 135 volts applied through a plate-coupling resistance of 0.1 megohm or an

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equivalent impedance; screen voltage, 67.5 volts; and a negative grid bias (approximately 6 volts) adjusted so that a plate current of 0.2 milliampere is obtained with no input signal. For grid leak and condenser detection, suitable operating conditions are: Plate-supply voltage, 135 volts applied through a plate-coupling resistor of 0.1 megohm or an equivalent impedance; screen voltage up to 45 volts; grid condenser of 0.00025 $\mu$ f; and grid leak of 1 to 5 megohms.

In designing circuits to use the 3 $\bar{2}$  as a detector, it is desirable to work from the detector stage directly into the power-output stage.

As an **audio-frequency amplifier** in resistance-coupled circuits, the 3 $\bar{2}$  may be operated under the following conditions: Plate-supply voltage, 180 volts applied through a plate-coupling resistor of 0.1 to 0.25 megohm (or a 500-henry choke shunted by a 0.25 megohm resistor); screen voltage, 25 volts; plate current, 0.25 milliampere (approximate); grid voltage, -1 volt; and a grid resistor, 0.25 to 2.0 megohms.

