

RCA-861

Screen-Grid R-F Power Amplifier

Illustrated on page 119

RCA-861 is a screen-grid transmitting tube of the thoriated-tungsten filament type for use as a radio-frequency power amplifier. The grid, plate, and screen are supported on separate stems and their leads brought out of the bulb through separate seals. This construction insures good insulation and low interelectrode capacitances. Neutralization to prevent feedback is generally unnecessary when the tube is used in adequately shielded circuits. The 861 may be operated at maximum input at frequencies as high as 20 megacycles.

CHARACTERISTICS

Filament Volts (a-c or d-c)	11.0	Grid-Plate Capacitance (With external shielding)	0.1 max. μf
Filament Amperes	10	Input Capacitance	14.5 μf
Amplification Factor (Approx.)	300	Output Capacitance	10.5 μf
Transconductance (For plate current of 130 ma.) Micromhos.....	2100		

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

As R-F Power Amplifier—Class B Telephony

Carrier conditions per tube for use with a max. modulation factor of 1.0

D-C PLATE VOLTAGE	3500 max. Volts
D-C SCREEN VOLTAGE	750 max. Volts
D-C PLATE CURRENT	250 max. Milliamperes
PLATE INPUT	600 max. Watts
SCREEN INPUT	35 max. Watts
PLATE DISSIPATION	400 max. Watts

TYPICAL OPERATION:

D-C Plate Voltage	2500	3000	3500	Volts
D-C Screen Voltage	500	500	500	Volts
D-C Grid Voltage [§]	-60	-60	-60	Volts
Peak R-F Grid Voltage	250	245	215	Volts
D-C Plate Current	190	175	150	Milliamperes
D-C Grid Current (Approx.)	4	4	4	Milliamperes
Screen Resistor	Not recommended			
Driving Power (Approx.) [†]	20	15	15	Watts
Power Output (Approx.)	140	160	175	Watts

As Plate-Modulated R-F Power Amplifier—Class C Telephony

Carrier conditions per tube for use with a max. modulation factor of 1.0

D-C PLATE VOLTAGE	3000 max. Volts
D-C SCREEN VOLTAGE	750 max. Volts
D-C GRID VOLTAGE	-1000 max. Volts
D-C PLATE CURRENT	300 max. Milliamperes
D-C GRID CURRENT	75 max. Milliamperes
PLATE INPUT	650 max. Watts
SCREEN INPUT	30 max. Watts
PLATE DISSIPATION	270 max. Watts

TYPICAL OPERATION:

D-C Plate Voltage	2000	2500	3000	Volts
D-C Screen Voltage	425	400	375	Volts
D-C Grid Voltage [§]	-250	-225	-200	Volts
Peak R-F Grid Voltage	675	625	575	Volts
D-C Plate Current	250	220	200	Milliamperes
D-C Grid Current (Approx.)	65	60	55	Milliamperes
Screen Resistor	30000	50000	70000	Ohms
Grid Resistor	3850	3750	3640	Ohms
Driving Power (Approx.)	45	40	35	Watts
Power Output (Approx.)	285	340	400	Watts

As R-F Power Amplifier and Oscillator—Class C Telegraphy

Key-down conditions per tube without modulation^{††}

D-C PLATE VOLTAGE	3500 max. Volts
D-C SCREEN VOLTAGE	750 max. Volts

[§], [†]: see next page.

D-C GRID VOLTAGE	-1000 max. Volts
D-C PLATE CURRENT	350 max. Milliamperes
D-C GRID CURRENT	75 max. Milliamperes
PLATE INPUT	1200 max. Watts
SCREEN INPUT	35 max. Watts
PLATE DISSIPATION	400 max. Watts

TYPICAL OPERATION:

D-C Plate Voltage	2000	3000	3500	Volts
D-C Screen Voltage	500	500	500	Volts
D-C Grid Voltage [§]	-250	-250	-250	Volts
Peak R-F Grid Voltage	725	725	725	Volts
D-C Plate Current	300	300	300	Milliamperes
D-C Screen Current	60	50	40	Milliamperes
D-C Grid Current (Approx.)	40	40	40	Milliamperes
Screen Resistor	Not recommended			
Grid Resistor	6250	6250	6250	Ohms
Driving Power (Approx.)	30	30	30	Watts
Power Output (Approx.)	400	600	700	Watts

[§] Grid voltages are given with respect to the mid-point of filament operated on a.c. If d.c. is used, each stated value of grid voltage should be decreased by 8 volts and the circuit returns made to the negative end of the filament.

† At crest of audio-frequency cycle with modulation factor of 1.0.

†† Modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115% of the carrier conditions.

INSTALLATION AND APPLICATION

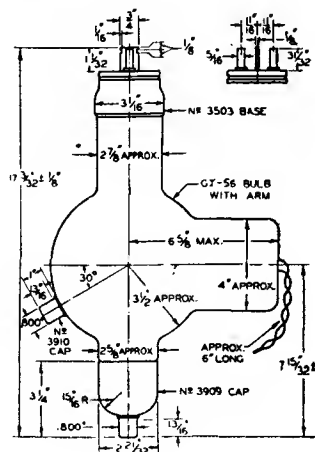
The filament base and plate cap of the 861 fit the standard RCA end-mountings UT-1085 and UT-1086, respectively. The end-mountings should be placed to hold the tube in a vertical position with the small cap (plate) down. The screen has two connections which are brought out of the tube to the blade on the filament base and to the cap at the side of the bulb. Only one of these, preferably the blade, need be used for the screen-voltage supply. However, it is essential that both screen terminals be by-passed to ground through separate condensers to maintain low impedance between screen and filament.

The plate of the 861 shows an orange-red color at the maximum plate-dissipation rating for each class of service. The screen should never be allowed to show more than a barely perceptible red color.

For high-frequency operation above 20 megacycles, see page 144.

For additional information, see chapters on INSTALLATION and APPLICATION.

A plate family of curves is shown at the bottom of page 118.



Connections to End-Mountings

