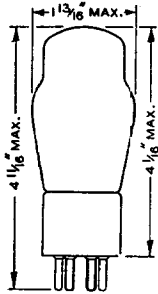
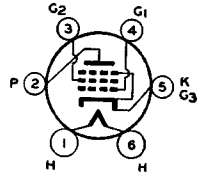


# RCA-42

## POWER-AMPLIFIER PENTODE



The 42 is a heater-cathode type of power-amplifier pentode for use in the audio-output stage of receivers. It is capable of giving large power output with a relatively small input-signal

voltage. Because of the heater-cathode construction, a uniformly low hum-level is attainable in power amplifier design.

### CHARACTERISTICS

HEATER VOLTAGE (A. C. or D. C.).....	6.3	Volts
HEATER CURRENT .....	0.7	Ampere
BULB .....		ST-14
BASE .....		Medium 6-Pin

#### As Single-Tube Class A<sub>1</sub> Amplifier

	Pentode Connection		Triode Connection Screen tied to plate	
PLATE VOLTAGE .....	250	315	max. 250°	Volts
SCREEN VOLTAGE (Grid No. 2).....	250	315	max. —	Volts
GRID VOLTAGE (Grid No. 1).....	-16.5	-22	-20	Volts
PLATE CURRENT .....	34	42	31	Milliamperes
SCREEN CURRENT .....	6.5	8	—	Milliamperes
PLATE RESISTANCE (Approx.).....	80000	100000	2700	Ohms
AMPLIFICATION FACTOR (Approx.)...	190	260	6.2	
TRANSCONDUCTANCE .....	2350	2600	2300	Micromhos
LOAD RESISTANCE .....	7000	7000	3000	Ohms
TOTAL HARMONIC DISTORTION.....	7	7	5	Per cent
POWER OUTPUT .....	3	5	0.65	Watts

Under the above maximum voltage conditions, transformer or impedance input-coupling devices are recommended. If resistance coupling is used, refer to last paragraph of APPLICATION under type 6F6.

° Maximum plate volts = 315.

#### As Push-Pull Class AB<sub>2</sub> Amplifier—Pentode Connection

Values are for two tubes.

	Fixed Bias	Self-Bias	
PLATE VOLTAGE .....	375 max.	375 max.	Volts
SCREEN VOLTAGE (Grid No. 2).....	250 max.	250 max.	Volts
GRID VOLTAGE (Grid No. 1).....	-26 min.	—	Volts
SELF-BIAS RESISTOR .....	—	340 min.	Ohms
ZERO-SIGNAL PLATE CURRENT.....	34	54	Milliamperes
ZERO-SIGNAL SCREEN CURRENT.....	5	8	Milliamperes
LOAD RESISTANCE (Plate-to-plate).....	10000	10000	Ohms
TOTAL HARMONIC DISTORTION.....	5	5	Per Cent
POWER OUTPUT .....	19*	19‡	Watts

\* With one triode-connected 42 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 3.32. The plate, screen and grid supply have negligible resistance.

‡ With one triode-connected 42 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 2.5. The plate and screen supply have negligible resistance. The value given for the self-bias resistor is determined for a minimum grid bias of -21 volts.

Under the above maximum voltage conditions, transformer or impedance input-coupling devices must be used.

**A<sub>2</sub> Push-Pull Class AB<sub>2</sub> Amplifier—Triode Connection**  
**Screen Tied to Plate**

Values are for two tubes.

	Fixed Bias	Self-Bias	
PLATE VOLTAGE .....	350 max.	350 max.	Volts
GRID VOLTAGE .....	-38 min.	—	Volts
SELF-BIAS RESISTOR .....	—	730 min.	Ohms
ZERO-SIGNAL PLATE CURRENT.....	45	50	Milliamperes
LOAD RESISTANCE (Plate-to-plate).....	6000	10000	Ohms
TOTAL HARMONIC DISTORTION.....	7	7	Per cent
POWER OUTPUT .....	18†	14**	Watts

† With one triode-connected 42 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 1.67. The plate and grid supply have negligible resistance.

\*\* With one triode-connected 42 as driver operated at plate volts of 250, grid volts of -20, and with a minimum plate load of approximately 10000 ohms: input transformer ratio, primary to one-half secondary, is 1.29. The plate supply has negligible resistance. The value given for the self-bias resistor is determined for a minimum grid bias of -36.5 volts.

Under the above maximum voltage conditions, transformer or impedance input-coupling devices must be used

**INSTALLATION AND APPLICATION**

The base pins of the 42 fit the standard six-contact socket which may be installed to hold the tube in any position. Sufficient ventilation should be provided to prevent overheating.

The heater is designed to operate at 6.3 volts. In a series-heater circuit employing several 6.3-volt types and one or more 42's, the heaters of the 42's should be placed on the positive side. Furthermore, since most 6.3-volt types have 0.3-ampere heaters, a bleeder circuit across these heaters is required to take care of the additional 0.4-ampere heater current of the 42. Each 6.3-volt tube of the 0.3-ampere type in the series circuit should, therefore, be shunted by a bleeder resistance of 16 ohms.

The cathode should preferably be connected directly to a mid-tap on the heater winding or to a center-tapped resistor across the heater winding. If this practice is not followed, the potential difference between heater and cathode should be kept as low as possible.

For application, refer to type 6F6.

Additional curve data is given under type 2A5.

