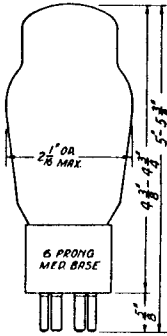
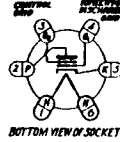


GASEOUS DISCHARGE TRIODE POWER AMPLIFIER OSCILLATOR

The RK-100 is a heater type gaseous discharge tube designed for use as a power amplifier or oscillator. The RK-100 differs from conventional tubes in that it contains mercury vapor and an auxiliary grid, number one grid, which acts as an anode for the ionizing discharge and as a virtual cathode for the amplifier section of the tube. In practice the actual cathode is used as the zero potential point for the circuit returns.



HEATER RATING

Table with 2 columns: Heater Voltage (6.3 volts), Heater Current (0.9 amp).

DIRECT INTERELECTRODE CAPACITANCES

Table with 2 columns: Grid to Plate (19 pF), Input (23 pF), Output (3 pF).

A-F POWER AMPLIFIER—CLASS A MAXIMUM RATINGS

Table with 2 columns: D-C Plate Voltage (150 volts), D-C Plate Current (250 ma), D-C Control Grid Current (100 ma), D-C Ionizing Current (250 ma), Plate Dissipation (15 watts).

TYPICAL OPERATION—SINGLE TUBE

Table with 3 columns: D-C Plate Voltage (110), D-C Control Grid Voltage (-1.6), D-C Ionizing Current (150), D-C Plate Current (50), D-C Control Grid Current (7), A-F Grid Voltage (6), Amplification Factor (40), Plate Resistance (3600), Transconductance (12000), Load Resistance (1600), Power Output (3.2).

TYPICAL OPERATION—PUSH-PULL—TWO TUBES

Table with 3 columns: D-C Plate Voltage (110), D-C Control Grid Voltage (-1.6), D-C Ionizing Current (150), D-C Plate Current (100), D-C Control Grid Current (14), A-F Grid Voltage (13), Load Resistance (2000), Power Output (7).

R-F POWER AMPLIFIER OR OSCILLATOR—CLASS C MAXIMUM RATINGS

Table with 2 columns: D-C Plate Voltage (150 volts), D-C Plate Current (250 ma), D-C Control Grid Current (100 ma), D-C Ionizing Current (250 ma), Plate Dissipation (15 watts).

TYPICAL OPERATION—R-F OSCILLATOR—CLASS C

Table with 2 columns: D-C Plate Voltage (110 volts), D-C Ionizing Current (150 ma), D-C Plate Current (80 ma), D-C Control Grid Current (8 ma), Control Grid Resistor (500 ohms), Power Output (3.5 watts).

TYPICAL OPERATION—R-F AMPLIFIER—CLASS C

Table with 2 columns: D-C Plate Voltage (110 volts), D-C Ionizing Current (150 ma), D-C Plate Current (175 ma), D-C Control Grid Current (39 ma), Control Grid Resistor (500 ohms), Peak R-F Input Voltage (35 volts), Driving Power (2 watts), Power Output (11 watts).

OPERATING NOTES

IONIZING DISCHARGE CIRCUIT

Under all conditions a separate current limiting resistor should be used in series with the number one grid of each tube in order to limit the discharge current to or under the rated value, as the voltage drop from the number one grid to the cathode is approximately 10 volts.

CIRCUIT OPERATION

The operation of the RK-100 is similar to that of a conventional high vacuum tube except for the ionizing discharge mentioned above and the markedly different values of tube parameters such as high transconductance and high grid current.

The internal impedance of the RK-100 is very low with a large signal on the grid. This makes it necessary to tap down on the output plate coil to match the low tube impedance. The input impedance is low so relatively few turns are required on the secondary of the driver transformer for optimum conditions. The above characteristics, low input and output impedances, make it difficult to obtain the same power from a self-excited oscillator as can be obtained from a driven amplifier. The power necessary to drive the tube may be obtained from conventional tubes such as the type 48 or one RK-100 will drive two RK-100 tubes.

IMPORTANT

When first placing the RK-100 in operation it should be allowed to warm up for about 15 minutes to insure that no drops of mercury are shorting the elements. Thereafter, this precaution need not be taken unless the tube has been handled in such a way as to get mercury on the elements.

