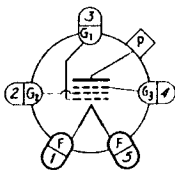
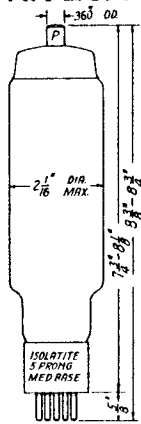


**PENTODE
POWER AMPLIFIER
OSCILLATOR**

The RK-20A is a pentode type power amplifier tube having a thoriated tungsten filament, a molybdenum plate, a hard glass bulb and an isolantite base. It is designed for use as a power amplifier, oscillator or frequency multiplier. The RK-20A may also be used in circuits employing suppressor or control grid modulation.



BOTTOM VIEW OF SOCKET



FILAMENT RATING

| | | |
|------------------|------|-------|
| Filament Voltage | 7.5 | volts |
| Filament Current | 3.25 | amp |

DIRECT INTERELECTRODE CAPACITANCES

| | | |
|---------------|------|----|
| Grid to Plate | 0.01 | μf |
| Input | 14 | μf |
| Output | 12 | μf |

R-F POWER AMP. OR OSC.—CLASS C

| | | |
|-----------------------------|------|-------|
| MAXIMUM RATINGS | | |
| D-C Plate Voltage—Telephony | 1250 | volts |

| | | |
|--------------------------------------|------|-------|
| D-C Plate Voltage—Telephony | 1250 | volts |
| With Control or Sup. Grid Modulation | 1000 | volts |
| With Plate & Screen Modulation | 300 | volts |
| D-C Screen Voltage | 92 | ma |
| D-C Plate Current | 15 | ma |
| D-C Control Grid Current | 5 | amp |
| R-F Control Grid Current | 40 | watts |
| Plate Dissipation | 15 | watts |
| Screen Dissipation | 15 | watts |

TYPICAL OPERATION

| | Telephony Control Grid Modulation | Telephony Suppressor Grid Modulation | Telephony Plate & Screen Modulation | Telephony | Telephony | Volts | |
|-----------------------|-----------------------------------|--------------------------------------|-------------------------------------|-----------|-----------|-------|-------|
| D-C Plate Voltage | 1250 | 1250 | 1000 | 1250 | 1250 | volts | |
| D-C Screen Voltage | 300 | 300 | 300 | 300 | 300 | volts | |
| D-C Sup. Grid Volt. | 0 +45 | -45 | 0 | 0 | +45 | volts | |
| D-C Con. Grid Volt. | -142 -142 | -100 | -100 | -100 | -100 | volts | |
| D-C Plate Current | 40 | 40 | 48 | 75 | 80 | ma | |
| D-C Screen Current | 7 | 7 | 44 | 30 | 43 | ma | |
| D-C Con. Grid Current | 1.8 | 1.8 | 11.5 | 10 | 11.5 | ma | |
| Screen Resistor | — | — | 23000‡ | — | — | ohms | |
| Peak R-F Input Volt. | 160 | 160 | 140 | 145 | 155 | volts | |
| R-F Driving Power | 1.5* | 1.5* | 1.3 | 1.6 | 1.6 | watts | |
| Carrier Power Output | 17 | 20 | 21 | 52 | 64 | 84 | watts |
| Peak A-F Volt.—Plate | — | — | — | 1000* | — | — | volts |
| Peak A-F Volt.—Grid | 30* | 30* | 75* | 300* | — | — | volts |
| A-F Modulating Power | 0.3* | 0.3* | 0.36* | 52 | — | — | watts |
| Peak Power Output | 68* | 80* | 84* | 208* | — | — | watts |

*At the peak of the a-f cycle with 100% modulation.
‡Connected to plate end of modulation trans. and by-passed for r.f. only.

R-F POWER AMPLIFIER—CLASS B—TELEPHONY

MAXIMUM RATINGS

| | | |
|------------------------------|------|-------|
| D-C Plate Voltage | 1250 | volts |
| D-C Screen Voltage | 300 | volts |
| D-C Plate Current (Carrier) | 70 | ma |
| Plate Dissipation (Carrier) | 40 | watts |
| Screen Dissipation (Carrier) | 15 | watts |

TYPICAL OPERATION

| | | |
|-----------------------------|------|-------|
| D-C Plate Voltage | 1250 | volts |
| D-C Screen Voltage | 300 | volts |
| D-C Suppressor Grid Voltage | 0 | volts |
| D-C Grid Voltage | -30 | volts |
| D-C Plate Current | 43 | ma |
| D-C Screen Current | 15 | ma |
| Peak R-F Input Voltage | 70* | volts |
| R-F Driving Power | 0.5* | volts |
| Carrier Power Output | 16 | watts |
| Peak Power Output | 64* | watts |

*At the peak of the a-f cycle with 100% modulation.

OPERATING NOTES

FREQUENCY RANGE

The RK-20A may be operated at the maximum ratings at frequencies up to 30 megacycles. At frequencies between 30 megacycles and 60 megacycles the maximum d-c plate voltage should not exceed 900 volts. The operation of the tube at frequencies higher than 60 megacycles is not recommended.

EXCITATION

The Class C amplifier characteristic curves show the power output, plate current and screen current plotted vs. excitation as denoted by the control grid current in milliamperes. The power output flattens off around 11 or 12 ma. of grid current with very little gained beyond these values. The screen dissipation increases with excitation and for this reason the excitation should be kept at a reasonable value.

SCREEN VOLTAGE

The screen voltage may be obtained either from a separate source or through a dropping resistor from the plate supply. The screen should always be by-passed to the filament midpoint for r.f.

SHIELDING

Shielding of the grid input tuning system from the plate tuning apparatus is desirable and will provide improved stability. If a shield is applied to the RK-20A it should enclose the base and extend to the lower internal shield and should clear the glass bulb by at least 1/16".

BIAS

Battery bias, or at least partial battery bias on the control grid is recommended. Additional bias may be obtained by placing a resistor in series with the battery.

CRYSTAL OSCILLATOR

Using crystal control, 50 watts of r-f power output may be obtained without overheating the crystal.

PLATE TEMPERATURE

The plate of the RK-20A will not show color when operated at its rated plate dissipation. Dissipations above the rated value should be avoided.

