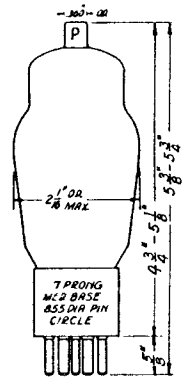
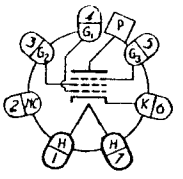
PENTODE POWER AMPLIFIER OSCILLATOR





BOTTOM VIEW OF SOCKET

The RK-23 and the RK-25 are heater type pentode power amplifier tubes having isolantite bases. The RK-25B is similar to the RK-25 except that the base is of bakelite. These tubes are designed for use as power amplifiers, oscillators or frequency multipliers. They may also be used in circuits employing suppressor or control grid modulation.

HEATER RATING

	RK-23	RK-25 RK-25B	
Heater Voltage	2.5	6.3	volts
Heater Current	2	0.9	amp

DIRECT INTERELECTRODE CAPACITANCES

Grid to Plate	0.2	μμf
Input	10	μμf
Output	10	μμf

R-F POWER AMP. OR OSC.—CLASS C

MAXIMUM RATINGS

D-C Plate Voltage—Telegraphy	500	volts
D-C Plate Voltage—Telephony		
With Con. or Sup. Grid Modulation	500	volts
With Plate & Screen Modulation	400	volts
D-C Screen Voltage	250	volts
D-C Plate Current	60	ma
D-C Control Grid Current	10	ma
Plate Dissipation	10	watts
Screen Dissipation	8	watts

TYPICAL OPERATION

	Telephony Control Grid Modulation		Telephony Suppressor Grid Modulation	Telephony Plate & Screen Modulation	Telegraphy		
D-C Plate Voltage	500	500	500	400	500	500	volts
D-C Screen Voltage	200	200	200	150	200	200	volts
D-C Sup. Grid Voltage	0	+45	−45	0	0	+45	volts
D-C Con. Grid Volt.	−125	−125	−90	−90	−90	−90	volts
D-C Plate Current	32	34	31	43	50	55	ma
D-C Screen Current	20	20	39	30	40	38	ma
D-C Con. Grid Current	1.5	1.5	4	6	4	4	ma
Screen Resistor	—	—	—	8300‡	—	—	ohms
Peak R-F Input Volt.	150	150	135	145	135	135	volts
R-F Driving Power	1.2*	1.3*	0.5	0.8	0.5	0.5	watts
Carrier Power Output	5.5	6.5	6	13.5	18	22	watts
Peak A-F Volt.—Plate	—	—	—	400*	—	—	volts
Peak A-F Volt.—Grid	45 *	45 *	75 *	150*	—	—	volts
A-F Modulating Power	0.5*	0.55*	0.3*	14.5	—	—	watts
Peak Power Output	22 *	26 *	24 *	54 *	—	—	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	500	volts
D-C Screen Voltage	250	volts
D-C Plate Current (Carrier)	35	ma
Plate Dissipation (Carrier)	10	watts
Screen Dissipation (Carrier)	8	watts

TYPICAL OPERATION

D-C Plate Voltage	500	volts
D-C Screen Voltage	200	volts
D-C Suppressor Grid Voltage	0	volts
D-C Control Grid Voltage	−38	volts
D-C Plate Current	30	ma
D-C Screen Current	12	ma
Peak R-F Input Voltage	80 *	volts
R-F Driving Power	0.24*	watts
Carrier Power Output	5	watts
Peak Power Output	20 *	watts

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

OPERATING NOTES

FREQUENCY RANGE
The RK-23, RK-25 and RK-25B may be operated at the maximum ratings at frequencies up to 30 megacycles. Above 30 megacycles the reduced efficiency realized requires that the plate voltage be lowered to prevent the plate dissipation from exceeding the maximum rated value.

EXCITATION
The Class C amplifier characteristic curves show the power output, plate current and screen current plotted vs. excitation as denoted by the d-c control grid current in milliamperes. The power output flattens off around 4 or 5 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 cathode 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-23, RK-25 or RK-25B, it should enclose the base and extend to the lower internal shield and should clear the glass bulb by at least 1/16".

BIAS
At least 25 volts of fixed bias should be used with 500 volts on the plate to protect the tube in case of failure of the bias or excitation. Additional bias may be obtained by the use of a grid or cathode resistor.

CRYSTAL OSCILLATOR
Using crystal control, 20 watts of r-f power output may be obtained without overheating the crystal.

PLATE TEMPERATURE
The plate of the RK-23, RK-25 or RK-25B will not show color when operated at the rated plate dissipation. Dissipations above the rated value should be avoided.