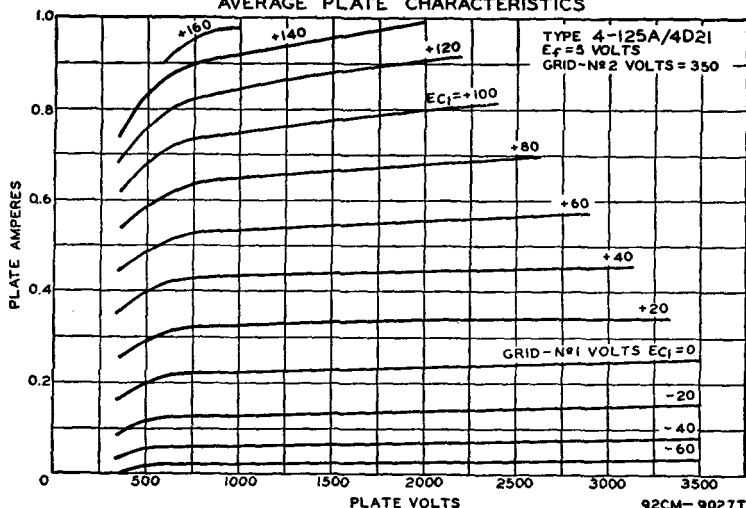


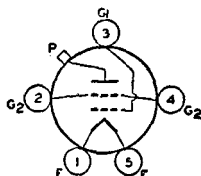
AVERAGE PLATE CHARACTERISTICS



BEAM POWER TUBE

Forced-air-cooled thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator. May be used with full input up to 110 Mc and

with reduced input up to 150 Mc. Class C Telegraphy maximum CCS plate dissipation, 250 watts.



FILAMENT VOLTAGE (AC/DC)	5.0	volts
FILAMENT CURRENT	14.5	amperes
TRANSCONDUCTANCE*	4000	μmhos
MU-FACTOR, Grid-No.2 to Grid-No.1	5.1	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid-No.1 to plate (Base shell connected to ground)	0.14 max	μuf
Grid-No.1 to filament, grid-No.2, and base shell	12.7	μuf
Plate to filament, grid-No.2, and base shell	4.5	μuf

* Plate volts, 2500; grid-No.2 volts, 500; plate milliamperes, 100.

AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Maximum Ratings:

DC PLATE VOLTAGE	4000 max	volts
DC GRID-No.2 (SCREEN-GRID) VOLTAGE	600 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT*	350 max	ma
Grid-No.2 INPUT*	35 max	watts
GRID-No.1 (CONTROL-GRID) INPUT*	10 max	watts
PLATE DISSIPATION*	250 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage*	600	600	600	600	volts
DC Grid-No.1 Voltage*	-95	-104	-110	-116	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	128	176	180	186	volts
Zero-Signal DC Plate Current	120	110	120	120	ma
Maximum-Signal DC Plate Current	400	405	430	417	ma
Zero-Signal DC Grid-No.2 Current	-0.4	-0.3	-0.3	-0.2	ma
Maximum-Signal DC Grid-No.2 Current	23	22	13	10.5	ma
Effective Load Resistance (Plate to plate)	6250	9170	11400	15000	ohms
Maximum-Signal Driving Power	0	0	0	0	watts
Total Harmonic Distortion	4	2.5	2	2.5	per cent
Maximum-Signal Power Output (Approx.)	310	460	625	750	watts

* Averaged over any audio-frequency cycle of sine-wave form.

† Obtained from a source having good regulation.

‡ Total effective grid-No.1-circuit resistance should not exceed 0.25 megohm.

RCA Transmitting Tubes

AF POWER AMPLIFIER AND MODULATOR—Class AB₂

Maximum Ratings:

DC PLATE VOLTAGE.....	4000 max	volts
DC GRID-NO.2 VOLTAGE.....	600 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT*	350 max	ma
GRID-NO.2 INPUT*	35 max	watts
GRID-NO.1 INPUT*	10 max	watts
PLATE DISSIPATION*	250 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage.....	1500	2000	2500	3000	volts
DC Grid-No.2 Voltage*	300	300	300	300	volts
DC Grid-No.1 Voltage*	-48	-48	-51	-53	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage.....	192	198	200	198	volts
Zero-Signal DC Plate Current.....	100	120	120	125	ma
Maximum-Signal DC Plate Current.....	485	510	500	473	ma
Zero-Signal DC Grid-No.2 Current.....	0	0	0	0	ma
Maximum-Signal DC Grid-No.2 Current.....	34	26	23	33	ma
Effective Load Resistance (Plate to plate).....	5400	8000	10900	16000	ohms
Maximum-Signal Average Driving Power (Approx.).....	2.1	2.3	2.2	1.9	watts
Maximum-Signal Peak Driving Power (Approx.).....	4.7	5.5	4.8	4.6	watts
Total Harmonic Distortion.....	3	4	4	4.5	per cent
Maximum-Signal Power Output (Approx.).....	428	650	840	1040	watts

* Averaged over any audio-frequency cycle of sine-wave form.

* Obtained from a source having good regulation.

* Obtained from fixed supply having dc resistance not exceeding 250 ohms.

PLATE-MODULATED RF POWER AMPLIFIER—Class C Telephony

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

Maximum CCS Ratings:

DC PLATE VOLTAGE.....	3200 max	volts
DC GRID-NO.2 VOLTAGE.....	600 max	volts
DC GRID-NO.1 VOLTAGE.....	-500 max	volts
DC PLATE CURRENT.....	275 max	ma
GRID-NO.2 INPUT.....	35 max	watts
GRID-NO.1 INPUT.....	103 max	watts
PLATE DISSIPATION.....	165 max	watts

Typical Operation:

DC Plate Voltage.....	2500	3000	volts
DC Grid-No.2 Voltage*	400	400	volts
DC Grid-No.1 Voltage*	-200	-310	volts
Peak AF Grid-No.2 Voltage.....	350	350	volts
Peak RF Grid-No.1 Voltage (Approx.).....	255	365	volts
DC Plate Current.....	200	225	ma
DC Grid-No.2 Current.....	30	30	ma
DC Grid-No.1 Current (Approx.).....	9	9	ma
Driving Power (Approx.).....	2.2	3.2	watts
Power Output (Approx.).....	375	510	watts

* Obtained preferably from separate source modulated along with plate supply, or from the modulated plate supply through a series resistor.

* Obtained preferably from grid-No.1 resistor or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telephony#

and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum CCS Ratings:

DC PLATE VOLTAGE.....	4000 max	volts
DC GRID-NO.2 VOLTAGE.....	600 max	volts
DC GRID-NO.1 VOLTAGE.....	-500 max	volts
DC PLATE CURRENT.....	350 max	ma
GRID-NO.2 INPUT.....	35 max	watts
GRID-NO.1 INPUT.....	10 max	watts
PLATE DISSIPATION.....	250 max	watts

Typical Operation:

DC Plate Voltage.....	2500	3000	4000	volts
DC Grid-No.2 Voltage.....	500	500	500	volts
DC Grid-No.1 Voltage.....	-150	-180	-225	volts
Peak RF Grid-No.1 Voltage (Approx.).....	220	265	303	volts

RCA Transmitting Tubes

DC Plate Current.....	300	345	312	ma
DC Grid-No.2 Current.....	60	60	45	ma
DC Grid-No.1 Current (Approx.).....	9	10	9	ma
Driving Power (Approx.)♦.....	1.7	2.6	2.5	watts
Power Output (Approx.).....	575	800	1000	watts

Key-down conditions per tube without amplitude modulation. Amplitude modulation essentially negative may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

♦ Increased driving power is required at frequencies above 40 Mc.

OPERATING CONSIDERATIONS

Type 4-250A requires Special Metal-Shell Giant five-contact socket and may be mounted in vertical position only, base up or down. *OUTLINE 37, Outlines Section.*

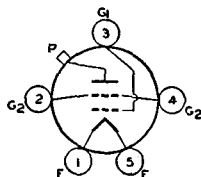
For operation at 125 Mc, plate voltage should be reduced to 85 per cent of maximum rating; at 150 Mc, to 74 per cent. Plate shows an orange-red color when the tube is operated at maximum CCS ratings.

Cooling requirements for seals and envelope are the same as those for the 4-125A/4D21.

BEAM POWER TUBE

4-1000A

Forced-air-cooled thoriated-tungsten-filament type used as af power amplifier and modulator and as rf power amplifier and oscillator at frequencies up to 110 Mc. *OUTLINE 58, Outlines Section.* Filament volts (ac/dc), 7.5; amperes, 21. Direct interelectrode capacitances: grid No.1 to plate (with base shell connected to ground), 0.24 μf ; grid No.1 to filament, grid No.2, and base shell, 27.2 μf ; plate to filament,

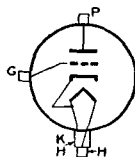


grid-No.2, and base shell, 7.6 μf . Maximum CCS ratings as RF POWER AMPLIFIER AND OSCILLATOR (up to 110 Mc): dc plate volts, 6000 *max*; dc grid-No.2 (screen-grid) volts, 1000 *max*; dc grid-No.1 (control-grid) volts, -500 *max*; dc plate milliamperes, 700 *max*; grid-No.2 input, 75 *max* watts; grid-No.1 input, 25 *max* watts plate dissipation, 1000 *max* watts. Characteristics as CLASS A₁ AMPLIFIER; plate volts, 2500; grid-No.2 volts, 500; plate milliamperes, 300; transconductance, 10,000 μmhos ; mu-factor, grid No.2 to grid No.1, 7. Plate shows an orange-red color when tube is operated at maximum CCS ratings. The 4-1000A is used principally for renewal purposes.

POWER TRIODE

4C33

Forced-air-cooled heater-cathode type used as Class C plate-pulsed oscillator. May be used with full input up to 625 Mc. Class C maximum CCS plate dissipation, 250 watts. Requires



special mounting designed for use in circuits of the coaxial-cavity type and may be mounted in vertical position only, base up or down. *OUTLINE 74, Outlines Section*, except that grid-flange thickness is 0.040 $\pm$ 0.005 inch and outside diameter of air-cooled radiator is 2 $\pm$ 0.005 inch.

HEATER VOLTAGE (AC/DC)°.....	5.0	volts
HEATER CURRENT.....	9.1	amperes
HEATER STARTING CURRENT.....	16 <i>max</i>	amperes
AMPLIFICATION FACTOR.....	25	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid to plate.....	13	μf
Grid to cathode and heater.....	34	μf
Plate to cathode and heater.....	0.7	μf

° Heater voltage must be applied for a minimum time of 2 minutes before application of plate voltage.

PLATE-PULSED OSCILLATOR—Class C

Maximum CCS Ratings:

PEAK PLATE-PULSE SUPPLY VOLTAGE.....	13000 <i>max</i>	volts
PEAK GRID VOLTAGE.....	-2000 <i>max</i>	volts
PEAK PLATE CURRENT FROM PULSE SUPPLY.....	30 <i>max</i>	amperes
PEAK RECTIFIED GRID CURRENT.....	4 <i>max</i>	amperes