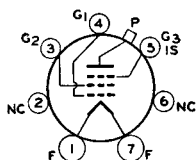


OPERATING CONSIDERATIONS

Type 812-A requires Small four-contact socket and may be mounted in vertical position with base down, or in horizontal position with pins 1 and 4 in vertical plane. OUTLINE 39, *Outlines* Section.

For operation at 60 Mc, plate voltage and plate input should be reduced to 89 per cent of maximum ratings; at 80 Mc, to 70 per cent; at 100 Mc, to 55 per cent. Plate shows no color when tube is operated at maximum CCS ratings, and shows a barely perceptible red color at maximum ICAS ratings.

When the 812-A is used in the final amplifier or a preceding stage of a transmitter designed for break-in operation and oscillator keying, a small amount of fixed bias must be used to maintain the plate current at a safe value. With a plate voltage of 1500 volts, a fixed bias of at least -45 volts should be used.



BEAM POWER TUBE

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 30 Mc. For operation at 45 Mc,

plate voltage and plate input should be reduced to 87 per cent of maximum ratings; at 60 Mc, to 75 per cent; at 120 Mc, to 50 per cent. Class C Telegraphy maximum plate dissipation, CCS 100 watts, ICAS 125 watts. Requires Giant seven-contact socket and may be mounted in vertical position with base up or down, or in horizontal position with pins 2 and 6 in vertical plane. OUTLINE 47, *Outlines* Section. Plate shows no color when tube is operated at maximum CCS or ICAS ratings.

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FILAMENT VOLTAGE (AC/DC)	10	volts
FILAMENT CURRENT	5	amperes
TRANSCONDUCTANCE*	3750	μmhos
MU-FACTOR, Grid No.2 to Grid No.1*	8.5	
DIRECT INTERELECTRODE CAPACITANCES:		
Grid No.1 to plate	0.25 max	μμf
Grid No.1 to filament, grid No.3, internal shield, grid No.2, and base shell	16.3	μμf
Plate to filament, grid No.3, internal shield, grid No.2, and base shell ...	14	μμf

* Plate volts, 2000; grid-No.2 volts, 400; plate milliamperes, 50.

AF POWER AMPLIFIER AND MODULATOR—Class AB₁

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE	2250 max	2500 max	volts
DC GRID-NO.2 (SCREEN-GRID) VOLTAGE	1100 max	1100 max	volts
MAXIMUM-SIGNAL DC PLATE CURRENT [■]	180 max	225 max	ma
MAXIMUM-SIGNAL PLATE INPUT [■]	360 max	450 max	watts
MAXIMUM-SIGNAL DC GRID-NO.2 INPUT [■]	22 max	22 max	watts
PLATE DISSIPATION [■]	100 max	125 max	watts

Typical Operation (Values are for 2 tubes):

DC Plate Voltage	1500	2000	2250	2500	volts
DC Grid-No.3 (Suppressor-Grid) Voltage [▲]	0	0	0	0	volts
DC Grid-No.2 Voltage [†]	750	750	750	750	volts
DC Grid-No.1 (Control-Grid) Voltage [†]	-85	-90	-95	-95	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage	160	160	170	180	volts
Zero-Signal DC Plate Current	50	50	50	50	ma
Maximum-Signal DC Plate Current	305	265	255	290	ma
Zero-Signal DC Grid-No.2 Current	2	2	2	2	ma
Maximum-Signal DC Grid-No.2 Current	45	43	53	54	ma
Effective Load Resistance (Plate to plate)	9300	16000	20000	19000	ohms
Maximum-Signal Driving Power (Approx.)	0	0	0	0	watts
Maximum-Signal Power Output (Approx.)	260	335	380	490	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-No.1-Circuit Resistance	30000 max	ohms
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RCA Transmitting Tubes

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

▲ Grid No.3 should be connected to the mid-tap on the filament-transformer secondary winding or to the negative end of a filament operated on dc.

‡ Preferably obtained from a separate source or from the plate-voltage supply with a voltage divider.

† For ac filament supply.

PLATE-MODULATED PUSH-PULL RF POWER AMPLIFIER—Class C Telephony

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

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE.....	1600 max	2000 max	volts
DC GRID-NO.2 VOLTAGE.....	400 max	400 max	volts
DC GRID-NO.1 VOLTAGE.....	-300 max	-300 max	volts
DC PLATE CURRENT.....	150 max	200 max	ma
DC GRID-NO.1 CURRENT.....	25 max	30 max	ma
PLATE INPUT.....	240 max	400 max	watts
GRID-NO.2 INPUT.....	15 max	20 max	watts
PLATE DISSIPATION.....	67 max	100 max	watts

Typical Operation:

DC Plate Voltage.....	1250	1600	2000	volts
DC Grid-No.3 Voltage▲.....	0	0	0	volts
DC Grid-No.2 Voltage‡.....	300	300	350	volts
From series resistor of.....	27000	43000	41000	ohms
DC Grid-No.1 Voltage◊.....	-160	-160	-175	volts
From grid-No.1 resistor of.....	12500	13500	11000	ohms
Peak RF Grid-No.1 Voltage.....	250	250	300	volts
DC Plate Current.....	150	150	200	ma
DC Grid-No.2 Current.....	35	30	40	ma
DC Grid-No.1 Current (Approx.).....	13	12	16	ma
Driving Power (Approx.).....	2.9	2.7	4.3	watts
Power Output (Approx.).....	140	180	300	watts

Maximum Circuit Values (CCS or ICAS conditions):

Grid-No.1-Circuit Resistance.....	30000 max	ohms
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▲ Grid No.3 should be connected to the mid-tap on the filament-transformer secondary winding or to the negative end of a filament operated on dc.

‡ Obtained preferably from separate source modulated along with the plate supply, or from the modulated plate supply through series resistor of value shown for each operating condition.

◊ Obtained from a grid-No.1 resistor of value shown or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

RF POWER AMPLIFIER AND OSCILLATOR—Class C Telegraphy# and

RF POWER AMPLIFIER—Class C FM Telephony

Maximum Ratings:	CCS	ICAS	
DC PLATE VOLTAGE.....	2000 max	2250 max	volts
DC GRID-NO.2 VOLTAGE.....	400 max	400 max	volts
DC GRID-NO.1 VOLTAGE.....	-300 max	-300 max	volts
DC PLATE CURRENT.....	180 max	225 max	ma
DC GRID-NO.1 CURRENT.....	25 max	30 max	ma
PLATE INPUT.....	360 max	500 max	watts
GRID-NO.2 INPUT.....	22 max	22 max	watts
PLATE DISSIPATION.....	100 max	125 max	watts

Typical Operation:

DC Plate Voltage.....	1250	1500	2000	2250	volts
DC Grid-No.3 Voltage▲.....	0	0	0	0	volts
DC Grid-No.2 Voltage‡.....	300	300	400	400	volts
From series resistor of.....	27000	40000	36000	46000	ohms
DC Grid-No.1 Voltage†.....	-75	-90	-120	-155	volts
From grid-No.1 resistor of.....	6000	7500	12000	10000	ohms
From cathode resistor of.....	330	400	520	565	ohms
Peak RF Grid-No.1 Voltage.....	160	175	205	275	volts
DC Plate Current.....	180	180	180	220	ma
DC Grid-No.2 Current.....	35	30	45	40	ma
DC Grid-No.1 Current (Approx.).....	12	12	10	15	ma
Driving Power (Approx.).....	1.7	1.9	1.9	4.0	watts
Power Output (Approx.).....	170	210	275	375	watts

RCA Transmitting Tubes

Maximum Circuit Values:

- Grid-No.1-Circuit Resistance 30000 *max* ohms
- # 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.
- * Grid No.3 should be connected to the mid-tap on the filament-transformer secondary winding or to the negative end of a filament operated on dc.
- ‡ Obtained from separate source, from plate-voltage supply with a voltage divider, or through series resistor of value shown for each operating condition. Grid-No. 2 voltage must not exceed 800 volts under key-up conditions.
- † For ac filament supply.
- Obtained from a grid-No.1 resistor, from cathode resistor, or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor. If preceding stage is keyed, bias must be obtained partially from a fixed supply to limit the plate current and plate dissipation to a safe value.

SELF-RECTIFYING OSCILLATOR OR AMPLIFIER—Class C

Maximum CCS Ratings:

RMS PLATE VOLTAGE	2800 <i>max</i>	volts
RMS GRID-No.2 VOLTAGE	550 <i>max</i>	volts
DC GRID-No.1 VOLTAGE	-100 <i>max</i>	volts
DC PLATE CURRENT	95 <i>max</i>	ma
DC GRID-No.1 CURRENT	10 <i>max</i>	ma
PLATE INPUT •	295 <i>max</i>	watts
GRID-No.2 INPUT •	22 <i>max</i>	watts
PLATE DISSIPATION	100 <i>max</i>	watts

Typical Operation:

RMS Plate Voltage	2800	volts
DC Grid-No.3 Voltage*	0	volts
RMS Grid-No.2 Voltage‡	530	volts
DC Grid-No.1 Voltage‡	-37	volts
From grid-No.1 resistor of	37000	ohms
DC Plate Current	95	ma
DC Grid-No.2 Current	12	ma
DC Grid-No.1 Current (Approx.)	1	ma
Driving Power (Approx.)♦	1	watt
Useful Power Output (Approx.)-75-per-cent circuit efficiency	170	watts

- Power input is 1.11 times the product of the rms voltage and the dc current.
- * Grid No.3 should be connected to the mid-tap on the filament-transformer secondary winding or to the negative end of filament operated on dc.
- ‡ Obtained from a separate ac supply in phase with the plate supply or from a low-voltage tap on the plate transformer. Use of a grid-No.2 series voltage-dropping resistor is not recommended.
- ‡ Obtained from a grid-No.1 resistor of value shown or from a combination of grid-No.1 resistor and cathode resistor. Fixed-bias operation is not recommended. The bias resistors should not be bypassed for the plate and grid-No.2 voltage supply frequency.
- ♦ From a self-rectified driver.

AMPLIFIER OR OSCILLATOR—Class C

With separate, rectified, unfiltered, single-phase, full-wave plate and grid-No.2 supply

Maximum CCS Ratings:

DC PLATE VOLTAGE	1800 <i>max</i>	volts
DC GRID-No.2 VOLTAGE	360 <i>max</i>	volts
DC GRID-No.1 VOLTAGE	-200 <i>max</i>	volts
DC PLATE CURRENT	190 <i>max</i>	ma
DC GRID-No.1 CURRENT	22 <i>max</i>	ma
PLATE INPUT •	360 <i>max</i>	watts
GRID-No.2 INPUT •	22 <i>max</i>	watts
PLATE DISSIPATION	100 <i>max</i>	watts

Typical Operation:

DC Plate Voltage	1800	volts
DC Grid-No.3 Voltage*	0	volts
DC Grid-No.2 Voltage‡	250	volts
DC Grid-No.1 Voltage‡	-120	volts
From grid-No.1 resistor of	10000	ohms
DC Plate Current	160	ma
DC Grid-No.2 Current	37	ma
DC Grid-No.1 Current (Approx.)	12	ma

Driving Power (Approx.) ^{▲▲}	2	watts
Useful Power Output (Approx.)—75-per-cent circuit efficiency.....	210	watts

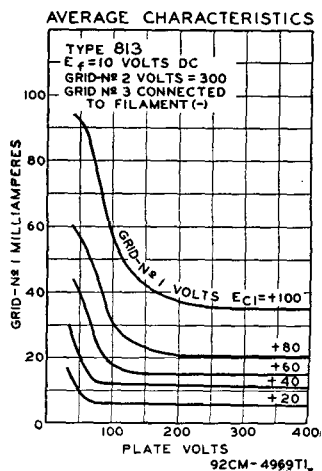
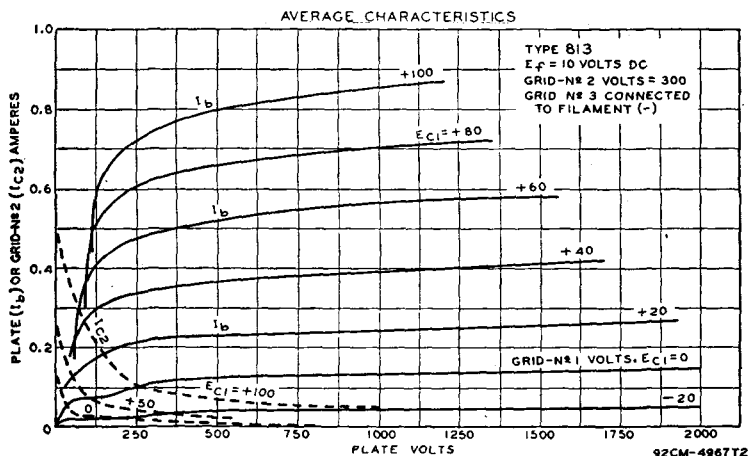
• Power input is 1.23 times the product of dc plate voltage and dc plate current.

▲ Grid No.3 should be connected to the mid-tap on the filament-transformer secondary winding or the negative end of a filament operated on dc.

△ Obtained from a separate, rectified, unfiltered, single-phase, full-wave supply in phase with the plate supply, or from the rectified, unfiltered, single-phase, full-wave supply by means of taps on the plate transformer.

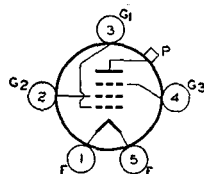
◊ Obtained from grid-No.1 resistor of value shown or from a combination of grid-No.1 resistor and cathode resistor. Fixed-bias operation is not recommended. The bias resistors should not be bypassed for the plate and grid-No.2 voltage supply frequency.

▲▲ From a driver having a rectified, unfiltered, single-phase, full-wave plate supply.



BEAM POWER TUBE

Thoriated-tungsten-filament type used as rf power amplifier and oscillator. May be used with full input up to 30 Mc. For operation at 50 Mc, plate voltage and plate input should be re-



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