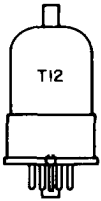
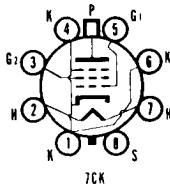


**AUDIO POWER AMPLIFIER
MODULATOR or RF POWER AMP.**

6146B/8298A

Beam Power Pentode

Construction Octal T-12
Base Octal 8 Pin, B8-150 or B8-159
Top Cap C1-1
Basing 7CK
Outline
Maximum Diameter 1.562 In.
Maximum Seated Height 3.125 In.
Maximum Overall Height 3.687 In.



ELECTRICAL DATA

HEATER OPERATION

Heater Voltage 6.3 Volts
Heater Current 1125 Ma
Maximum Heater-Cathode Voltage
Heater Negative with Respect to Cathode 135 Volts
Heater Positive with Respect to Cathode 135 Volts

MAINTENANCE OF POWER CAPABILITY

With heater voltage reduced to 5.0 Volts, the power output obtained under the classes of service contained in these defining data will not be reduced by more than ten percent from that obtained at rated heater voltage. Plate input power for the classes of service would be maintained at that obtained using rated heater voltage.

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Grid No. 1 to Plate (Max.) 0.22 Pf
Input 13.0 Pf
Output 8.5 Pf

RATINGS (Absolute Maximum Rating System)

AF Amplifier and Modulator

	Class AB1		Class AB2	
	CCS	ICAS	CCS	ICAS
Plate Voltage	600	750	600	750 Volts
Grid No. 2 Voltage	250	250	250	250 Volts
Plate Current (Max. Signal) ⁽¹⁾	175	220	175	220 Ma
Plate Input (Max. Signal) ⁽¹⁾	90	120	90	120 Watts
Plate Dissipation ⁽¹⁾	27	35	27	35 Watts
Grid No. 2 Input (Max. Signal) ⁽¹⁾	3	3	3	3 Watts
Grid No. 1 Circuit Resistance ^(4,5)	0.1	0.1	0.03	0.03 Megohm

Linear RF Amplifier—Class AB1 (Single Sideband Suppressed Carrier)

	CCS	ICAS
Plate Voltage	600	750 Volts
Grid No. 2 Voltage	250	250 Volts
Plate Current (Max. Signal)	175	220 Ma
Plate Dissipation	27	35 Watts
Grid No. 2 Dissipation	3	3 Watts

RF Amplifier Service—Class C

	Telephony ⁽¹⁾		Telegraphy or F. M. Telephony	
	CCS	ICAS	CCS	ICAS
Plate Voltage	480	600	600	750 Volts
Grid No. 2 Voltage	250	250	250	250 Volts
Grid No. 1 Voltage	-150	-150	-150	-150 Volts
Plate Current	145	180	175	220 Ma
Grid No. 1 Current	3.5	4.0	3.5	4.0 Ma
Plate Input	60	85	90	120 Watts
Plate Dissipation	18	23	27	35 Watts
Grid No. 2 Input	2	2	3	3 Watts
Grid No. 1 Circuit Resistance ⁽¹³⁾	0.03	0.03	0.03	0.03 Megohm

CHARACTERISTICS AND TYPICAL OPERATION

Plate Voltage 200 Volts
Grid No. 2 Voltage 200 Volts
Plate Current 100 Ma
Transconductance 7000 μ mhos
Amplification Factor (G1 to G2) 4.5

AF Power Amplifier—Class AB1 (2 Tubes)

	CCS	CCS
Plate Voltage	600	750 Volts
Grid No. 2 Voltage ⁽²⁾	200	200 Volts
Grid No. 1 Voltage	-47	-48 Volts
Peak AF G1 to G1 Voltage ⁽³⁾	94	96 Volts
Plate Current (Zero Signal)	48	50 Ma
Plate Current (Max. Signal)	250	250 Ma
Grid No. 2 Current (Max. Signal)	14.8	12.6 Ma
Load Resistance (P1 to P1)	5.6	7.2 K Ohms
Power Output	96	124 Watts

AF Power Amplifier—Class AB2 (2 Tubes)

	CCS	CCS	ICAS	ICAS
Plate Voltage	500	600	600	750 Volts
Grid No. 2 Voltage ⁽²⁾	200	200	200	150 Volts
Grid No. 1 Voltage	-46	-48	-47	-39 Volts
Peak AF G1 to G1 Voltage	108	106	114	110 Volts
Plate Current (Zero Signal)	50	40	50	40 Ma
Plate Current (Max. Signal)	308	270	328	294 Ma
Grid No. 2 Current (Max. Signal)	26	27	26	28 Ma
Grid No. 1 Current (Max. Signal)	2.7	1.3	3.4	7.6 Ma
Load Resistance (P1 to P1)	3620	5200	4160	6050 Ohms
Driving Power (Max. Signal) ⁽⁵⁾	0.2	0.7	0.2	0.5 Watt
Power Output (Max. Signal)	100	110	130	148 Watts

Linear RF Amplifier (At 30 MHz)

	CCS	ICAS
Plate Voltage	600	750 Volts
Grid No. 2 Voltage ⁽⁷⁾	200	200 Volts
Grid No. 1 Voltage ⁽⁷⁾	-47	-48 Volts
Plate Current (Zero Signal)	24	25 Ma
Load Resistance	2800	3600 Ohms
Plate Current (Max. Signal)	125	125 Ma
Average Plate Current	86	86 Ma
Grid No. 2 Current (Max. Signal)	7.4	6.3 Ma
Average Grid No. 2 Current	5.0	3.9 Ma
Distortion Level ⁽⁸⁾		
Third Order	24	26 db
Fifth Order	30	31 db
Useful Power Output		
Average	24.5	30.5 Watts
Peak-Envelope	49	61 Watts

RF Power Amplifier—Class C Telephony (Up to 60 MHz)

	CCS	ICAS
Plate Voltage	475	600 Volts
Grid No. 2 Voltage ⁽⁹⁾	165	175 Volts
Grid No. 1 Voltage ⁽¹⁰⁾	-86	-92 Volts
Grid No. 1 Resistor	26K	27K Ohms
Peak RF Grid No. 1 Voltage	106	114 Volts
Grid No. 1 Current	3.3	3.4 Ma
Plate Current	125	140 Ma
Grid No. 2 Current	8.5	9.5 Ma
Driving Power (Approx.)	0.4	0.5 Watts
Power Output (Approx.)	42	62 Watts

RF Power Amplifier—Class C Telegraphy—F. M. Telephony

	Up to 60 MHz		Up to 175 MHz		
	CCS	ICAS	CCS	ICAS	ICAS
Plate Voltage	600	750	320	400	435 Volts
Grid No. 2 Voltage ⁽¹¹⁾	200	200	210	220	230 Volts
Grid No. 1 Voltage ⁽¹²⁾	-70	-77	-52	-55	-56 Volts
Grid No. 1 Resistor	24K	28K	26K	30K	24K Ohms
Peak RF Grid No. 1 Voltage	90	95	65	67	73 Volts
Grid No. 1 Current	2.8	2.7	2	1.9	2.3 Ma
Plate Current	150	160	170	180	210 Ma
Grid No. 2 Current	10	10	12	12	11 Ma
Driving Power (Approx.)	0.3	0.3	2	2	3 Watts
Power Output	63	85	29	40	50 Watts

NOTES:

- (1) Averaged over any audio-frequency cycle of sinewave form.
- (2) Obtained preferably from a separate source or from the plate voltage supply with a voltage divider.
- (3) The driver stage should be capable of supplying the No. 1 grids of the Class AB1 stage with the specified driving voltage at low distortion.
- (4) The type of input coupling network used should not introduce too much resistance in the Grid No. 1 circuit. Transformer or impedance coupling devices are recommended.

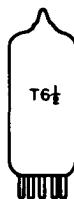
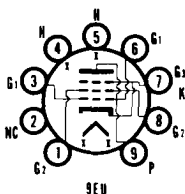
- (5) Driver stage should be capable of supplying the specified driving power at low distortion to the No. 1 grids of the AB2 stage.
- (6) To minimize distortion, the effective resistance per Grid No. 1 circuit of the AB2 stage should be held at a low value. For this purpose the use of transformer coupling is recommended. In no case, however, should the total dc Grid No. 1 circuit resistance exceed 30,000 ohms when the tube is operated at maximum ratings. For operation less than maximum ratings, the dc Grid No. 1 circuit resistance may be as high as 100,000 ohms.
- (7) Obtained preferably from a separate, well-regulated source.
- (8) Referenced to either of the two tones and without the use of feedback to enhance linearity.
- (9) Obtained preferably from a separate source modulated with the plate supply, or from the modulated plate supply through a series resistor.
- (10) Obtained from Grid No. 1 resistor or from a combination of Grid No. 1 resistor with either fixed supply or cathode resistor.
- (11) Obtained preferably from separate source, or from the plate-supply voltage with a voltage divider or through a series resistor. A series Grid No. 2 resistor should be used only when the tube is used in a circuit which is not keyed. Grid No. 2 voltage must not exceed 435 volts under key-up conditions.
- (12) Obtained from fixed supply, by Grid No. 1 resistor, by cathode resistor, or by combination methods.
- (13) When Grid No. 1 is driven positive and the tube is operated at maximum ratings, the total dc Grid No. 1 circuit resistance should not exceed the specified value of 30,000 ohms. If this value is insufficient to provide adequate bias, the additional required bias must be supplied by a cathode resistor or fixed supply. For operation at less than maximum ratings, the dc Grid No. 1 circuit resistance may be as high as 100,000 ohms.

AUDIO POWER AMPLIFIER

6973

Beam Power Pentode

Construction Miniature T-6½
 Base Button 9 Pin, E9-1
 Basing 9EU
 Outline 6-4
 Maximum Diameter 0.875 In.
 Maximum Seated Height 2.812 In.
 Maximum Overall Height 3.062 In.



ELECTRICAL DATA

HEATER OPERATION

Heater Voltage.....	6.3 Volts
Heater Current.....	450 Ma
Maximum Heater-Cathode Voltage	
Heater Negative with Respect to Cathode	
Total DC and Peak.....	200 Volts
Heater Positive with Respect to Cathode	
DC.....	100 Volts
Total DC and Peak.....	200 Volts

DIRECT INTERELECTRODE CAPACITANCES (Unshielded)

Grid No. 1 to Plate	0.4 Pf
Input	9.0 Pf
Output	6.0 Pf

RATINGS (Design Maximum Rating System)

	Ultra-Linear Conn.	Pentode Conn.
Plate and Grid No. 2 Voltage (Max.)	410	— Volts
Plate Voltage (Max.)	—	440 Volts
Grid No. 2 Voltage (Max.)	—	330 Volts
Plate Dissipation (Max.)	12	12 Watts
Grid No. 2 Input (Max.)	1.75	2 Watts
Grid No. 1 Circuit Resistance		
Fixed Bias (Max.)	0.5	0.5 Megohm
Self Bias (Max.)	1.0	1.0 Megohm
Bulb Temperature (Max.)	250	250 °C