

AMPEREX TUBE TYPE 6156

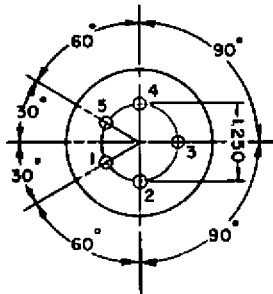
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The 6156/4-250-A is a four-electrode tube designed for use as a radio-frequency power amplifier and modulator. The anode is capable of dissipating 250 watts. Maximum ratings apply up to 75 megacycles. At reduced ratings it may be operated up to 120 megacycles.

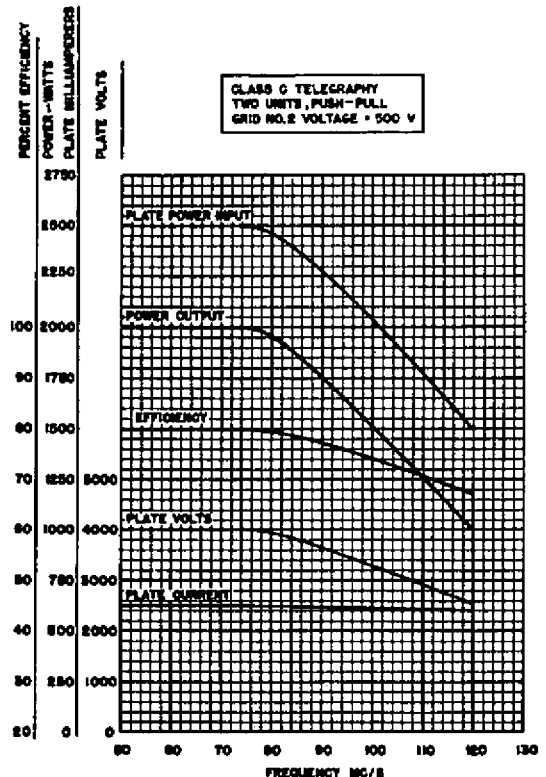
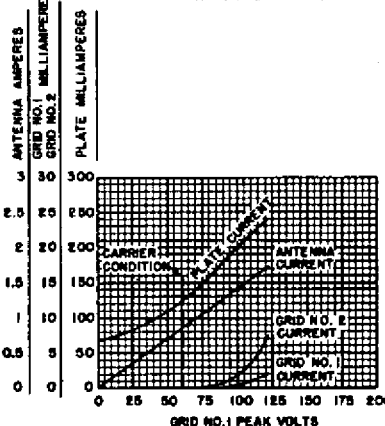
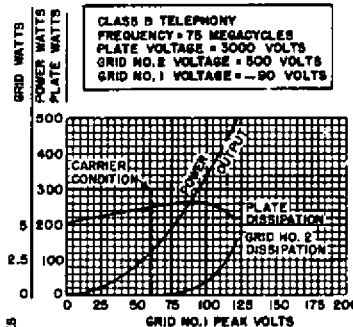
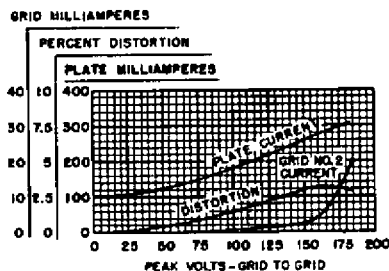
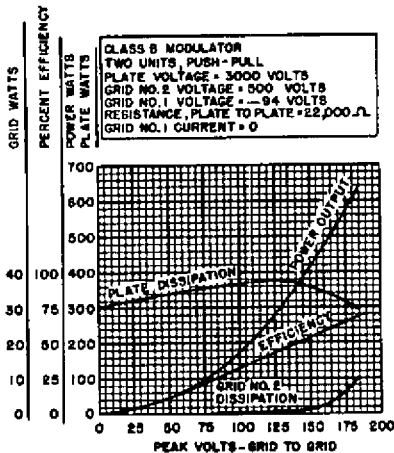
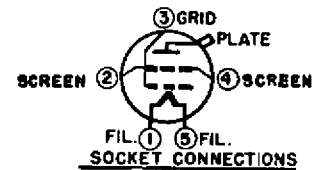
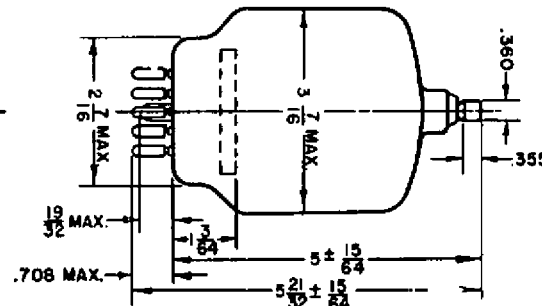
GENERAL CHARACTERISTICS

Electrical Data	Min.	Bogey	Max.	Mechanical Data
Filament Voltage	4.75	5.0	5.25 volts	Mounting Position - vertical, base up or down
Filament Current at Bogey Voltage	13.5	14.1	14.7 amperes	Maximum Plate Temperature 850° C.
Amplification Factor				Required Air Flow to Base 5 cfm
$G_1 - G_2$ Mu at $E_b = 3000$ volts				Required Air Flow to Envelope ² 5 cfm
$E_{c2} = 500$ volts, $I_b = 100$ ma	4.5	5.1	6.0	Maximum Glass Temperature ³
Peak Cathode Current ¹	--	--	2600 ma	at bottom seals 180° C.
Direct Interelectrode Capacitances				at plate seal 220° C.
Grid-Plate	--	--	0.14 uuf	Net Weight, approximate 6.4 ounces
Input	10.7	12.7	14.5 uuf	
Output	3.7	4.5	5.1 uuf	

- 1 Represents maximum usable cathode current (plate current plus current to each grid) for any condition of operation.
- 2 Maximum ratings, frequency above 30 megacycles.
- 3 In cases where the maximum permissible temperatures are likely to be exceeded, as would normally be the case at frequencies above 30 Mc/s with full ratings, a low velocity air flow should be directed on the anode seal and the bottom of the envelope.



GIANT 5 PIN BASE
PINS .187 DIA.



MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

A.F. Power Amplifier and Modulator
Class AB1

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	4000 volts max.
D.C. Grid No. 2 Voltage	600 volts max.
D.C. Grid No. 1 Voltage	—500 volts max.
Maximum Signal D.C. Plate Current ¹	350 ma max.
Maximum Signal Plate Input ²	750 watts max.
Maximum Signal Grid No. 2 Input ³	35 watts max.
Plate Dissipation ⁴	250 watts max.

Typical Operation

Unless otherwise specified, values are for two tubes.

	CCS	CCS	CCS	CCS
D.C. Plate Voltage	1500	2000	2500	3000 volts
D.C. Grid No. 2 Voltage	500	500	500	500 volts
D.C. Grid No. 1 Voltage	—85	—88	—91	—94 volts
Peak A.F. Grid No. 1 to Grid No. 1 Voltage	187	173	178	184 volts
Zero Signal D.C. Plate Current	100	100	100	100 ma
Maximum Signal D.C. Plate Current	300	300	310	310 ma
Effective Load Resistance, Plate to Plate	10000	14500	18000	22000 ohms
Maximum Signal Driving Power ⁵	0	0	0	0 watts
Maximum Signal Power Output	268	390	510	635 watts

A.F. Power Amplifier and Modulator
Class AB2

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	4000 volts max.
D.C. Grid No. 2 Voltage	600 volts max.
D.C. Grid No. 1 Voltage	—500 volts max.
Maximum Signal D.C. Plate Current ¹	350 ma max.
Maximum Signal Plate Input ²	1000 watts max.
Maximum Signal Grid No. 2 Input ³	35 watts max.
Plate Dissipation ⁴	250 watts max.

Typical Operation

Unless otherwise specified, values are for two tubes.

	CCS	CCS	CCS	CCS
D.C. Plate Voltage	1500	2000	2500	3000 volts
D.C. Grid No. 2 Voltage	300	300	300	300 volts
D.C. Grid No. 1 Voltage	—45	—49	—51	—55 volts
Peak A.F. Grid No. 1 to Grid No. 1 Voltage	323	328	306	280 volts
Zero Signal D.C. Plate Current	100	100	100	100 ma
Maximum Signal D.C. Plate Current	694	694	624	550 ma
Zero Signal D.C. Grid No. 2 Current	0	0	0	0 ma
Maximum Signal D.C. Grid No. 2 Current	116	110	88	69 ma
Effective Load Resistance, Plate to Plate	4550	6600	9200	14000 ohms
Maximum Signal Driving Power ⁵	8.0	8.0	5.8	3.8 watts
Maximum Signal Power Output	660	974	1140	1240 watts

R.F. Power Amplifier—Class B

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

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	4000 volts max.
D.C. Grid No. 2 Voltage	600 volts max.
D.C. Plate Current	210 ma max.
Plate Input	400 watts max.
Grid No. 2 Input	23 watts max.
Plate Dissipation	250 watts max.

Typical Operation

	CCS	CCS	CCS
D.C. Plate Voltage	2500	3500	4000 volts
D.C. Grid No. 2 Voltage	500	500	500 volts
D.C. Grid No. 1 Voltage	—84	—80	—100 volts
Peak R.F. Grid No. 1 Voltage	66	61	55.5 volts
D.C. Plate Current	150	125	94 ma
D.C. Grid No. 2 Current	0	0	0 ma
D.C. Grid No. 1 Current, approximate	0	0	0 ma
Driving Power, approximate ⁷	0.75	0.25	0.06 watts
Power Output, approximate	125	125	126 watts

Plate and Screen Grid Modulated R.F. Power Amplifier—Class C Telephony

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

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	3200 volts max.
D.C. Grid No. 2 Voltage	600 volts max.
D.C. Grid No. 1 Voltage	—500 volts max.
D.C. Plate Current	275 ma max.
D.C. Grid No. 1 Current	20 ma max.
Plate Input	825 watts max.
Grid No. 2 Input	35 watts max.
Plate Dissipation	165 watts max.

Typical Operation

	CCS	CCS
D.C. Plate Voltage	2500	3000 volts
D.C. Grid No. 2 Voltage	400	400 volts
D.C. Grid No. 1 Voltage	—200	—310 volts
Peak A.F. Grid No. 2 Voltage	350	350 volts
Peak R.F. Grid No. 1 Voltage	326	484 volts
D.C. Plate Current	200	225 ma
D.C. Grid No. 2 Current	30	30 ma
D.C. Grid No. 1 Current, approximate	9	9 ma
Driving Power, approximate	3.0	4.4 watts
Power Output, approximate	375	510 watts

R.F. Power Amplifier and Oscillator
Class C TelephonyKey-down conditions per tube without amplitude modulation⁶

Maximum Ratings, Absolute Values

	CCS
D.C. Plate Voltage	4000 volts max.
D.C. Grid No. 2 Voltage	600 volts max.
D.C. Grid No. 1 Voltage	—500 volts max.
D.C. Plate Current	350 ma max.
D.C. Grid No. 1 Current	20 ma max.
Plate Input	1250 watts max.
Grid No. 2 Input	35 watts max.
Plate Dissipation	250 watts max.

Typical Operation

	CCS	CCS	CCS
D.C. Plate Voltage	2500	3000	4000 volts
D.C. Grid No. 2 Voltage	500	500	500 volts
D.C. Grid No. 1 Voltage	—150	—180	—225 volts
Peak R.F. Grid No. 1 Voltage	284	327	374 volts
D.C. Plate Current	300	345	312 ma
D.C. Grid No. 2 Current	60	60	45 ma
D.C. Grid No. 1 Current, approximate	9	10	9 ma
Driving Power, approximate	2.4	3.3	3.4 watts
Power Output, approximate	575	800	1000 watts

Maximum ratings apply up to 75 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced according to the tabulation below (other maximum ratings are the same as shown above). Special attention should be given to adequate ventilation of the bulb at these frequencies.

Frequency	75	100	120 megacycles
Percentage of Maximum			
Rated Plate Voltage and Plate Input			
Class B	100	80	60 per cent
Class C Plate Telephony	100	80	60 per cent
Class C Telephony	100	80	60 per cent

Electrical Data and Limits

Characteristic	Conditions	Limits
		Min. Range Max.
Grid Voltage	E _b =600 V, E _c =500 V, I _b =2000 ma	E _g : — — 150 volts
Grid No. 2 Current	E _b =600 V, E _c =500 V, I _b =2000 ma	I _g : — — 1100 ma
Grid No. 1 Current	E _b =600 V, E _c =500 V, I _b =2000 ma	I _g : — — 250 ma
Plate Current	E _b =3000 V, E _c =500 V, E _g =—48 V	I _p : 170 280 360 ma
Plate Current	E _b =3000 V, E _c =500 V, E _g =—75 V	I _p : 60 110 165 ma
Plate Current	E _b =3000 V, E _c =500 V, E _g =—140V	I _p : — — 7 ma
Grid No. 2 Current	E _b =3000 V, E _c =500 V, E _g =—75 V	I _g : — — 4 ma
Power Output	E _b =4000 V, E _c =500 V, E _g =—225V, I _b =250 ma, I _g =45 ma, I _p =9 ma, f=60 megacycles Po: 750	— — watts

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

†The effective resistance per grid No. 1 circuit of the class AB1 stage should be kept below 0.25 megohms.

‡Driver stage should be capable of supplying the No. 1 grids of the class AB2 stage with the specified driving power at low distortion. When a bias supply is used, the DC-resistance of the bias source should not exceed 250 ohms.

§At crest of audio-frequency cycle with modulation factor of 1.0.

¶Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier conditions.

