

AMPEREX TUBE TYPE

6252/AX-9910

6252AX9T

GENERAL DESCRIPTION

The 6252/AX-9910 is a double tetrode intended for use as a Class C amplifier at frequencies up to 600 mc. Total anode dissipation is 20 watts, CCS. Allowable plate input is 90 watts CCS and 112 watts ICAS as a straight through, Class C, R.F. amplifier. The tube has built-in, cross neutralizing capacitors whose value are adjusted to be equal to the direct grid-plate capacities. This insures neutralization over the entire operating band.

GENERAL CHARACTERISTICS

ELECTRICAL DATA

Heater sections connected in series

	Min.	Nominal	Max.	
Heater voltage	11.35	12.6	13.85	volts
Heater current (at 12.6 volts)	0.55	0.65	0.75	amp ←

Heater sections connected in parallel

Heater voltage	5.7	6.3	6.9	volts
Heater current (at 6.3 volts)	1.1	1.3	1.5	amps ←

Amplification factor

$G_2 - G_1 \text{ Mu at } I_b = 20 \text{ ma}$	6.5	8.0	9.5	
Transconductance at $I_b = 20 \text{ ma}$		2500		micromhos

Direct Interelectrode Capacitances

Input (each section)	6.0	6.5	7.0	uuf
Output (each section)	2.0	2.5	3.0	uuf
Input (push-pull)		4.4		uuf
Output (push-pull)		1.6		uuf
Heater-cathode voltage			max. 100	volts

MECHANICAL DATA

Mounting position	any
Temperature of bottom seal	180°C max.
Temperature of anode seal	200°C max.
Temperature of bulb	250°C max.
Base	Standard 7 pin
Plate Connector	Amperex S-3712 or equal
Socket	Johnson 122-205 or equal

Plate connectors providing a high degree of heat transfer by radiation or by conduction should be used. Generally natural cooling is sufficient with a plate voltage of:

- 600 volts at frequencies up to 150 Mc
- 500 volts at frequencies up to 200 Mc
- 300 volts at frequencies up to 470 Mc

Above these limits or with high ambient temperatures it may be necessary to direct an airflow of about 0.5 cu. ft. per min. on top of the bulb to keep the seal temperature within the stated limit.

Net Weight 2 Oz.

6252/AX-9910

R.F. POWER AMPLIFIER AND OSCILLATOR CLASS C - TELEGRAPHY

(Key down conditions per tube without modulation)¹

Maximum Ratings, Absolute Values	CCS	ICAS
D.C. Plate Voltage	600	750 max. volts
D.C. Grid No. 2 Voltage	300	300 max. volts
Grid No. 2 Supply Voltage	600	600 max. volts
D.C. Grid No. 1 Voltage	-200	-200 max. volts
D.C. Cathode Current	2x82	2x82 max. ma
Grid No. 2 Input	2x2	2x2 max. watts
Plate Dissipation	2x10	2x12.5 max. watts
Plate Input	2x45	2x56 max. watts
Grid No. 1 Circuit Resistance With Fixed Bias	50,000	50,000 max. ohms
Grid No. 1 Circuit Resistance With Grid Leak	0.1	0.1 max. megohms
Heater-Cathode Voltage	100	100 max. volts

Typical Operation

	CCS	CCS	CCS	CCS
Frequency	220	220	220	200 Mc.
D.C. Plate Voltage	600	400	300	600 volts
D.C. Grid No. 2 Voltage	250	250	250	250 volts
D.C. Grid No. 1 Voltage	-60	-50	-40	-50 volts
D.C. Plate Current	2x50	2x50	2x50	2x70 ma.
D.C. Grid No. 2 Current	2x4	2x4	2x4.5	2x7 ma.
D.C. Grid No. 1 Current (approx.)	2x0.7	2x0.7	2x0.7	2x2 ma.
Driving Power ¹	1.5	1.0	1.0	2 watts
Power Output	48	30	21	67 watts

Frequency	462	462	462	600 Mc.
D.C. Plate Voltage	400	300	200	400 volts
D.C. Grid No. 2 Voltage	250	250	200	250 volts
D.C. Grid No. 1 Voltage	-30	-40	-30	-30 volts
D.C. Plate Current	2x50	2x50	2x50	2x50 ma.
D.C. Grid No. 2 Current	2x2.5	2x2.5	2x3	2x2.5 ma.
D.C. Grid No. 1 Current (approx.)	2x0.7	2x0.6	2x0.5	2x0.7 ma.
Driving Power	3.0	2.0	1.5	— watts
Power Output (approx.)	25	17	11	20 watts

FREQUENCY TRIPLER - CLASS C - TELEGRAPHY

Maximum Ratings, Absolute Values	CCS	ICAS
D.C. Plate Voltage	600	600 max. volts
D.C. Grid No. 2 Voltage	250	250 max. volts
D.C. Grid No. 1 Voltage	-200	-200 max. volts
D.C. Cathode Current	2x1.5	2x2 max. ma
Grid No. 2 Input	2x1.5	2x2 max. watts
Grid No. 1 Input	2x0.5	2x0.55 max. watts
Plate Input	2x18	2x22.5 max. watts
Plate Dissipation	2x10	2x12.5 max. watts
Grid No. 1 Circuit Resistance With Fixed Bias	50,000	50,000 max. ohms
Grid No. 1 Circuit Resistance With Automatic Bias	0.1	0.1 max. megohms
Heater-Cathode Voltage	100	100 max. volts

Typical Operation

	CCS	CCS	CCS	ICAS
Frequency	66.7/200	133/400	154/462	154/462 Mc.
D.C. Plate Voltage	300	300	350	350 volts
D.C. Grid No. 2 Voltage	250	250	250	250 volts
D.C. Grid No. 1 Voltage	-175	-175	-175	-175 volts
D.C. Plate Current	2x45	2x45	2x45	2x55 ma.
D.C. Grid No. 2 Current	2x3	2x2.8	3.5	3.0 ma.
D.C. Grid No. 1 Current (approx.)	2x1.5	2x1.2	2x1.2	2x1.8 ma.
Driving Power ¹	4	5	5	6 watts
Power Output	10.0	8.0	9.5	11.5 watts

PLATE & SCREEN GRID MODULATED R.F. POWER AMPLIFIER - CLASS C - TELEPHONY

(Carrier conditions with two units in push-pull for use with a maximum modulation factor of 1.0)

Maximum Ratings, Absolute Values	CCS	ICAS
D.C. Plate Voltage	500	600 max. volts
D.C. Grid No. 2 Voltage	300	300 max. volts
Grid No. 2 Supply Voltage	600	600 max. volts
D.C. Grid No. 1 Voltage	-200	-200 max. volts
D.C. Cathode Current	2x68	2x68 max. ma
Grid No. 2 Input	2x1.5	2x1.5 max. watts
Grid No. 1 Input	2x0.5	2x0.55 max. watts
D.C. Grid No. 1 Current	2x2	2x2.2 max. ma
Plate Dissipation	2x6.7	2x8.5 max. watts
Plate Input	2x30	2x36 max. watts
Heater-Cathode Voltage	100	100 max. volts

Typical Operation

	CCS	CCS	CCS	CCS
Frequency	200	200	200	400 Mc.
D.C. Plate Voltage	500	500	300	300 volts
D.C. Grid No. 2 Voltage	250	250	250	250 volts
D.C. Grid No. 1 Voltage	-80	-80	-50	-50 volts
D.C. Plate Current	2x50	2x40	2x40	2x40 ma.
D.C. Grid No. 2 Current	2x6	2x4	2x4	2x3 ma.
D.C. Grid No. 1 Current (approx.)	2x1.5	2x1	2x2	2x1 ma.
Driving Power ¹	4	3	1.5	— watts
Power Output (approx.)	40	31	17	13 watts

A.F. POWER AMPLIFIER AND MODULATOR CLASS B

Maximum Ratings, Absolute Values	CCS
D.C. Plate Voltage	600 max. volts
D.C. Grid No. 2 Voltage	250 max. volts
D.C. Grid No. 1 Voltage	-75 max. volts
Max. Signal D.C. Cathode Current	2x55 max. ma
Grid Resistance ²	50,000 max. ohms
Grid Resistance ⁴	100,000 max. ohms
Heater - Cathode Voltage	100 max. volts
Grid No. 2 Dissipation	2x1.5 max. watts
Plate Dissipation	2x10 max. watts

Typical Operation

	CCS	CCS
D.C. Plate Voltage	300	300 volts dc
Grid No. 2 Voltage	250	250 volts dc
Grid No. 1 Voltage	-26	-25 volts dc
Effective Load Resistance, Plate to Plate	20,000	11,000 ohms
Peak A.F. Grid No. 1 to Grid No. 1 Voltage	52	50 volts
Zero Signal D.C. Plate Current	2x12.5	2x12.5 ma
Max. Signal D.C. Plate Current	2x36.5	2x35 ma
Zero Signal D.C. Grid No. 2 Current	2x0.35	2x0.6 ma
Max. Signal D.C. Grid No. 2 Current	2x0.1	2x0.5 ma
Max. Signal Plate Input	36.5	21 watts
Max. Signal Plate Dissipation	2x6.5	2x3.9 watts
Power Output	23.5	13.2 watts
Distortion	3.5	3.5 %
Efficiency	63.5	63 %

¹ Driving Power includes typical fixed-frequency grid-circuit loss.

² Modulation essentially negative may be used if the positive peak of the envelope does not exceed 115 per cent of the carrier amplitude.

³ Fixed bias

⁴ Cathode bias

RF LINEAR AMPLIFIER - CLASS AB₁
SINGLE SIDEBAND SUPPRESSED CARRIER OPERATION

Both Sections in Parallel

Maximum Ratings, Absolute Values
(Frequencies to 250 Mc/s)

	CCS	ICAS
D-C Plate Voltage	600	750 volts
D-C Grid No. 2 Voltage	300	300 volts
D-C Grid No. 1 Voltage	- 200	- 200 volts
D-C Cathode Current	2 x 82	2 x 82 mA
D-C Grid No. 1 Current	2 x 0.5	2 x 0.55 mA
Plate Input	2 x 45	2 x 56 watts
Grid No. 2 Input	2 x 2	2 x 2 watts
Plate Dissipation	2 x 10	2 x 12.5 watts

Typical Operation
Single Tone and/or Two Tone Operation

	CCS	ICAS
Frequency	30	30 Mc/s
D-C Plate Voltage	600	750 volts
D-C Grid No. 2 Voltage	225	225 volts
D-C Grid No. 1 Voltage	- 26.5	- 26.5 volts
Zero Signal D-C Plate Current	2 x 13.5	2 x 14 mA
Zero Signal D-C Grid No. 2 Current	1	1 mA
Effective RF Load Resistance	4000	4800 ohms

Single Tone Modulation

	CCS	ICAS
Frequency	30	30 Mc/s
Max Signal D-C Plate Current	2 x 43	2 x 44.5 mA
Max Signal D-C Grid No. 2 Current	10	12 mA
Max Signal Grid No. 1 Current	0	0 mA
Max Signal Peak RF Grid Voltage	24	25.5 volts
Max Signal Driving Power	0	0 watts
Max Signal Plate Power Output	33.2	43.2 watts

Two Tone Modulation

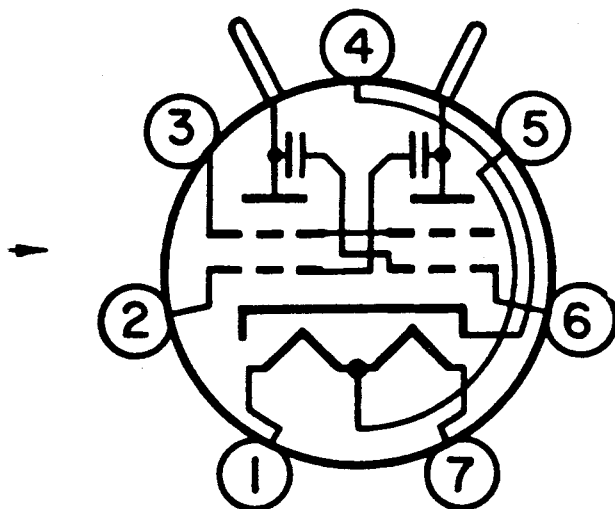
	CCS	ICAS
Frequency	30	30 Mc/s
Average D-C Plate Current	2 x 30.5	2 x 31 mA
Average D-C Grid No. 2 Current	6	6 mA
Average D-C Grid No. 1 Current	0	0 mA
Max Resultant Peak RF Grid Voltage	24	25.5 volts
Average Plate Power Output	16.6	21.6 watts
3rd Order Intermodulation Distortion	30	30 db

ELECTRICAL DATA AND LIMITS

Characteristics	Conditions	Min.	Limits	
				Max.
Plate Current	$E_b = 300\text{ V}$ $E_{c2} = 250\text{ V}$ $E_{c1} = -40\text{ V}$	I_b		1.5 mA
Plate Current	$E_b = 300\text{ V}$ $E_{c2} = 250\text{ V}$ $E_{c1} = -25\text{ V}$	I_b	2	26 mA
Plate Current	$E_b = 300\text{ V}$ $E_{c2} = 250\text{ V}$ $E_{c1} = -12\text{ V}$	I_b	40	80 mA
Grid No. 2 Current	$E_b = 300\text{ V}$ $E_{c2} = 250\text{ V}$ $E_{c1} = -25\text{ V}$	I_{c2}		3.5 mA
Power Output	$E_b = 600\text{ V}$ $E_{c2} = 250\text{ V}$ $E_{c1} = -60\text{ V}$ $I_b = 100\text{ mA}$ $f = 150\text{ Mc}$	P_o	40	watts

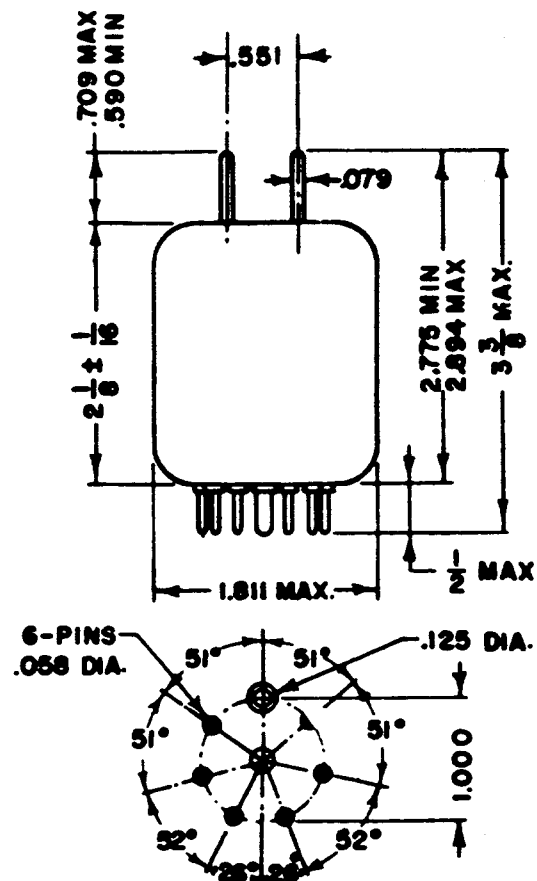
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BOTTOM VIEW

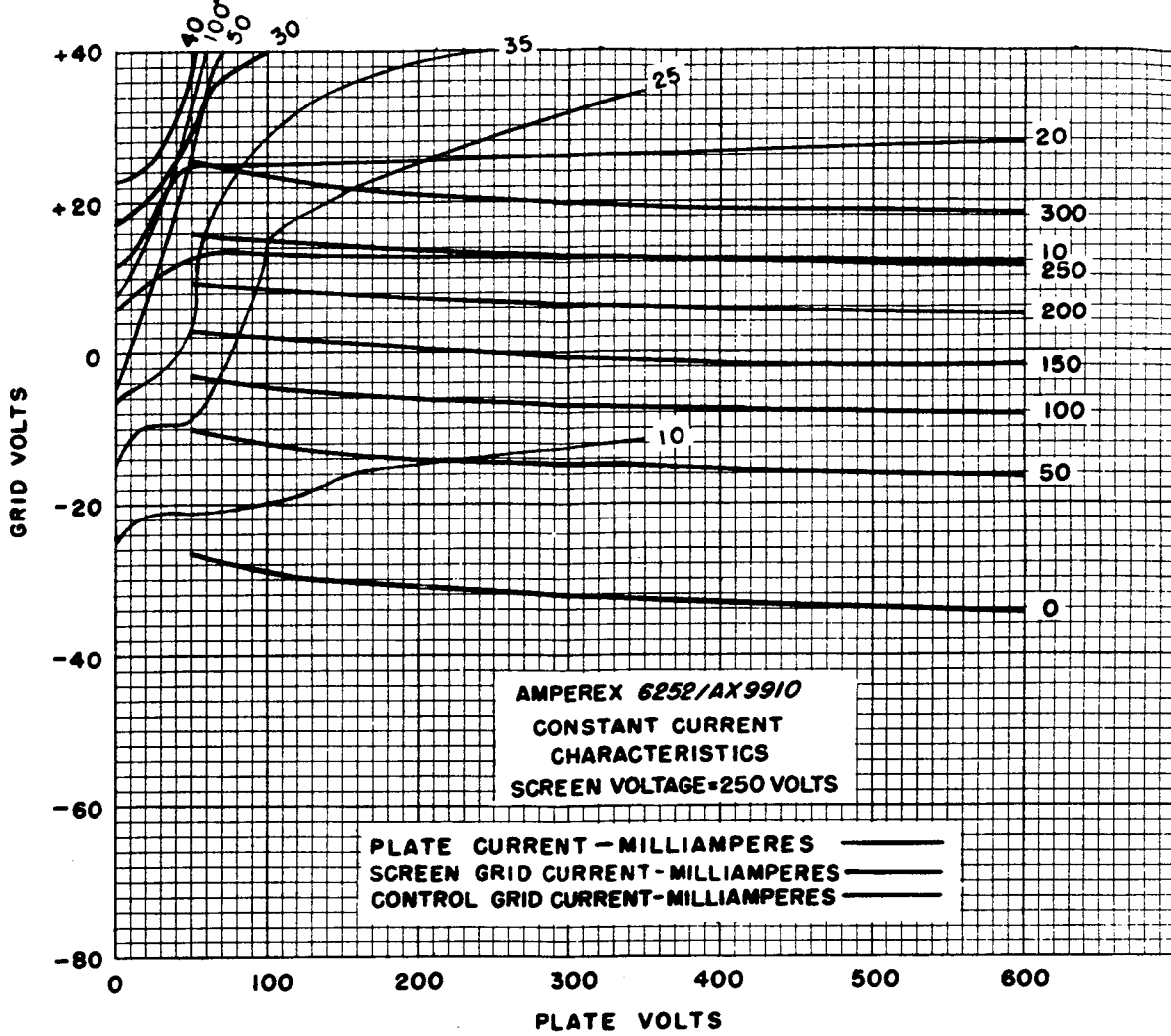


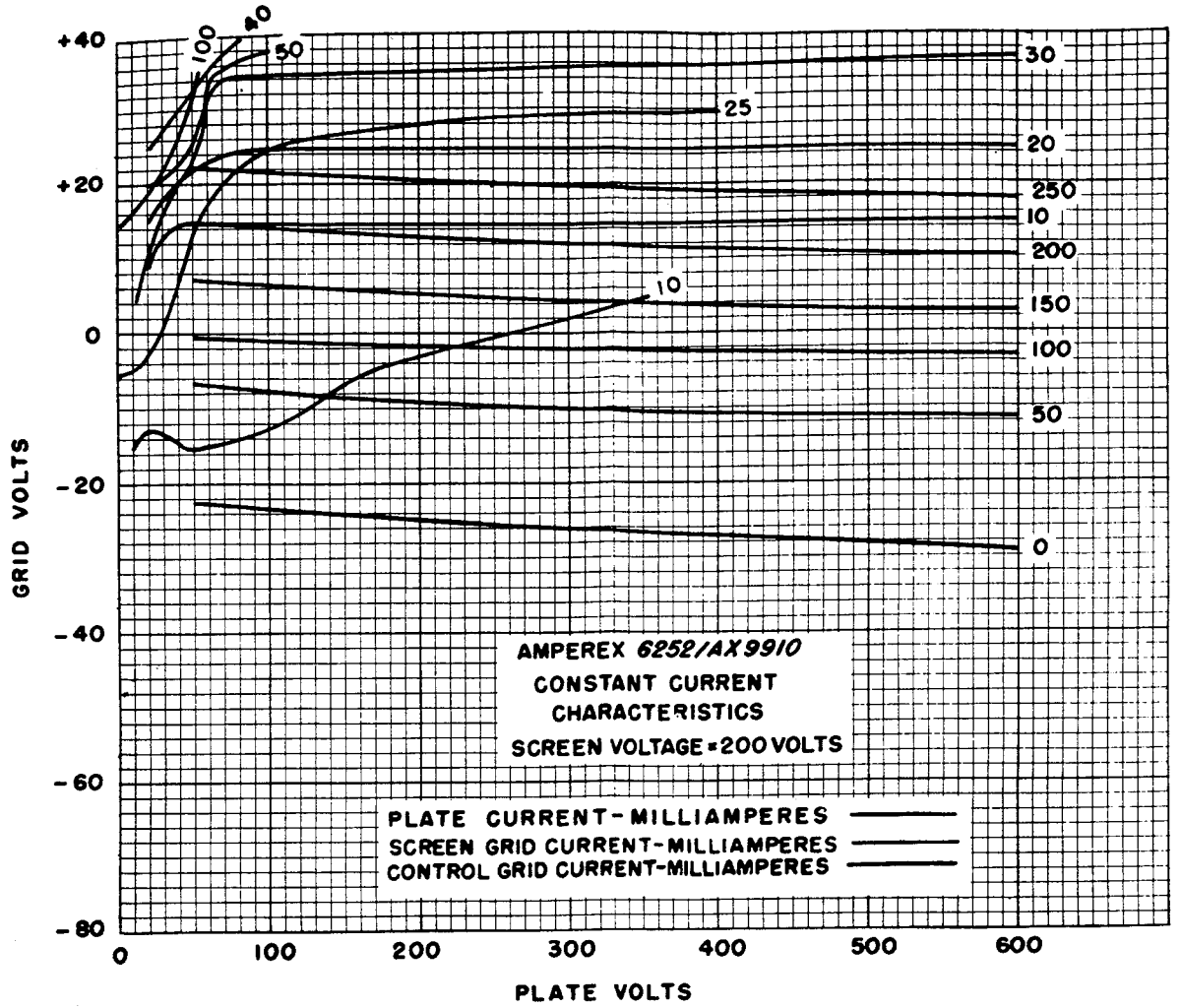
- Pin 1 - Heater
- Pin 2 - Grid No. 1, Section No. 1
- Pin 3 - Grid No. 2, Sections No. 1 and 2
- Pin 4 - Cathode
- Pin 5 - Heater center-tap
- Pin 6 - Grid No. 1, Section No. 2
- Pin 7 - Heater

Top Connections - Plate, Section No. 1
 Plate, Section No. 2

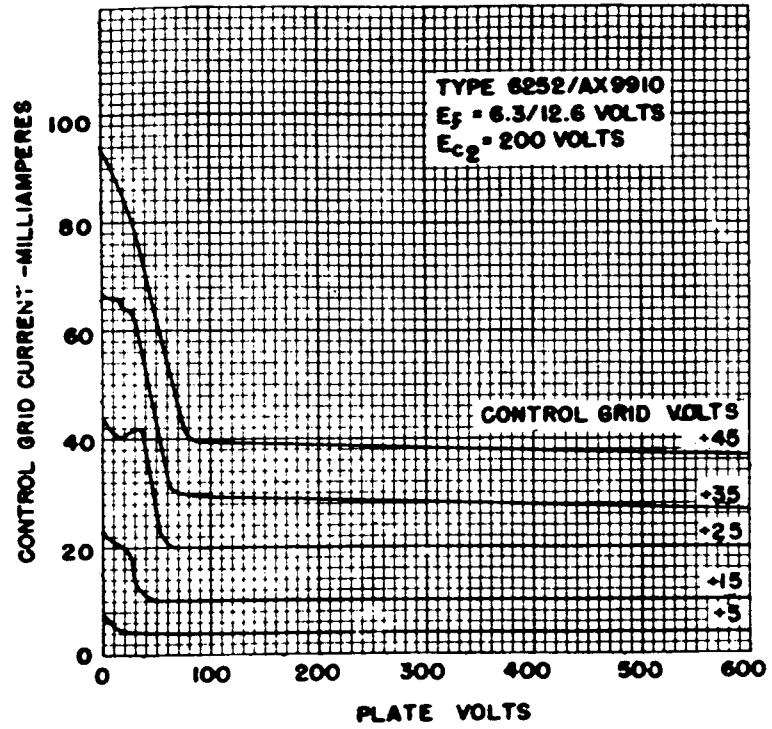


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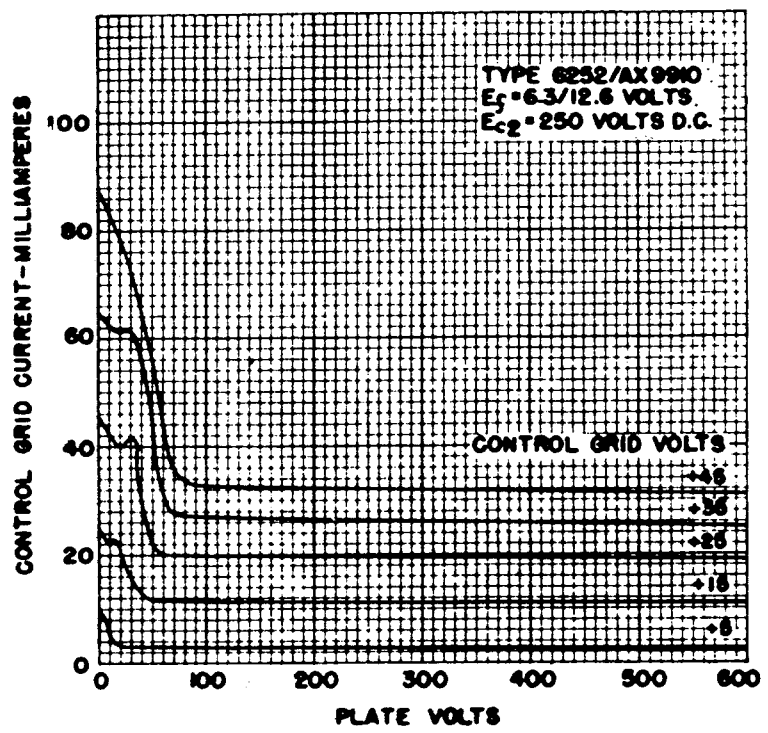




AVERAGE CONTROL GRID CHARACTERISTICS

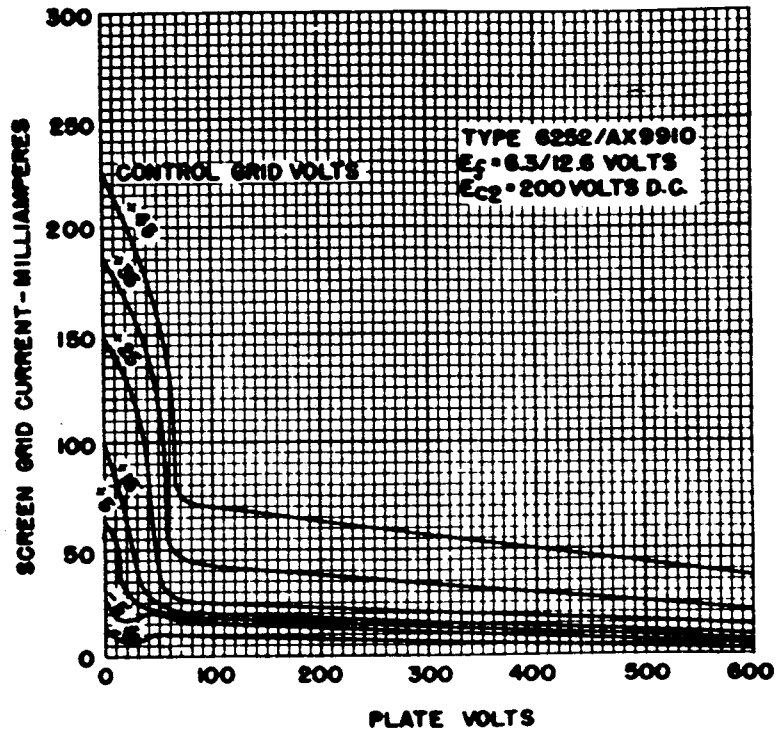


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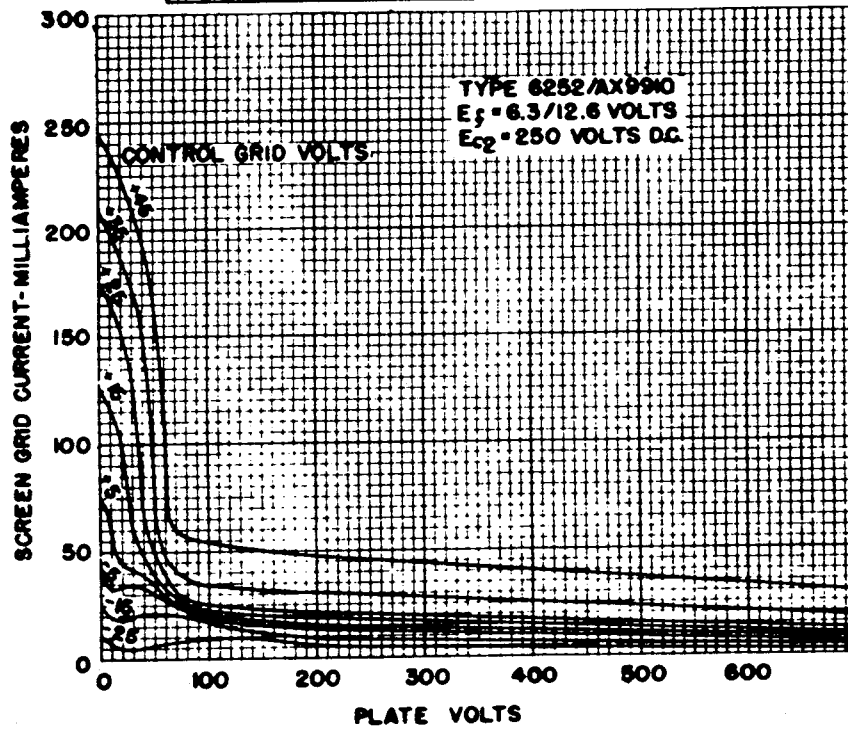


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AVERAGE SCREEN GRID CHARACTERISTICS

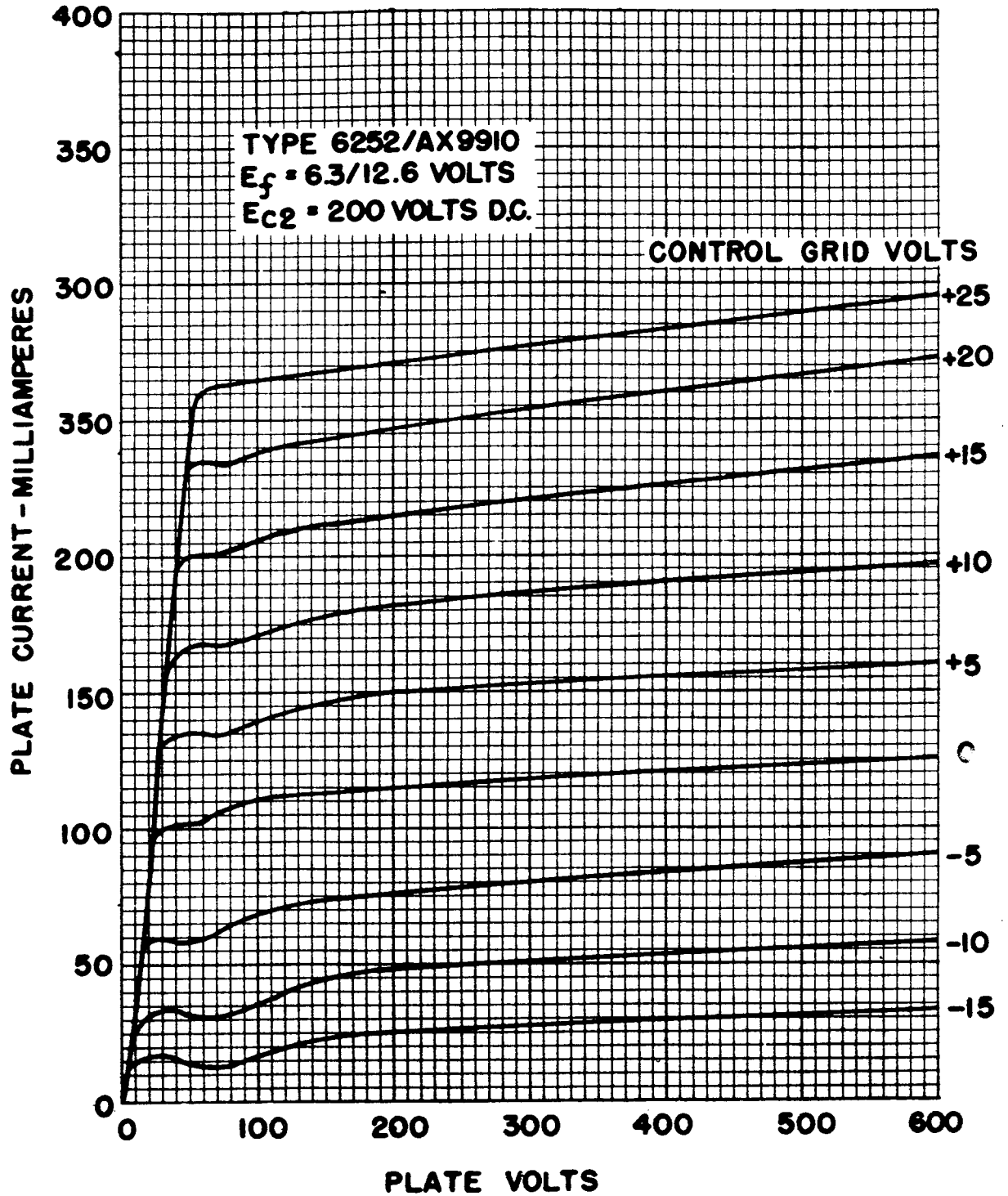


AVERAGE SCREEN GRID CHARACTERISTICS



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AVERAGE PLATE CHARACTERISTICS



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AVERAGE PLATE CHARACTERISTICS

