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BEAM POWER TUBE

Useful at Frequencies up to 125 Mc

GENERAL DATA

Electrical:

Heater, for Unipotential Cathode:

Voltage.	6.3 ± 0.6 ac or dc volts
Current.	0.9 amp

Transconductance (Approx.)

for plate volts = 250, grid-No.2 volts = 250, grid-No.1 volts = -14	6000 μmhos
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Mu-Factor, Grid No.2 to

Grid No.1 for plate volts = 250, grid-No.2 volts = 250, and grid-No.1 volts = -20	8
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Direct Interelectrode Capacitances:

Grid No.1 to plate ⁰	0.2 max. μμf
Grid No.1 to cathode & grid No.3, grid No.2, and heater	12 μμf
Plate to cathode & grid No.3, grid No.2, and heater	7 μμf

Mechanical:

Mounting Position. Any

Maximum Overall Length 5-3/4"

Seated Length. 4-31/32" ± 5/32"

Maximum Diameter 2-1/16"

Weight (Approx.) 3 oz

Bulb ST-16

Cap. Small (JETEC No.C1-1)

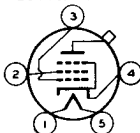
Base Medium-Micanol-Shell Small 5-Pin (JETEC No.A5-11)

Basing Designation for BOTTOM VIEW 5AW

Pin 1-Heater

Pin 2-Grid No.2

Pin 3-Grid No.1



Pin 4-Cathode,

Grid No.3

Pin 5-Heater

Cap-Plate

AF POWER AMPLIFIER & MODULATOR - Class AB₁

Triode Connection--Grid No.2 Connected to Plate

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	400 max.	400 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	125 max.	125 max.	ma
MAX.-SIGNAL DC PLATE PLUS GRID-No.2 INPUT*	50 max.	50 max.	watts
PLATE DISSIPATION PLUS GRID-No.2 INPUT*	25 max.	30 max.	watts

⁰ With external shield JETEC No.312.

♦, •, ** : See next page.

←Indicates a change.



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	CCS [•]	ICAS ^{••}	
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	135 max.	135 max.	volts
Heater positive with respect to cathode	135 max.	135 max.	volts

	CCS [•]	ICAS ^{••}	
Typical Operation:[•]			
<i>Values are for 2 tubes</i>			
DC Plate Voltage	400	400	volts
DC Grid-No.1 (Control-Grid) Voltage.	-45	-45	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage ^{••}	90	90	volts
Zero-Signal DC Plate Current	64	64	ma
Max.-Signal DC Plate Current	140	140	ma
Effective Load Resistance (Plate to Plate)	3000	3000	ohms
Max.-Signal Driving Power (Approx.)	0	0	watts
Max.-Signal Power Output (Approx.)	15	15	watts

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance:^{••}			
With fixed bias.	0.1 max.	0.1 max.	megohm
With cathode bias.	0.5 max.	0.5 max.	megohm

AF POWER AMPLIFIER & MODULATOR - Class AB₁ ♦

Maximum Ratings, Absolute Values:

	CCS [•]	ICAS ^{••}	
DC PLATE VOLTAGE	600 max.	750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.	300 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	120 max.	120 max.	ma
MAX.-SIGNAL DC PLATE INPUT*.	60 max.	90 max.	watts
MAX.-SIGNAL GRID-No.2 INPUT*.	3.5 max.	3.5 max.	watts
PLATE DISSIPATION*.	25 max.	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	135 max.	135 max.	volts
Heater positive with respect to cathode	135 max.	135 max.	volts

♦ Subscript 1 indicates that grid-No.1 current does not flow during any part of the input cycle.

• In class AB₁ service, the normal design limitation is the requirement that grid-No.1 current should not flow. For this reason, the typical operating values shown for both CCS and ICAS conditions are the same.

•• 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.

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Typical Operation:	CCS*			ICAS**	
	Values are for 2 tubes				
DC Plate Voltage	400	500	600	750	volts
DC Grid-No.2 Voltage** .	300	300	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage:					
From fixed-bias source	-30	-32	-34	-35	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage. . .	60	64	68	70	volts
Zero-Signal DC Plate Current.	56	44	36	30	ma
Max.-Signal DC Plate Current.	143	141	139	139	ma
Zero-Signal DC Grid-No.2 Current. . .	2	1	0.6	0.5	ma
Max.-Signal DC Grid-No.2 Current. . .	16	15	15	16	ma
Effective Load Resistance (Plate to plate) . . .	6800	8200	10000	12000	ohms
Max.-Signal Driving Power (Approx.)	0	0	0	0*	watts
Max.-Signal Power Output (Approx.)	36	46	56	72	watts
Maximum Circuit Values (CCS or ICAS):					
Grid-No.1-Circuit Resistance:°°					
With fixed bias.				0.1 max.	megohms
With cathode bias.				Not recommended	
AF POWER AMPLIFIER & MODULATOR - Class AB₂#					
Maximum Ratings, Absolute Values:					
	CCS*			ICAS**	
DC PLATE VOLTAGE	600 max.			750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.			300 max.	volts
MAX.-SIGNAL DC PLATE CURRENT*.	120 max.			120 max.	ma
MAX.-SIGNAL PLATE INPUT*	60 max.			90 max.	watts
MAX.-SIGNAL GRID-No.2 INPUT* .	3.5 max.			3.5 max.	watts
PLATE DISSIPATION*	25 max.			30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:					
Heater negative with respect to cathode	135 max.			135 max.	volts
Heater positive with respect to cathode	135 max.			135 max.	volts
* Subscript 2 indicates that the grid-no.1 current flows during some part of the input cycle.					
* Averaged over any audio-frequency cycle of sine-wave form.					
•, °°, **, °°: See next page.					
← Indicates a change.					



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Typical Operation:	CCS*			ICAS**	
	Values are for 2 tubes				
DC Plate Voltage	400	500	600	750	volts
DC Grid-No.2 Voltage**	300	300	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage:					
From fixed-bias source	-28	-30	-32	-35	volts
Peak AF Grid-No.1-to-Grid-No.1 Voltage.	80	86	90	96	volts
Zero-Signal DC Plate Current.	72	60	48	30	ma
Max.-Signal DC Plate Current.	240	240	200	240	ma
Zero-Signal DC Grid-No.2 Current.	2	0.9	0.7	0.5	ma
Max.-Signal DC Grid-No.2 Current.	20	20	18	20	ma
Effective Load Resistance (Plate to plate)	3700	4600	6900	7300	ohms
Max.-Signal Driving Power (Approx.) [⚡]	0.2	0.2	0.1	0.2	watt
Max.-Signal Power Output (Approx.) [▲]	55	75	80	120	watts

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance: [⊙]	
With fixed bias.	30000 max. ohms
With cathode bias.	Not recommended

RF POWER AMPLIFIER-Class B Telephony

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**
DC PLATE VOLTAGE	600 max.	750 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE	300 max.	300 max. volts
DC PLATE CURRENT	80 max.	90 max. ma
PLATE INPUT.	37.5 max.	45 max. watts
GRID-No.2 INPUT.	2.5 max.	2.5 max. watts

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

⚡ Driver stage should be capable of supplying the specified driving power at low distortion to the No.1 grids of the class AB₂ stage. The effective resistance per grid-No.1 circuit of the class AB₂ stage should be kept below 500 ohms and the effective impedance should not exceed 700 ohms at the highest response frequency.

▲ With zero-impedance driver and perfect regulation, plate-circuit distortion does not exceed 2%. In practice, the regulation of the plate-voltage, grid-No.2 voltage, and grid-No.1 voltage should not be greater than 5%, 5%, and 3%, respectively.

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	CCS*			ICAS**	
PLATE DISSIPATION.	25 max.			30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:					
Heater negative with respect to cathode	135 max.			135 max.	volts
Heater positive with respect to cathode	135 max.			135 max.	volts
Typical Operation:					
DC Plate Voltage	400	500	600	750	volts
DC Grid-No.2 Voltage . .	300	300	300	300	volts
DC Grid-No.1 (Control-Grid) Voltage	-40	-40	-40	-40	volts
Peak RF Grid-No.1 Voltage	40	38	36	35	volts
DC Plate Current	75	70	62.5	60	ma
DC Grid-No.2 Current . .	5	4	4	3	ma
DC Grid-No.1 Current (Approx.)	0	0	0	0	ma
Driving Power (Approx.) [□]	0.4	0.3	0.2	0.2	watt
Power Output (Approx.)	9	11	12.5	15	watts

Maximum Circuit Values (CCS or ICAS):Grid-No.1-Circuit Resistance^{○○} 30000 max. ohms**PLATE-MODULATED RF POWER AMPLIFIER - Class C Telephony**

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

Maximum Ratings, Absolute Values:

	CCS*	ICAS**
DC PLATE VOLTAGE	475 max.	600 max. volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.	300 max. volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE.	-200 max.	-200 max. volts
DC PLATE CURRENT	83 max.	100 max. ma
DC GRID-No.1 CURRENT	5 max.	5 max. ma
PLATE INPUT.	40 max.	60 max. watts
GRID-No.2 INPUT.	2.5 max.	2.5 max. watts
PLATE DISSIPATION.	16.5 max.	25 max. watts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	135 max.	135 max. volts
Heater positive with respect to cathode	135 max.	135 max. volts

* Use of a fixed supply or bypassed cathode resistor is recommended.

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

○○ 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.

* , ** : See next page.

← Indicates a change.



BEAM POWER TUBE

Typical Operation:	CCS*			ICAS**	
DC Plate Voltage . . .	325	400	475	600	volts
DC Grid-No.2 Voltage ^{▲▲}	250	250	250	300	volts
From a series resistor of . . .	12500	25000	28000	37500	ohms
DC Grid-No.1 Voltage ^{††}	-75	-75	-85	-85	volts
From a grid-No.1 resistor of . . .	21400	21400	21200	21200	ohms
Peak RF Grid-No.1 Voltage	95	95	108	107	volts
DC Plate Current . . .	80	80	83	100	ma
DC Grid-No.2 Current .	6	6	8	8	ma
DC Grid-No.1 Current (Approx.)	3.5	3.5	4	4	ma
Driving Power (Approx.)	0.3	0.3	0.4	0.4	watt
Power Output (Approx.)	17	22	28	44	watts

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance[■]. 30000 max. ohms

RF POWER AMPLIFIER & OSCILLATOR-Class C Telegraphy[■] and RF POWER AMPLIFIER-Class C FM Telephony

Maximum Ratings, Absolute Values:

	CCS*	ICAS**	
DC PLATE VOLTAGE	600 max.	750 max.	volts
DC GRID-No.2 (SCREEN) VOLTAGE.	300 max.	300 max.	volts
DC GRID-No.1 (CONTROL-GRID) VOLTAGE	-200 max.	-200 max.	volts
DC PLATE CURRENT	100 max.	100 max.	ma
DC GRID-No.1 CURRENT	5 max.	5 max.	ma
PLATE INPUT.	60 max.	75 max.	watts
GRID-No.2 INPUT.	3.5 max.	3.5 max.	watts
PLATE DISSIPATION.	25 max.	30 max.	watts
PEAK HEATER-CATHODE VOLTAGE:			
Heater negative with respect to cathode	135 max.	135 max.	volts
Heater positive with respect to cathode	135 max.	135 max.	volts

^{▲▲} Obtained preferably from a separate source modulated along with the plate supply, or from the modulated plate supply through a series resistor as indicated.

^{††} Obtained from a grid-No.1 resistor as indicated, or from a combination of grid-No.1 resistor with either fixed supply or cathode resistor.

[■] 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% of the carrier conditions.

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Typical Operation:	CCS*			ICAS**	
DC Plate Voltage . . .	400	500	600	750	volts
DC Grid-No.2 Voltage [■]	250	250	250	250	volts
From a series resistor of . . .	19000	31000	44000	62000	ohms
DC Grid-No.1 Voltage ^{□□}	-45	-45	-45	-45	volts
From a grid-No.1 resistor of . . .	11200	11200	11200	11200	ohms
From a cathode resistor of . . .	400	400	400	400	ohms
Peak RF Grid-No.1 Voltage	65	65	65	65	volts
DC Plate Current . . .	100	100	100	100	ma
DC Grid-No.2 Current .	8	8	8	8	ma
DC Grid-No.1 Current (Approx.)	4	4	4	4	ma
Driving Power (Approx.)	0.3	0.3	0.3	0.3	watt
Power Output (Approx.)	25	32	40	54	watts

Maximum Circuit Values (CCS or ICAS):

Grid-No.1-Circuit Resistance*. 30000 max. ohms

CHARACTERISTICS RANGE VALUES FOR EQUIPMENT DESIGN

	Note	Min.	Max.	
Heater Current	1	0.81	0.99	amp
Direct Interelectrode Capacitances:				
Grid No.1 to plate	2	-	0.2	μ f
Grid No.1 to cathode & grid No.3, grid No.2, and heater	-	10	14	μ f
Plate to cathode & grid No.3, grid No.2, and heater	-	5.3	8.7	μ f
Plate Current (1)	1,3	24	48	ma
Plate Current (2)	1,4	-	0.5	ma
Grid-No.2 Current	1,3	-	4	ma
Power Output	1,5	33	-	watts

Note 1: Heater voltage = 6.3 volts.

Note 2: With external shield JETEC No.312.

Note 3: With dc plate voltage of 600 volts, dc grid-No.2 voltage of 300 volts, and dc grid-No.1 voltage of -29 volts.

Note 4: With dc plate voltage of 600 volts, dc grid-No.2 voltage of 300 volts, and dc grid-No.1 voltage of -100 volts.

Note 5: With dc plate voltage of 600 volts, dc grid-No.2 voltage of 200 volts, dc plate current of 100 ma. max., grid-No.1 current of 5 to 7 ma., grid-No.1 resistor of 10000 ohms \pm 10%, and a frequency of 15 Mc.

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**BEAM POWER TUBE**

- Continuous Commercial Service.
- Intermittent Commercial & Amateur Service.
- When grid No.1 is driven positive, the total dc grid-No.1-circuit resistance should not exceed 30000 ohms. If this value is insufficient to provide adequate bias, the additional required bias must be supplied by a cathode resistor or fixed supply.
- Obtained from a separate source, from the plate-voltage supply with a voltage divider, or through a series resistor as indicated. A series grid-No.2 resistor should be employed only when the 807 is used in a circuit which is not keyed. Grid-No.2 voltage must not exceed 400 volts under key-up conditions.
- Obtained from fixed supply, by grid-No.1 resistor as indicated, by cathode resistor as indicated, or by combination methods.

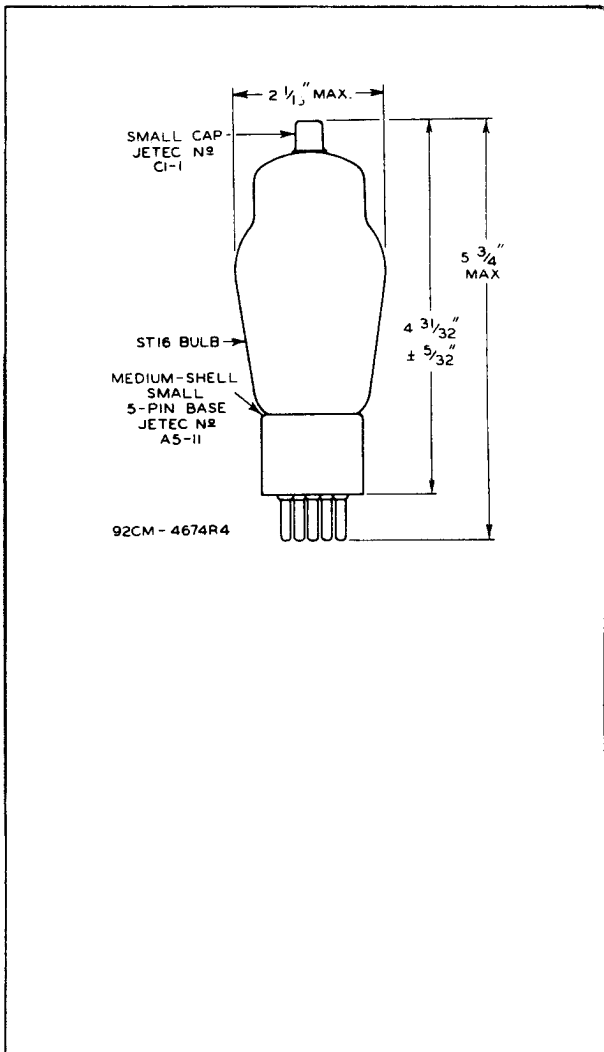
Data on Operating Frequencies for the 807 are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.



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BEAM POWER TUBE

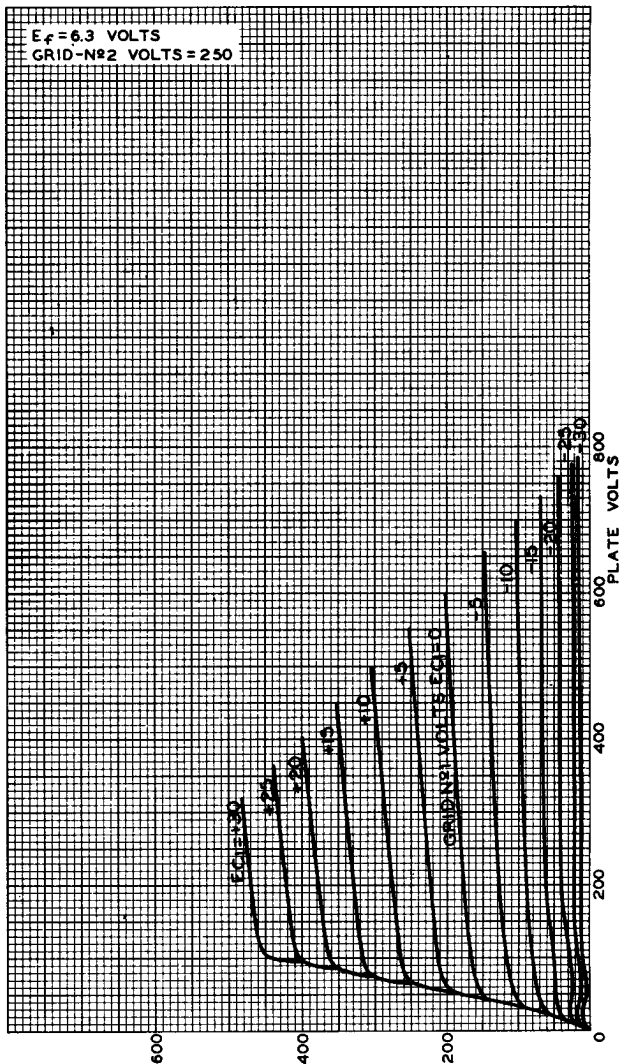


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AVERAGE PLATE CHARACTERISTICS



APR. 7, 1953

 PLATE MILLIAMPERES
 TUBE DIVISION
 RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

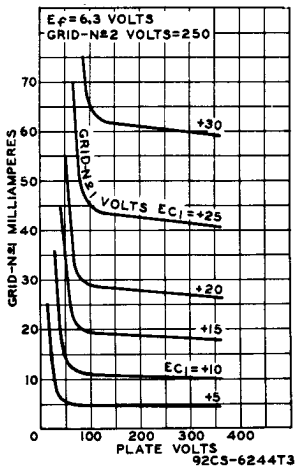
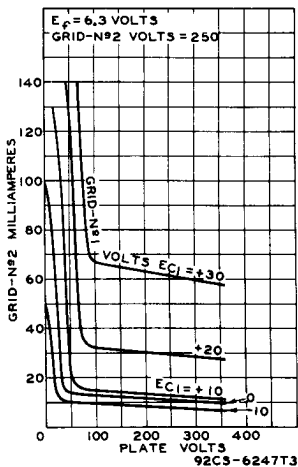
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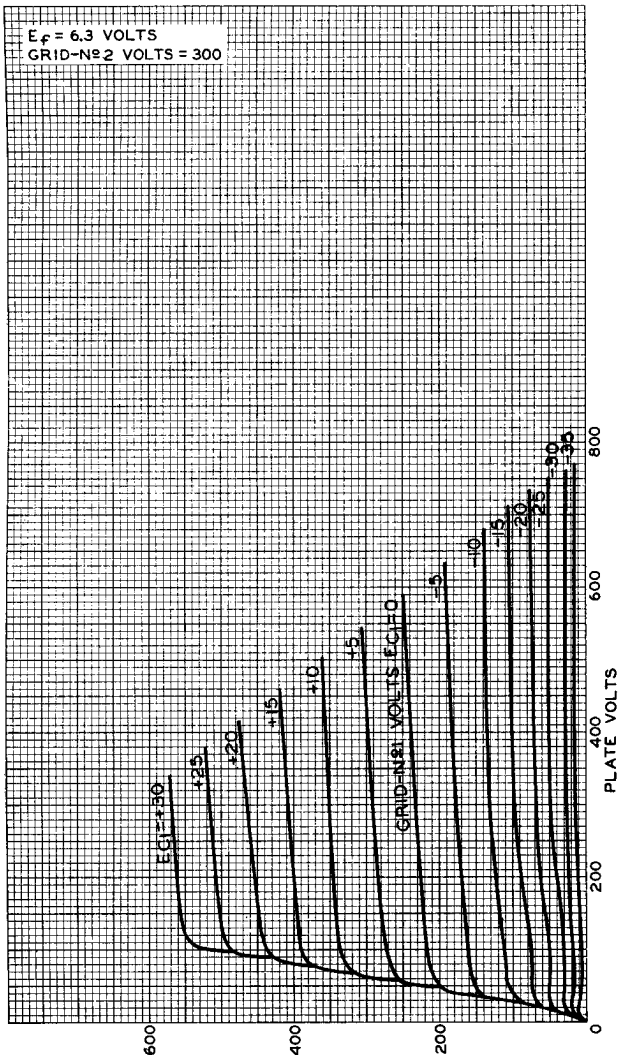
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AVERAGE CHARACTERISTICS





AVERAGE PLATE CHARACTERISTICS

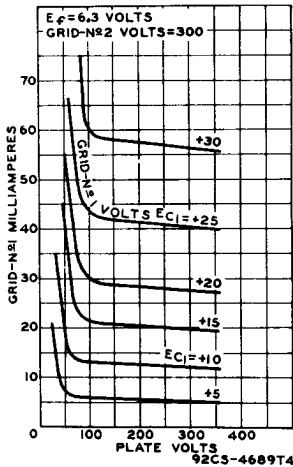
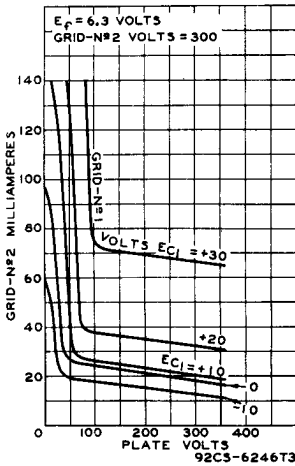




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AVERAGE CHARACTERISTICS



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AVERAGE CHARACTERISTICS TRIODE CONNECTION

$E_f = 6.3$ VOLTS
GRID No2 CONNECTED TO PLATE.

