893A-R

TRANSMITTING TRIODE
FORCED-AIR COOLED

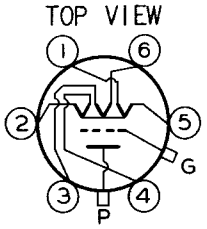
GENERAL DATA

Electrical:

Filament: Tungsten, Three-Section Type
Excitation . . 1φAC, 3φAC, 6φAC, or DC
Voltage per strand . . . . 10 . . . . . volts
Current per terminal . . . 61 . . . . . amp.
(See FILAMENT CONNECTIONS AND EXCITATION CIRCUITS under type 893-A)
Starting – The current per terminal must never exceed 120 amperes, even momentarily.
Amplification Factor 36
Direct Interelectrode Capacitances (Approx.):
Grid to Plate. . . . . 34 . . . . . μμf
Grid to Filament . . . . . 48 . . . . . μμf
Plate to Filament. . . . . 3.5 . . . . . μμf

Physical:

Terminal Connections:
Term.1 – Fil. No.3
Term.2 – Fil. No.2
Term.3 – Fil. No.1
Term.4 – Fil. No.2
Term.5 – Fil. No.3
Term.6 – Fil. No.1



G – Grid Cap Terminal

P – Radiator-cooled Plate Terminal

TERMINAL №5 IS ABOVE GRID ARM

Mounting Position. . . . . Vertical only, glass end up
Overall Length . . . . . 26-7/8" ± 1-1/8"
Greatest Radius. . . . . 8-13/16"
Cap. No.3935
Base (with nozzle for air-cooling of filament seal) No.6628
Radiator . . . . . Integral part of tube
Cooling – A vertical air flow of at least 1800 cu. ft./min. should be delivered by a blower to the cooling radiator. An air flow of about 2 cu. ft./min. should be supplied to the air nozzle in the filament base. Cooling must be adequate to limit the glass temperature to not more than 150°C at the hottest part. Air flow must start before the application of any voltages. The incoming air temperature must not exceed 45°C.

This tube can often be operated with reduced filament voltage as explained on sheet TYPES OF CATHODES in General Section.

A-F POWER AMPLIFIER & MODULATOR – Class B

Maximum Ratings, *Absolute Values*:

D-C PLATE VOLTAGE	20000 max.	volts
MAX.-SIGNAL D-C PLATE CURRENT*	4 max.	amp.
MAX.-SIGNAL PLATE INPUT*	60 max.	kw
PLATE DISSIPATION*	20 max.	kw
RADIATOR TEMPERATURE▲	180 max.	°C

* Averaged over any audio-frequency cycle of sine-wave form.
▲ : See next page.

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TRANSMITTING TRIODE

(continued from preceding page)

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage	12000	15000	18000	volts
D-C Grid Voltage	-260	-350	-450	volts
Peak A-F Grid-to-Grid Voltage	1480	1560	1720	volts
Zero-Sig. D-C Plate Cur.	0.8	0.8	0.8	amp.
Max.-Sig. D-C Plate Cur.	7.0	6.0	5.5	amp.
Effective Load Res. (plate-to-plate)	4000	6000	8000	ohms
Max.-Sig. Driving Power	220	190	140	approx. watts
Max.-Sig. Power Output	52	60	70	approx. kw

R-F POWER AMPLIFIER - Class B Telephony

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

Maximum Ratings, *Absolute Values*:

D-C PLATE VOLTAGE	20000 max.	volts
D-C PLATE CURRENT	2 max.	amp.
PLATE INPUT	32 max.	kw
PLATE DISSIPATION	20 max.	kw
RADIATOR TEMPERATURE▲	180 max.	°C

Typical Operation

D-C Plate Voltage	12000	15000	15000	volts
D-C Grid Voltage	-250	-340	-340	volts
Peak R-F Grid Voltage	350	395	450	volts
D-C Plate Current	1.5	1.5	2.0	amp.
Driving Power #**	130	150	200	approx. watts
Power Output #	6	7.5	10	approx. kw

** At crest of a-f cycle with modulation factor of 1.0.

PLATE-MODULATED R-F POWER AMPLIFIER - Class C Telephony

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

Maximum Ratings, *Absolute Values*:

D-C PLATE VOLTAGE	12000 max.	volts
D-C GRID VOLTAGE	-3000 max.	volts
D-C PLATE CURRENT	2 max.	amp.
D-C GRID CURRENT	0.4 max.	amp.
PLATE INPUT	24 max.	kw
PLATE DISSIPATION	12 max.	kw
RADIATOR TEMPERATURE▲	180 max.	°C

Typical Operation:

D-C Plate Voltage	10000	10000	12000	volts
D-C Grid Voltage	-800	-800	-1000	volts

▲, #: See next page.

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(continued from preceding page)

Peak R-F Grid Voltage . .	1200	1280	1500	. . . volts
D-C Plate Current	1.5	2.0	2.0	. . . amp.
D-C Grid Current #	0.10	0.16	0.14	approx. amp.
Driving Power #	120	210	210	approx. watts
Power Output.	11	15	18	approx. kw

R-F POWER AMPLIFIER & OSCILLATOR – Class C Telegraphy

*Key-down conditions per tube without modulation***

Maximum Ratings, ***Absolute Values*****:**

D-C PLATE VOLTAGE	20000 max.	.	volts
D-C GRID VOLTAGE.	-3000 max.	.	volts
D-C PLATE CURRENT	4 max.	.	amp.
D-C GRID CURRENT.	0.4 max.	.	amp.
PLATE INPUT	70 max.	. .	kw
PLATE DISSIPATION	20 max.	. .	kw
RADIATOR TEMPERATURE▲	180 max.	. .	°C

Typical Operation:

D-C Plate Voltage	12000	15000	18000	. . . volts
D-C Grid Voltage.	-800	-900	-1000	. . . volts
Peak R-F Grid Voltage . .	1430	1520	1630	. . . volts
D-C Plate Current	3.5	3.6	3.6	. . . amp.
D-C Grid Current #	0.26	0.25	0.21	approx. amp.
Driving Power #	360	370	340	approx. watts
Power Output.	30	40	50	approx. kw

\# Subject to wide variations as explained on sheet TUBE RATINGS in General Section.

** Modulation essentially negative may be used if the positive peak of the audio frequency envelope does not exceed 115% of the carrier conditions.

▲ Measured in thermometer well.

Data on operating frequencies for the 893A-R are given on the sheet TRANS. TUBE RATINGS vs FREQUENCY.

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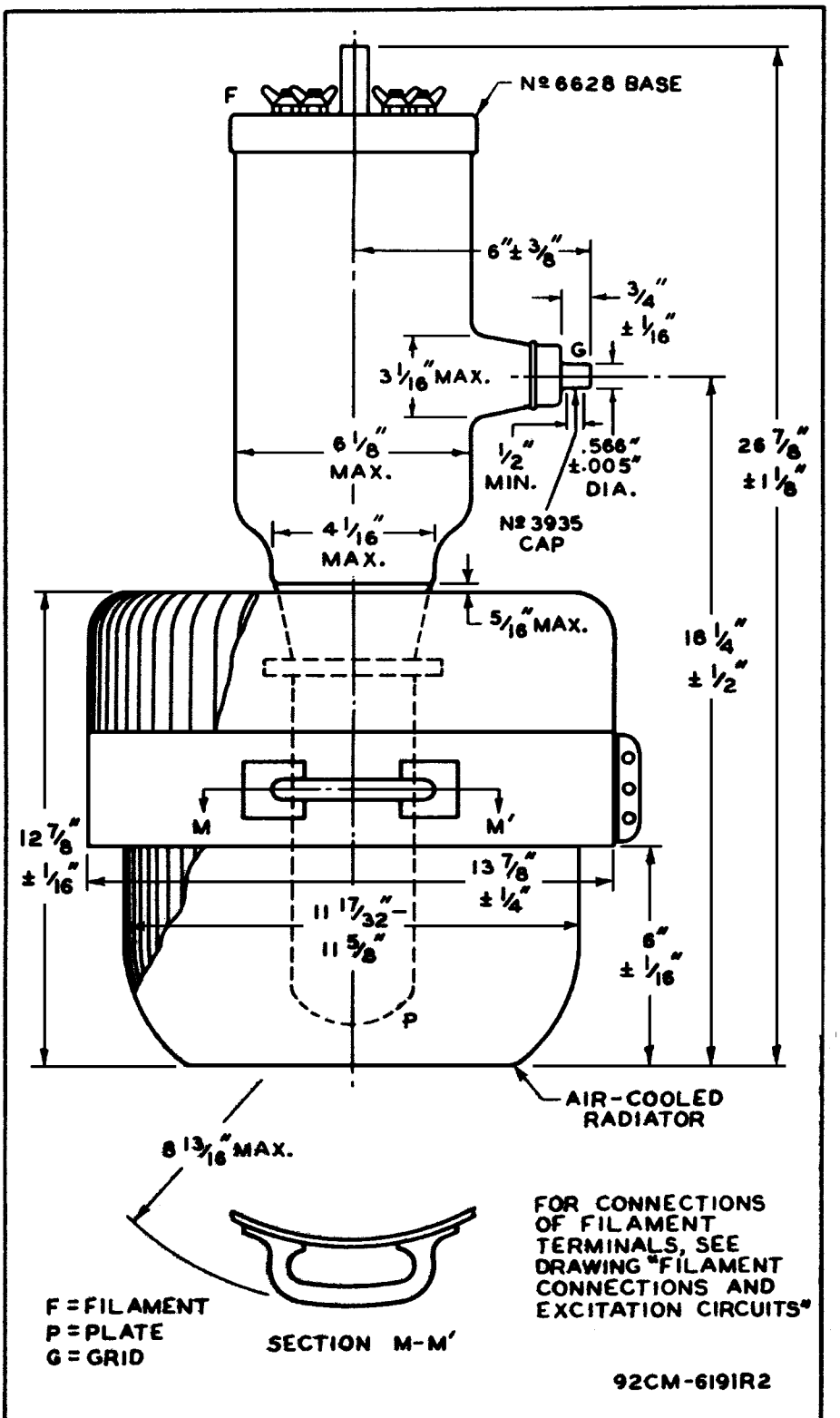
TRANSMITTING TRIODE



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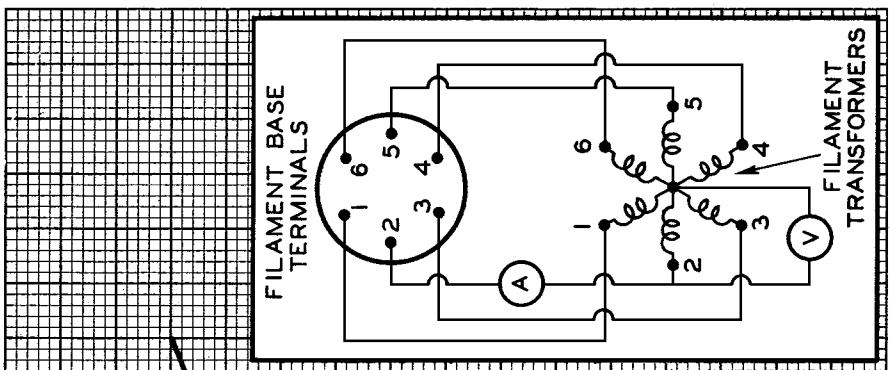
AVERAGE FILAMENT CHARACTERISTIC



COLD RESISTANCE OF FILAMENT BETWEEN ANY TERMINAL AND NEUTRAL = 0.014 OHM

FILAMENT VOLTS A.C. – ANY TERMINAL TO NEUTRAL

0 2 4 6 8 10 12

FILAMENT AMPERES PER TERMINAL

10 20 30 40 50 60 70

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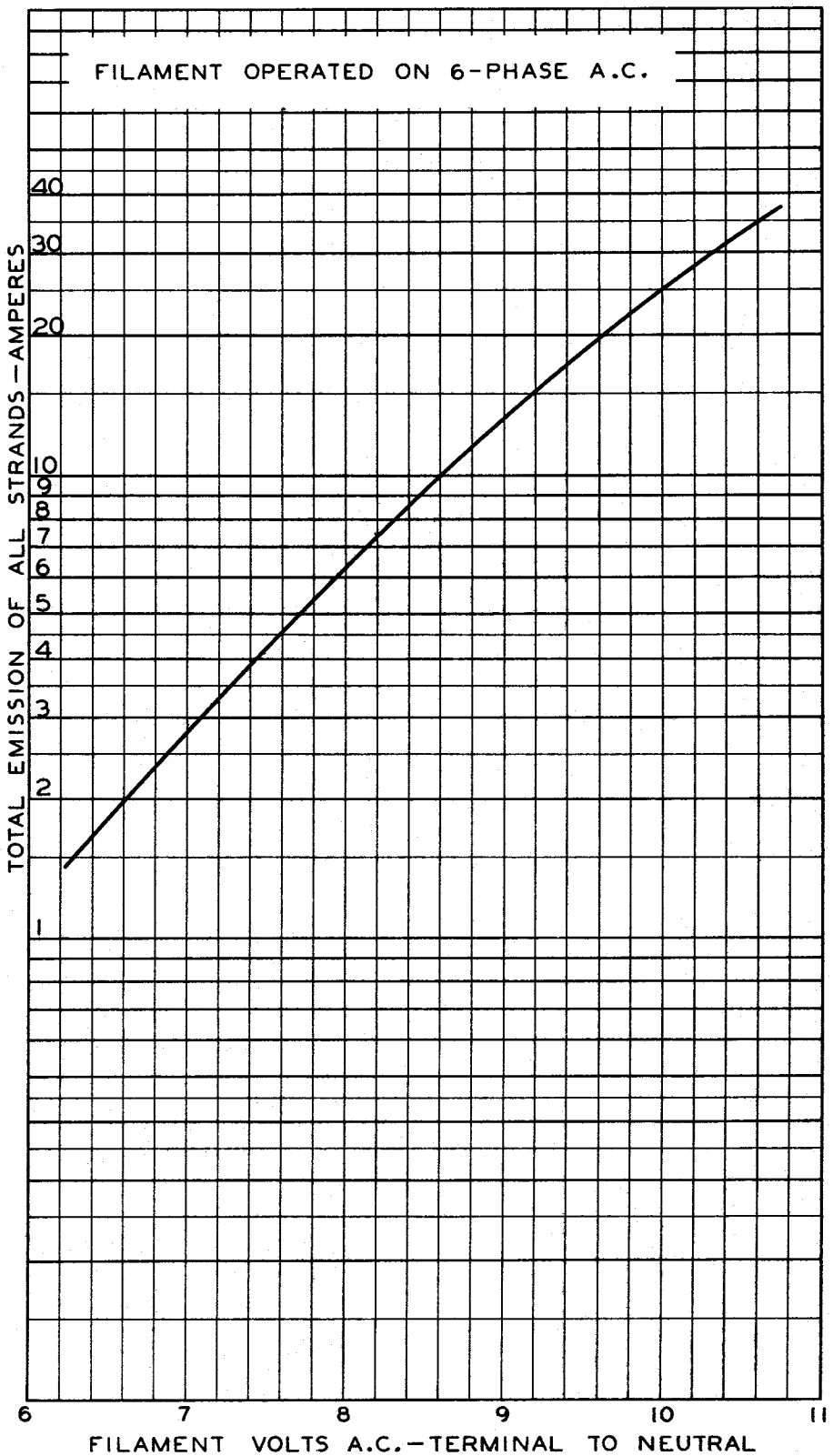
AVERAGE FILAMENT-EMISSION CHARACTERISTIC



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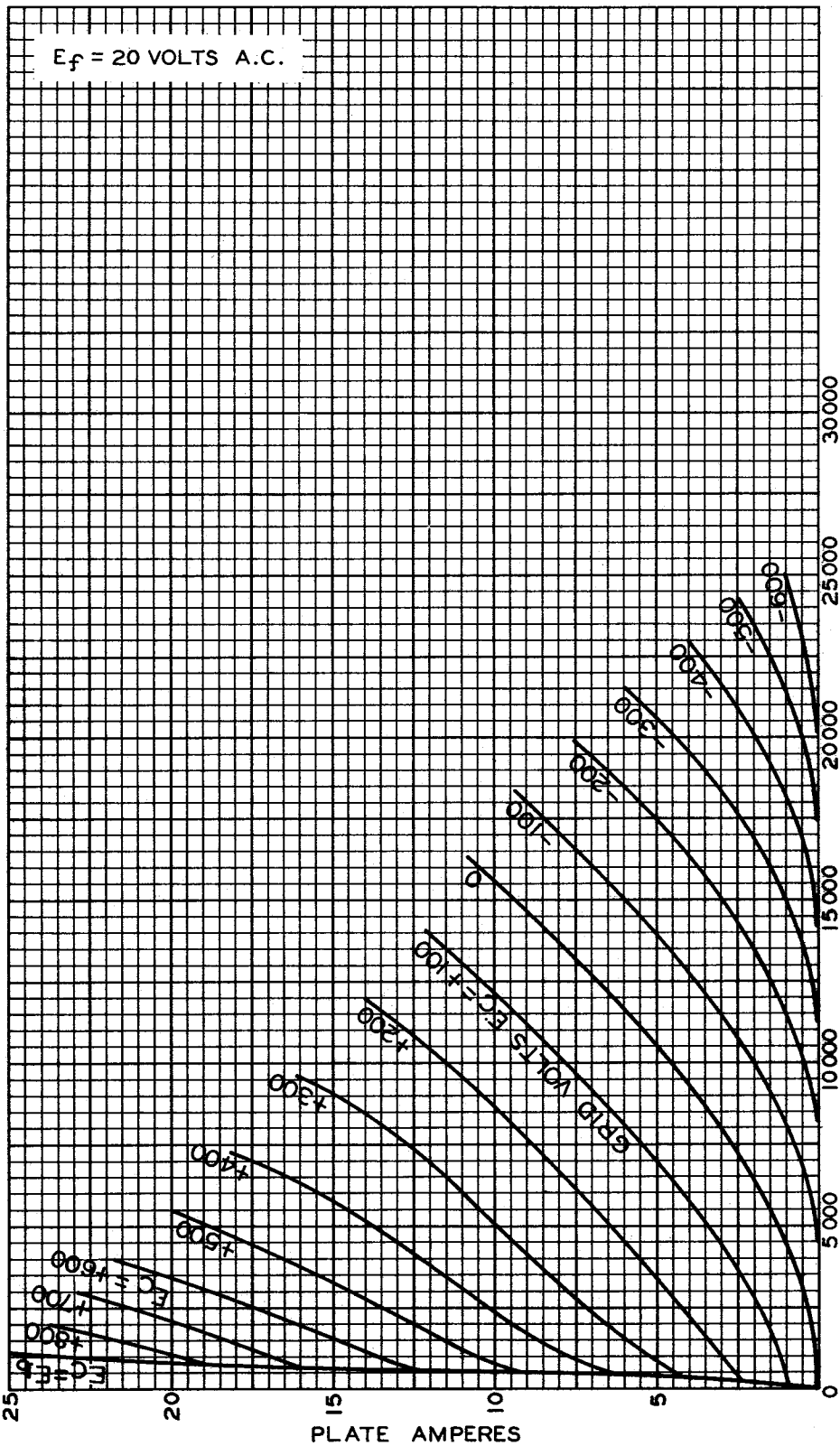
AVERAGE PLATE CHARACTERISTICS



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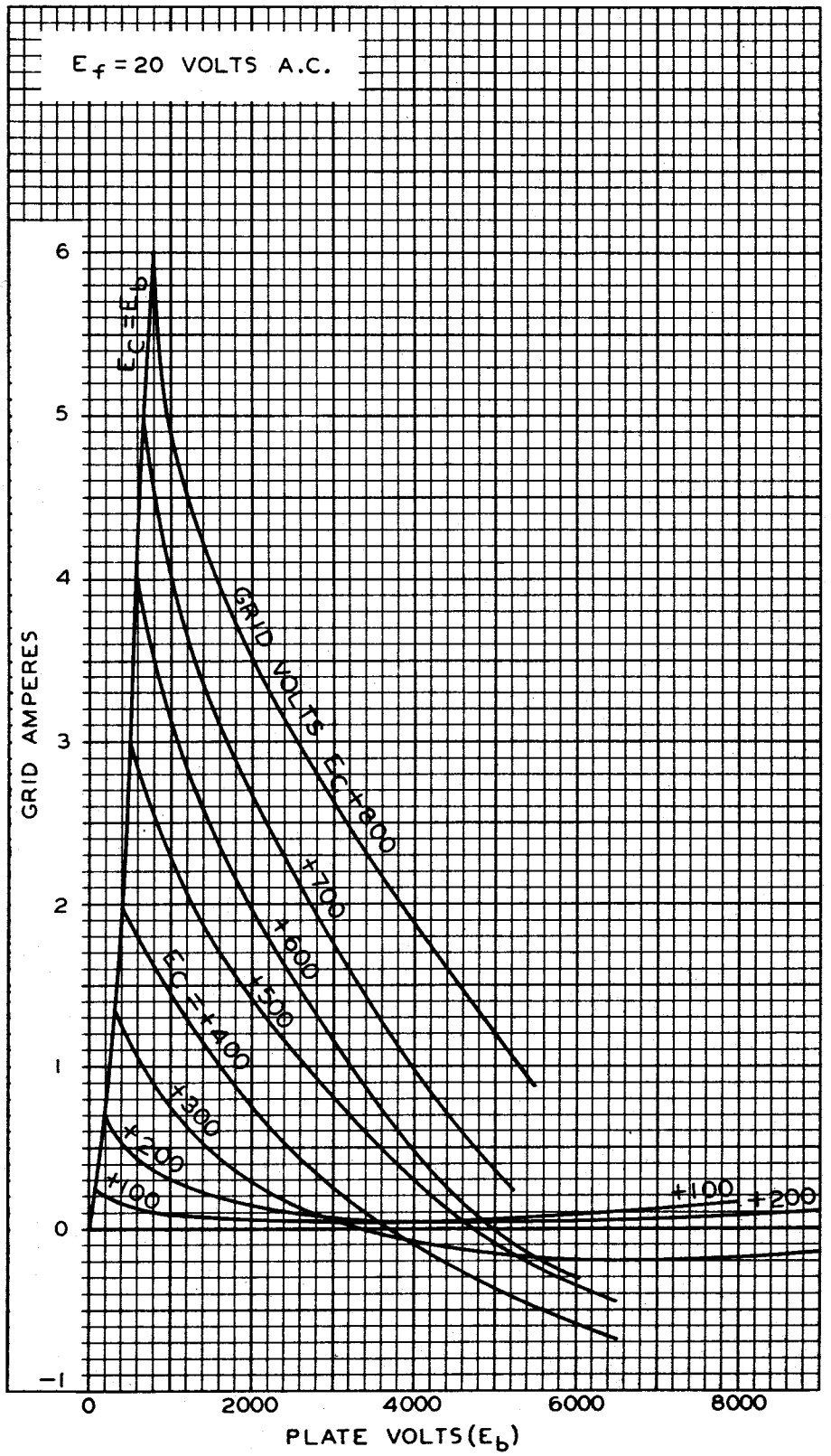
TYPICAL CHARACTERISTICS



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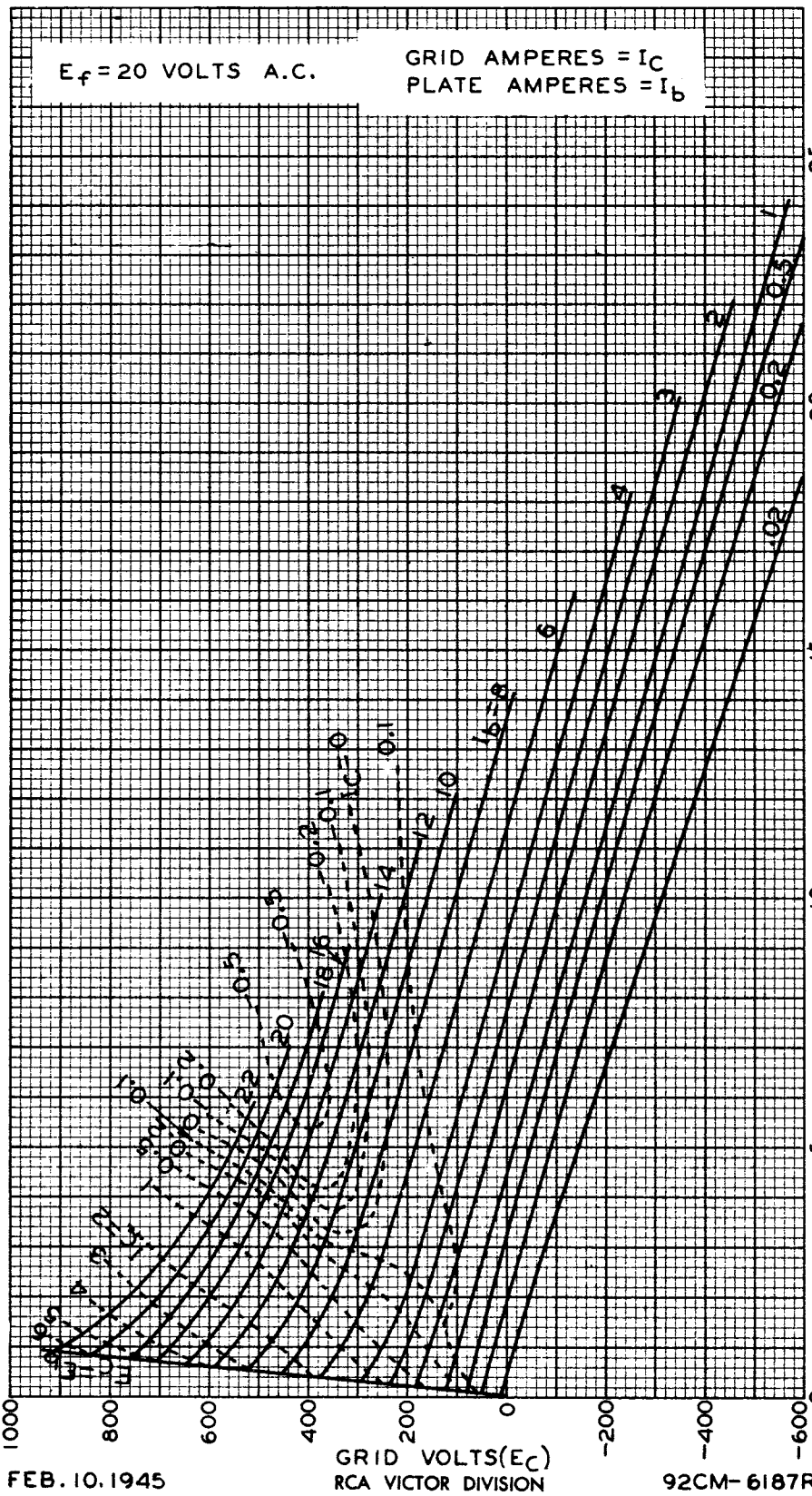
AVERAGE CONSTANT-CURRENT CHARACTERISTICS



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