893-A

TRANSMITTING TRIODE

WATER & 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 this type)
Starting – The current per terminal must never exceed 120 amperes, even momentarily.

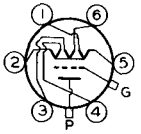
Amplification Factor 36

Direct Interelectrode Capacitances (Approx.):
Grid to Plate. . . . . 33 . . . . . μμf
Grid to Filament . . . . . 48 . . . . . μμf
Plate to Filament. . . . . 3.2 . . . . . 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

TOP VIEW



G – Grid Cap Terminal

P – Water-cooled Plate Terminal

TERMINAL No5 IS ABOVE GRID ARM

Mounting Position. . . . . Vertical only, glass end up
Overall Length . . . . . 25-5/8" ± 1-1/8"
Greatest Radius. . . . . 6" ± 3/8"
Cap. No.3935
Base (with nozzle for air-cooling of filament seal) No.6628
Water Jacket . . . . . Type UT-1290-A
Gasket . . . . . RCA Stock No.17880

Cooling – *Water flow* of 8 to 15 gallons per minute must start before application of any voltages and continue for at least 2 minutes after removal of voltages. Water temperature must not exceed 70°C under any conditions of operation.
Air flow of 2 cubic feet per minute in nozzle of filament base before application of any voltages is required to limit temperature of filament seal to 150°C.

This tube can often be operated at 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

Typical Operation:

Unless otherwise specified, values are for 2 tubes

D-C Plate Voltage. . . . . 12000 15000 18000 . . . volts

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

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(continued from preceding page)

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.-Signal Driving Power	220	190	140	approx. watts
Max.-Signal 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

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

Typical Operation:

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

: See next page.

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(continued from preceding page)

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

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.

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

CURVES
FOR THE 893-A ARE THE SAME AS
THOSE FOR TYPE 893A-R

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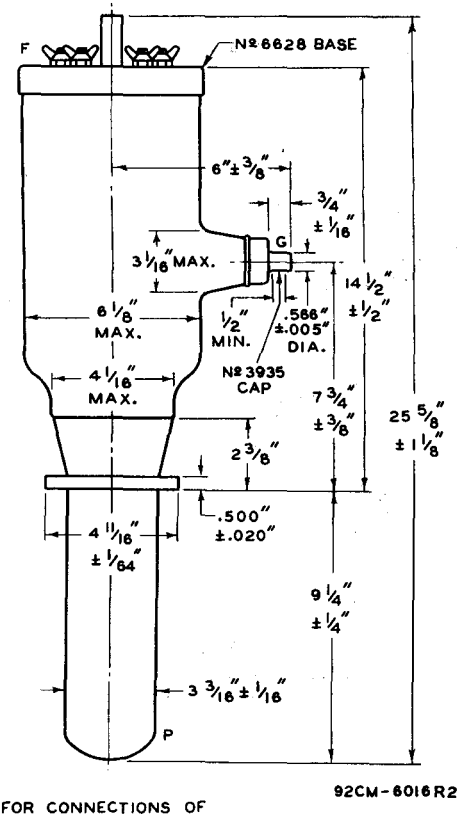

FOR CONNECTIONS OF FILAMENT TERMINALS SEE DRAWING FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

F = FILAMENT
P = PLATE
G = GRID

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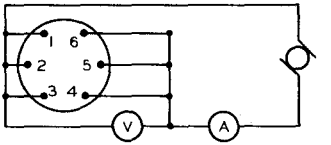
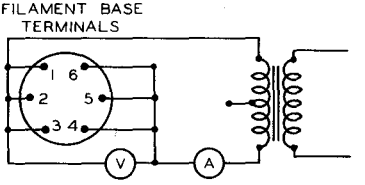
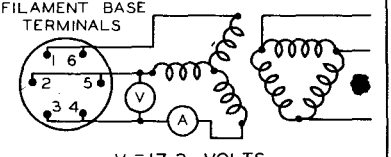
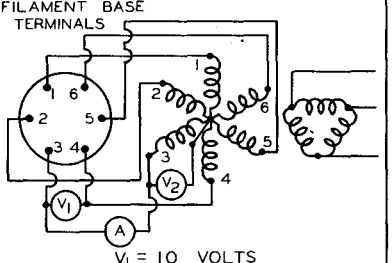
FILAMENT CONNECTIONS AND EXCITATION CIRCUITS

D-C FILAMENT EXCITATION	 V = 20 VOLTS A = 183 AMP.
SINGLE-PHASE A-C FILAMENT EXCITATION	 V = 20 VOLTS A = 183 AMP.
THREE-PHASE A-C FILAMENT EXCITATION	 V = 17.3 VOLTS A = 122 AMP.
SIX-PHASE A-C FILAMENT EXCITATION NOTE: TERMINALS MUST BE CONNECTED IN CORRECT PHASE RELATION AS SHOWN	 V_1 = 10 VOLTS V_2 = 10 VOLTS A = 61 AMP.