GENERAL ELECTRIC

Transmitting Tube GL-893 - - Description and Rating

Technical Information

The GL-893 is a three-electrode, water-cooled vacuum tube designed for use as a radio-frequency amplifier, oscillator, or Class B modulator. A particular advantage of this tube is the unique construction of the filament which permits operation from single-phase, three-phase, or six-phase alternating current, or from direct current, for all classes of service.

CHARACTERISTICS AND RATINGS

ELECTRICAL

Filament Voltage, per strand		10	Volts
Filament Current, per terminal		61	Amperes
Amplification Factor	E_b = 15 kv, I_b = 1.0 amp	36	
Grid-plate Transconductance	E_c = -300, E_f = 20 a-c	16000	Micromhos
Direct Interelectrode Capacitances:			
Grid-plate		33	μμf
Input		48	μμf
Output		3.2	μμf
Frequency for Maximum Ratings		5	Megacycles

MECHANICAL

Gasket, Cat. No. 5182028P2	
Type of Cooling	Water and Forced Air
Water Flow, gallons per minute	8-15
Air Flow, cubic feet per minute	
To Stem	2
Net Weight, approx	12 lb
Shipping Weight, approx	27 lb
Installation and Operation	GEH-1152

MAXIMUM RATINGS AND TYPICAL OPERATING CONDITIONS

CLASS B A-F POWER AMPLIFIER (TWO TUBES)

D-c Plate Voltage	12000	15000	18000	20000 max	Volts
Max Signal Plate Current, per tube*				4.0 max	Amperes
D-c Max Signal Plate Input, per tube*				60 max	Kilowatts
Plate Dissipation, per tube*				20 max	Kilowatts
D-c Grid Voltage	-260	-350	-450		Volts
Peak A-f Grid Input Voltage	1480	1560	1720		Volts
Zero Signal Plate Current	0.8	0.8	0.8		Ampere
Max Signal Plate Current	7.0	6.0	5.5		Amperes
Max Signal Plate Input*	84.0	90.0	99.0		Kilowatts
Max Signal Driving Power, approx	220	190	140		Watts
Effective Load Resistance, Plate-to-plate	4000	6000	8000		Ohms
Max Signal Plate Power Output	52.0	60.0	70.0		Kilowatts

from RMA release #335, April 26, 1943

CLASS B R-F POWER AMPLIFIER

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

D-c Plate Voltage	12000	15000	15000	20000 max	Volts
D-c Grid Voltage	-250	-340	-340		Volts
D-c Plate Current	1.5	1.5	2.0	2.0 max	Amperes
Plate Input				32 max	Kilowatts
Plate Dissipation				20 max	Kilowatts
Peak R-f Grid Input Voltage	700	790	900		Volts
Driving Power, approx **	130	150	200		Watts
Plate Power Output	6	7.5	10		Kilowatts

CLASS C R-F POWER AMPLIFIER AND OSCILLATOR - PLATE-MODULATED

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

D-c Plate Voltage	10000	10000	12000	12000 max	Volts
D-c Grid Voltage	-800	-800	-1000	-3000 max	Volts
D-c Plate Current	1.5	2.0	2.0	2.0 max	Amperes
D-c Grid Current, approx	0.10	0.16	0.14	0.4 max	Amperes
Plate Input				24 max	Kilowatts
Plate Dissipation				12	Kilowatts
Peak R-f Grid Input Voltage, approx	1200	1280	1500		Volts
Driving Power, approx	120	210	210		Watts
Plate Power Output	11	15	18		Kilowatts

CLASS C R-F POWER AMPLIFIER AND OSCILLATOR

Key-down conditions per tube without modulation #

D-c Plate Voltage	12000	15000	18000	20000 max	Volts
D-c Grid Voltage	-800	-900	-1000	-3000 max	Volts
D-c Plate Current	3.5	3.6	3.6	4.0 max	Amperes
D-c Grid Current, approx	0.26	0.25	0.21	0.4 max	Amperes
Plate Input				70 max	Kilowatts
Plate Dissipation				20 max	Kilowatts
Peak R-f Grid Input Voltage, approx	1430	1520	1630		Volts
Driving Power, approx	360	370	340		Watts
Plate Power Output	30	40	50		Kilowatts

* Averaged over any audio-frequency cycle.

** At crest of audio-frequency cycle.

\# Modulation, essentially negative, may be used if the positive peak of the audio-frequency envelope does not exceed 115 per cent of the carrier conditions.

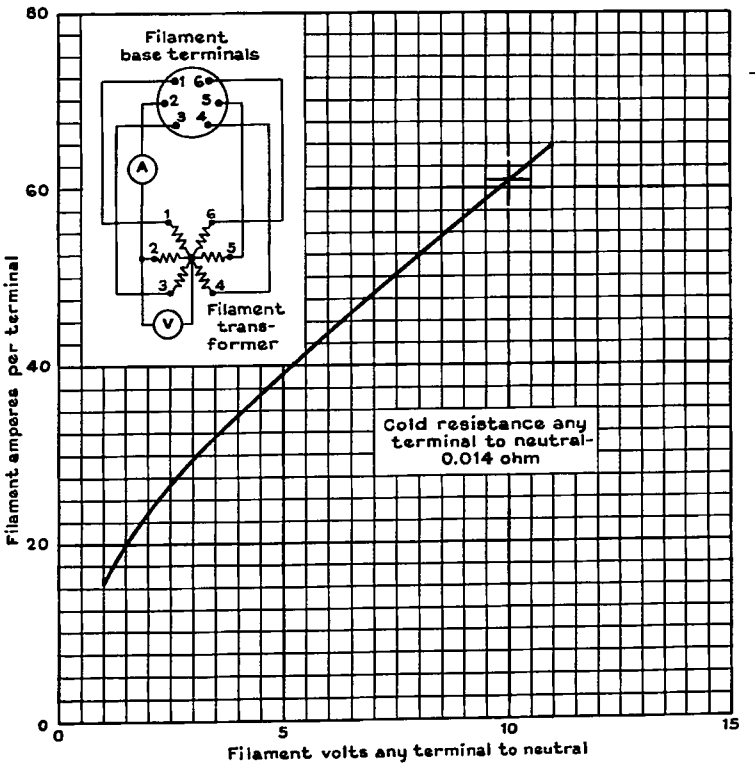
GL-893 can be operated at maximum ratings in all classes of service at frequencies as high as 5 megacycles. The tube may be operated at higher frequencies provided the maximum values of plate voltage and power input are reduced as the frequency is raised (Other maximum ratings are the same as shown under CHARACTERISTICS and RATINGS.) The tabulation below shows the highest percentage of maximum plate voltage and power input that can be used up to 40 mc for the various classes of service. Special attention should be given to adequate ventilation of the bulb at these frequencies.

FREQUENCY	5	20	40	Mc
MAXIMUM PERMISSIBLE PERCENTAGE OF MAXIMUM RATED PLATE VOLTAGE AND PLATE INPUT:				
Class B R-f				
Percentage Plate Voltage	100	85	65	
Percentage Plate Input	100	82	73	
Class C Plate Modulated				
Percentage Plate Voltage	100	80	64	
Percentage Plate Input	100	75	64	
Class C				
Percentage Plate Voltage	100	80	60	
Percentage Plate Input	100	66	50	

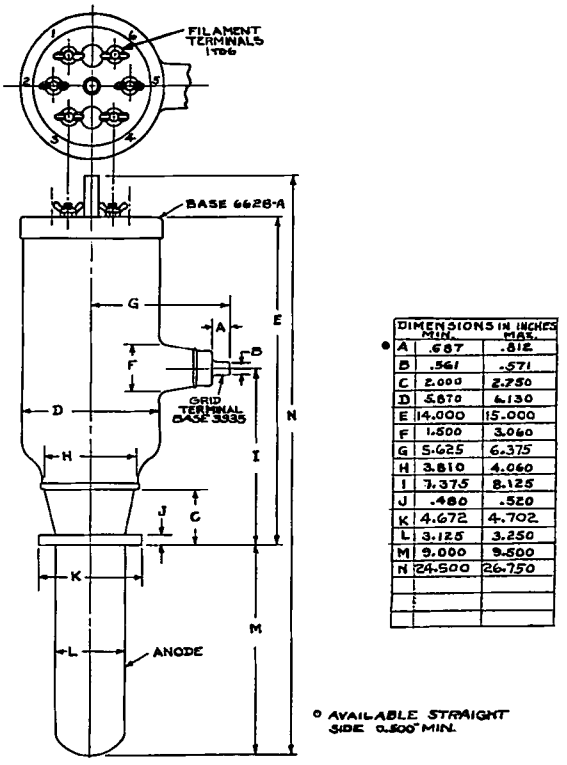
APPLICATION NOTES

Plate Series Protective Resistors (see paragraph describing plate circuit under Installation in the Instructions).

Series Resistor, ohms	10	20	40	80	100
Maximum Power Output of Rectifier, kilowatts	40	100	250	640	1600

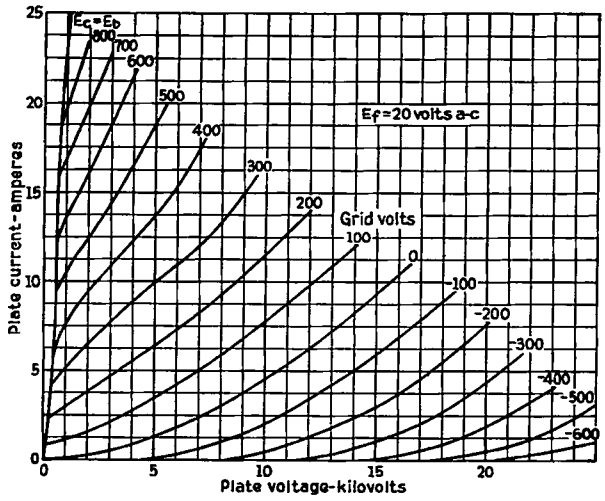


Average Filament Characteristic
K-7050605 5-22-39

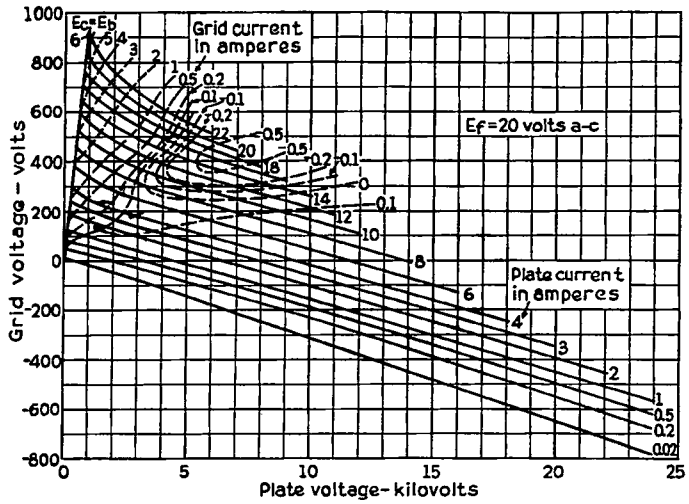


DIMENSIONS IN INCHES	MIN.	MAX.
A	.687	.812
B	.561	.571
C	2.000	2.250
D	5.670	6.130
E	14.000	15.000
F	1.500	3.060
G	5.625	6.375
H	3.810	4.060
I	7.375	8.125
J	.480	.520
K	4.672	4.702
L	3.125	3.250
M	9.000	9.500
N	24.500	26.750

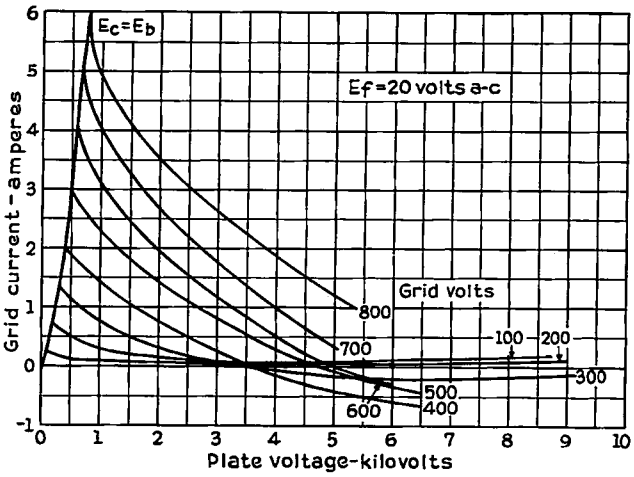
Outline Transmitting Tube
GL-893
K-5344783 2-11-42



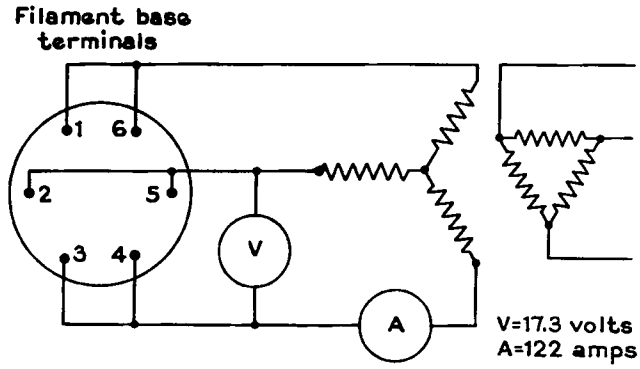
Average Plate Characteristics for
Transmitting Tube GL-893
K-7050615 5-22-39



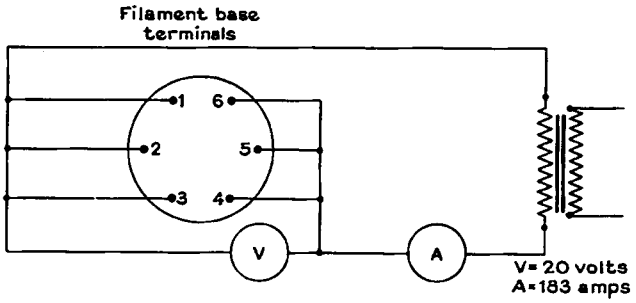
Characteristics for Transmitting
Tube GL-893
K-7050611 5-22-39



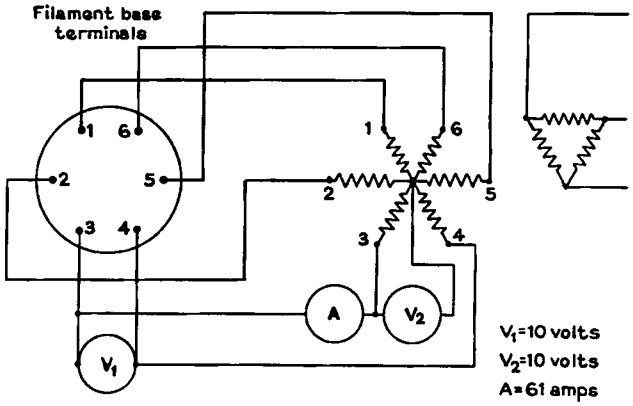
Typical Grid-plate Transfer
Characteristics for Transmitting
Tube GL-893
K-7050618 4-25-39



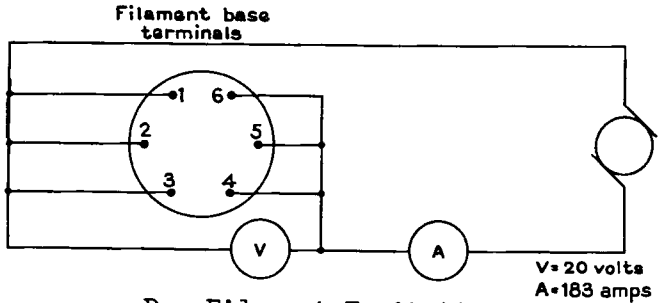
Three-phase A-c Filament Excitation



Single-phase A-c Filament Excitation



Six-phase A-c Filament Excitation



D-c Filament Excitation

NOTE: Terminals must be connected in correct phase relation as shown.

K-7050604 Filament Connections and Excitation Circuits 5-22-39

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

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