



PHASITRON

DESCRIPTION

The 5593 is a phase-modulator tube for use in frequency-modulated transmitters. It is intended for operation up to 250 kilocycles with any degree of subsequent frequency multiplication.

As a modulator tube the 5593 enables the introduction of comparatively wide-phase excursions at audio-frequency rates in a crystal-controlled, radio-frequency carrier. The modulating circuit audio response is such that the tube has a wide-swing frequency-modulated output. Phase modulation is converted to frequency modulation directly at the tube through the self-inductance of the external audio-modulating coil.

With a suitable three-phase supply circuit the only circuit voltage requiring adjustment is that which varies the Phasitron first focus voltage for maximum radio-frequency output. Low-frequency audio feedback is used with this type of operation. The constants of such a circuit are approximately 18 decibels audio feedback through a resistance-capacitance network of 2500 microseconds time constant. This may conveniently be obtained by one stage of radio-frequency amplification of voltage extracted from some point in the radio-frequency chain followed by a standard discriminator.

TECHNICAL INFORMATION

These data are for reference only. For design information refer to specifications.

GENERAL CHARACTERISTICS

Number of electrodes 10

Electrical

Cathode—indirectly heated

Heater voltage 6.3 volts

Heater current 0.3 ampere

GENERAL  ELECTRIC


Electronic
TUBE

TECHNICAL INFORMATION (CONT'D)

Direct interelectrode capacitance, approx		
Deflectors to plate 1	0.05	micromicrofarad
Plate 1 to plate 2	5.5	micromicrofarad
Frequency for maximum ratings	250	kilocycles

Mechanical

Net weight, approx.	3	ounces
Shipping weight, approx.	1	pound
Mounting position		Any

MAXIMUM RATINGS

Plate No. 1 voltage	250	volts
Plate No. 2 voltage*	300	volts
Deflectors No. 1, 2 and 3 voltage	100	volts
Deflector No. 4 voltage	100	volts
Grid No. 1 voltage	25	volts
Grid No. 2 voltage	50	volts
Cathode current	12	milliamperes

* There must be a differential of at least 50 volts d-c between the two anodes, with plate number 2 at the higher potential .

CHARACTERISTICS AND TYPICAL OPERATION

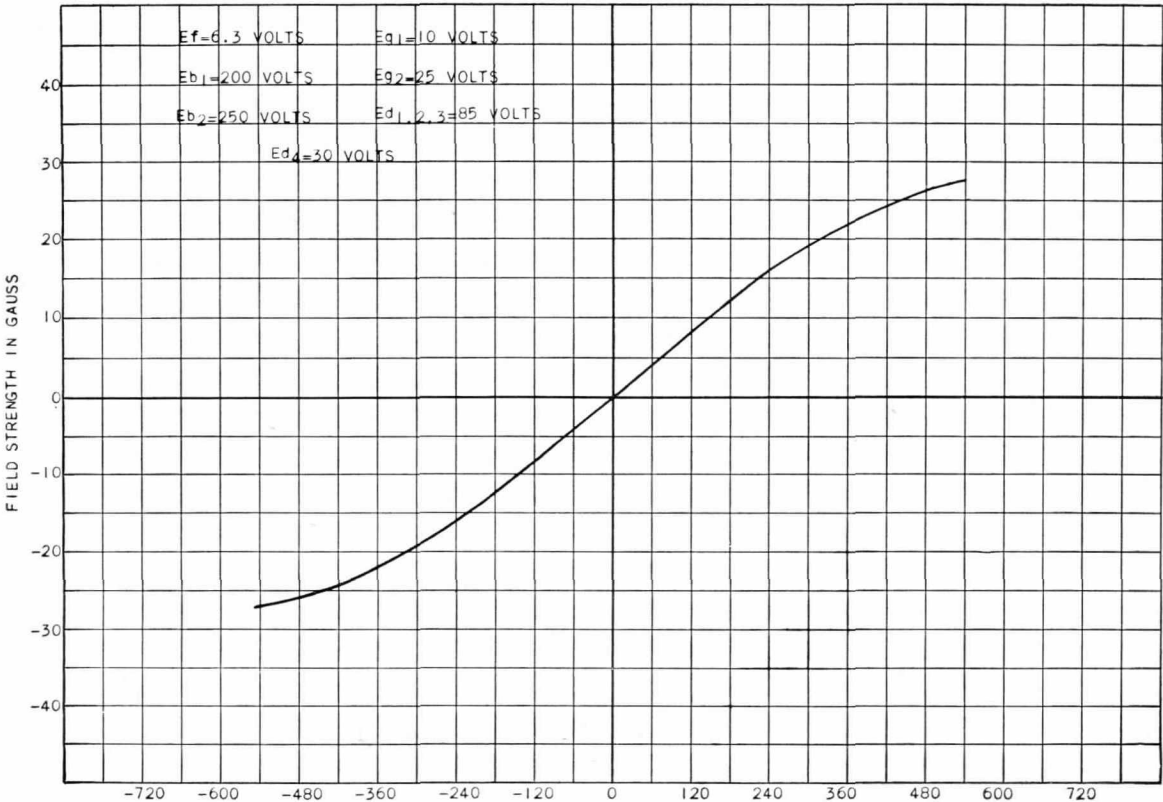
Phase Modulator

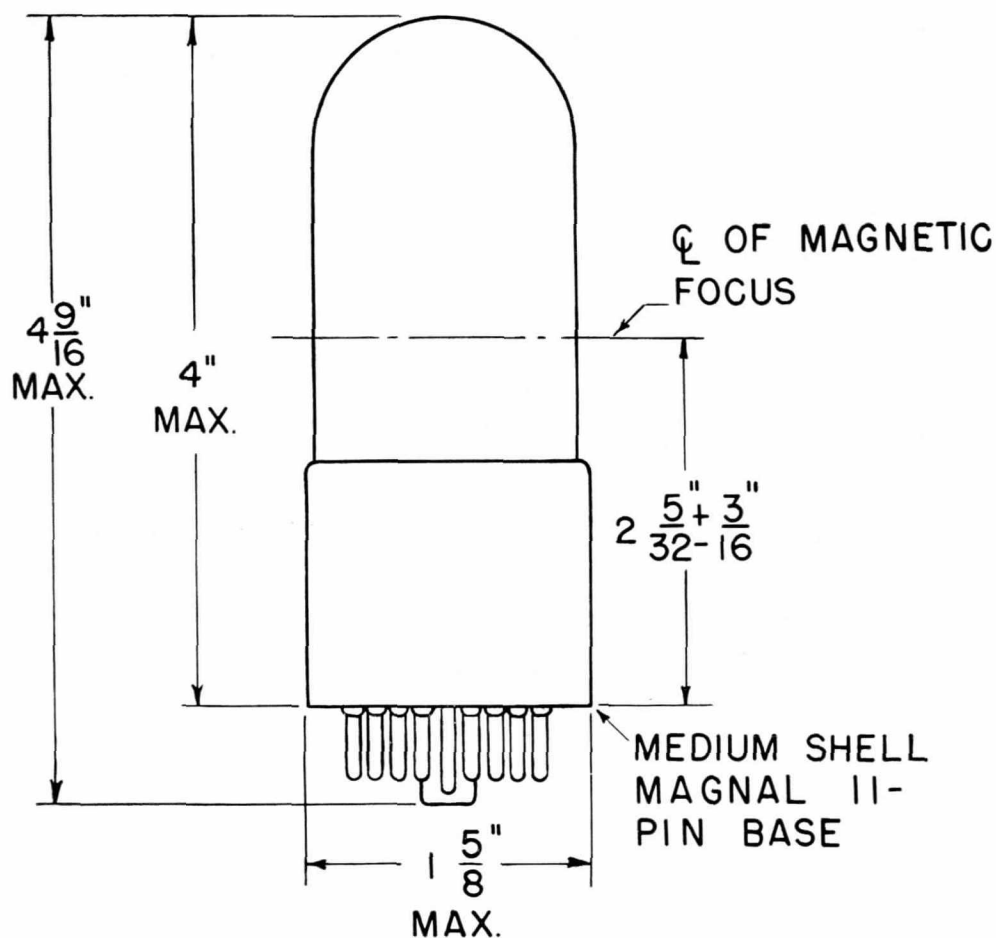
Operating frequency	230	kilocycles
Plate No. 1 voltage	200	volts d-c
Plate No. 2 voltage	250	volts d-c
Plates No. 1 and No. 2 current	3	milliamperes
Deflectors Nos. 1, 2, 3, and 4 current	50	microamperes
Deflector No. 4 voltage	30	volts d-c
Deflectors Nos. 1, 2, and 3 voltage	60	volts d-c
Grid No. 1 voltage**	15	volts d-c
Grid No. 1 current	6	milliamperes
Grid No. 2 voltage	50	volts d-c
Grid No. 2 current	20	microamperes
Radio-frequency driving voltage: phase-to-neutral	35	volts RMS
Audio-modulating power for ± 180 -degree phase shift, approximate	50	milliwatts
Radio-frequency output voltage	4	volts RMS
Distortion at ± 199 -degree phase shift #	1	per cent

** Adjusted for maximum phasitron output.

Distortion at output of typical frequency-modulated transmitter, frequency at resonance approximately 99 megacycles

GL-5593
MODULATION CHARACTERISTIC

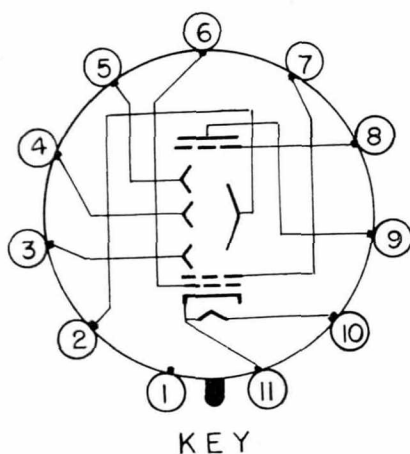




GL-5593 OUTLINE

N-51066AZ

11-1-45



N-15066AZ-1

11-1-45

TERMINAL CONNECTIONS			
PIN	CONNECTION	PIN	CONNECTION
1	INTERNAL CONNECTION	6	GRID NO. 1
2	DEFLECTOR NO. 4	7	GRID NO. 2
3	DEFLECTOR NO. 1	8	PLATE NO. 1
4	DEFLECTOR NO. 2	9	PLATE NO. 2
5	DEFLECTOR NO. 3	10	HEATER
		11	HEATER AND CATHODE

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