

G.E.C.

CATHODE RAY TUBES

E-4412-B-9 OSCILLOGRAPHIC TUBE, 3½" SCREEN

DESCRIPTION

The G.E.C. cathode ray tube type E-4412-B-9 has an indirectly heated cathode with separate connection so that modulating voltages can be applied between cathode and modulator without the distortion which might otherwise be caused by the capacitance to earth of the heater transformer.

It is intended for use in portable or fixed oscillographic apparatus for studying a variety of phenomena at high or low frequencies. The screen has a green fluorescence of negligible persistence.

A particular feature of this tube is the short overall length for the high deflection sensitivity obtained.

RATINGS

Heater voltage	...	...	...	...	...	4.0 ± 5%	volts
Heater current	...	...	...	...	...	1.1	approx. amps
First anode voltage (VA1)	...	...	...	...	...	2500	max. volts
Second anode voltage (VA2)	...	...	...	...	...	VA3 × 0.175	mean volts
Third anode voltage (VA3)	...	...	...	...	...	4000	max. volts
						1000	min. volts
Brightness control (modulator or grid) voltage (VM)						-(VA1 × 0.04)	max. volts

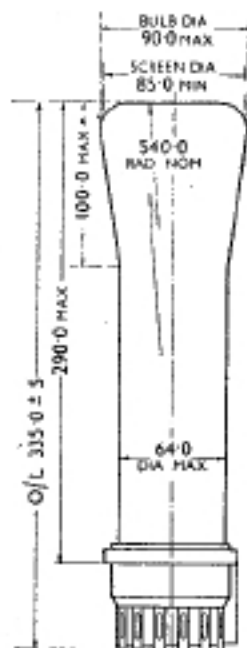
Deflection Sensitivity:

1. Deflectors nearest base X1 and X2	...	...	...	...	...	750	mm/v
						VA3	
2. Deflectors nearest screen Y1 and Y2	...	...	...	...	...	350	mm/v
						VA3	

Capacitances:

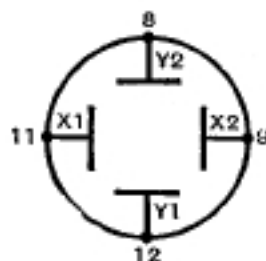
Modulator (grid) to all other electrodes	...	...	...	...	...	25	max. pF
Either X or Y deflector to all other electrodes	...	...	...	...	...	25	max. pF
Either X to either Y deflector, other electrodes earthed	...	...	...	...	...	6	max. pF

DIMENSIONS



All dimensions are in mm. and are the maximum except where otherwise stated.

DEFLECTOR PLATES



With the tube viewed from the screen end with the base spigot uppermost, a positive potential applied to contact 11 will deflect the spot to the left and a positive potential applied to contact 12 will deflect the spot downwards.

BASE



View of underside of base

PIN CONNECTIONS

Pin 1:	Modulator
2:	Cathode
3:	Heater
4:	Heater
5:	A1
6:	A2
7:	Graphite
8:	Y2 deflector
9:	X2 deflector
10:	A3
11:	X1 deflector
12:	Y1 deflector

TYPE E-4412-B-9

OPERATING CONDITIONS

The attention of the user of these tubes is directed to the CODE OF PRACTICE FOR THE USE OF CATHODE RAY TUBES IN EQUIPMENT. BS.1147, 1943.

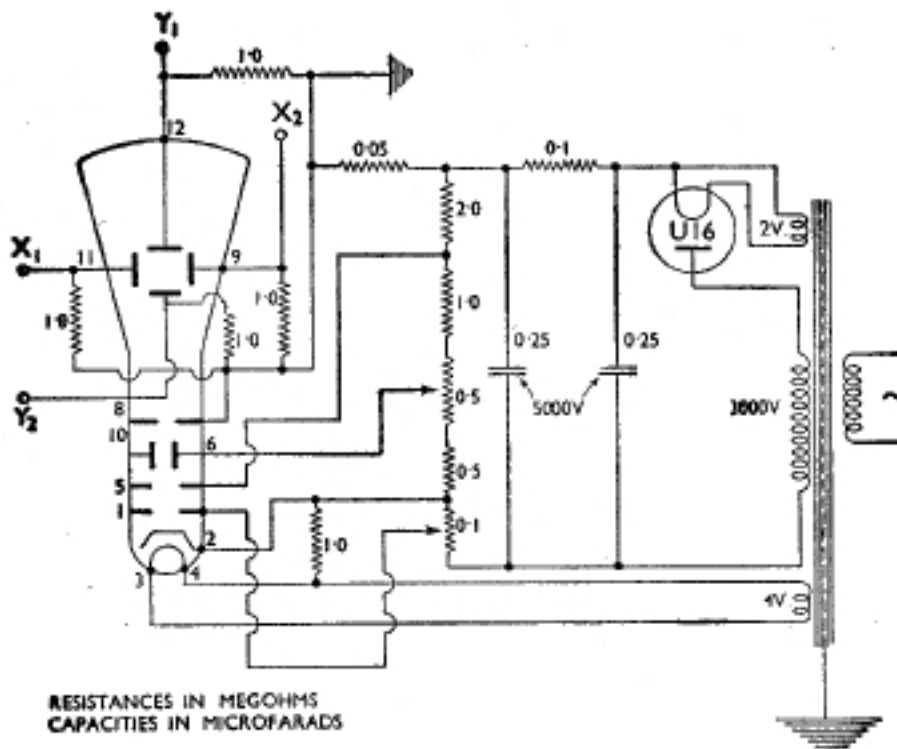
Failure to observe the recommendations contained therein result in poor performance of, or damage to, both tube and equipment.

A.C. supplies for operating these tubes should be obtained from transformers provided with an earthed screen between primary and secondary windings in order to protect the main supplies from any high voltage surges produced under fault conditions in the equipment.

A circuit from which the various electrode potentials can be obtained is shown below.

The internal conducting coating of the tube is connected to contact 7. This should be normally tied directly to contact 10 (A3) but if it should be desired to read the current in the spot (beam current) a meter reading 0-100 microamperes may be connected between contact 7 and contact 10.

If it is not desired to apply any modulation between cathode and modulator, one side of the heater should be connected directly to the cathode, otherwise through a resistance of approximately 1 megohm.



TYPICAL CIRCUIT SHOWING HIGH VOLTAGE POWER SUPPLY TO TUBE.

This circuit applies approx. 4000 v. between A.3 and cathode. If the tube is to be operated on some other voltage, proportional modifications should be made to the output voltage of the h.t. windings and to the insulation between the windings of the transformer and to the rating of the capacitors employed.