SCREEN TYPES

TYPE B

This is the ordinary green willemite screen with which the standard tubes are normally supplied. It is suitable for visual observation of the trace although it has a very slight persistance which can be troublesome when recording photographically on moving film.

TYPE E

This screen is highly actinic with very short persistance and is therefore suitable for photographic recording of high speed transients particularly when used with blue sensitive photographic emulsion.

TYPE C

This screen should be used where it is desired to record high speed transients in which a relatively small amount of energy is available to excite the screen. The persistance enables the transient to be observed for several seconds after it has occurred. This type of screen is useful for reducing the flicker with recurrent traces of low frequency say 5—10 c/s.

TYPE M

This screen should be used where a relatively large amount of energy is available and a bright afterglow of considerable duration is required. It is useful in observing low speed phenomena which may have a duration of several seconds, e.g. electro-cardiography.

It is not possible to define the characteristics of the C and M screens in more precise terms unless the exact conditions of use are specified.

G.E.C.

CATHODE RAY TUBES

E-4103-B-4 OSCILLOGRAPHIC TUBE, 1½" SCREEN

DESCRIPTION

The G.E.C. cathode ray tube, type E-4103-B-4, is a miniature high vacuum cathode ray tube with indirectly heated cathode and is designed for electrostatic focus and deflection.

It is intended for use in portable oscillographic apparatus, as used for radio servicing purposes, and may also be employed in applications where a visual means of studying transient or recurrent phenomena is required.

Features of the E-4103-B-4 are—small overall length and comparatively low operating voltage.

In this tube all four deflector plates are brought out to separate pins so that symmetrical (push-pull) deflection can be used if desired; the tube can also be used with unsymmetrical (non-push-pull) deflection with some deterioration of performance.

The screen has green fluorescence of negligible persistence.

RATINGS

Heater voltage	$4.0 \pm 5\%$	volts
Heater current	1.1	approx. amp
First anode voltage (VA1) } internally	600	min. volts
Third anode voltage (VA3) } connected	1000	max. volts
Second anode focussing voltage (VA2)	$VA3 \times 0.15$	mean volts
Brightness control (modulator or grid) voltage (VM).	$-VA1 \times 0.025$	max. volts

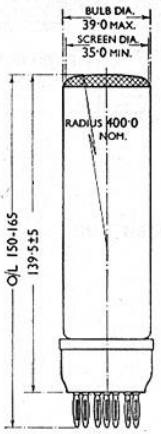
Deflection Sensitivity:

1. Deflectors nearest base Y1 and Y2	$\frac{100}{VA3}$	mm/v
2. Deflectors nearest screen X1 and X2	$\frac{90}{VA3}$	mm/v

Capacitances:

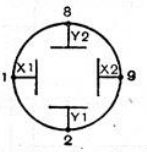
Modulator (grid) to all other electrodes	20	max. pF
Either X or Y deflector to all other electrodes	15	max. pF
Either X to either Y deflector, other electrodes earthed	5	max. pF

DIMENSIONS



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

DEFLECTOR PLATES

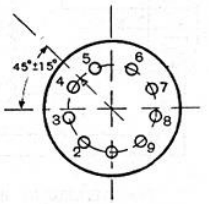


Disposition of plates viewed from screen end of tube.

With the tube viewed from the screen end and the arrow between pins 4 and 5 pointing downwards, a positive voltage applied to X1 and Y1 simultaneously will deflect the spot downwards.

Tolerances should be allowed for by mounting the tube holder in such a way that it may be rotated to accommodate individual tubes.

BASE



External view. Base end of tube.

PIN CONNECTIONS

Pin 1:	X1, DeflectorPlate
2:	Y1, Deflector Plate
3:	A2
4:	Heater and Cathode
5:	Heater
6:	Modulator
7:	A1 and A3
8:	Y2, Deflector Plate
9:	X2, Deflector Plate

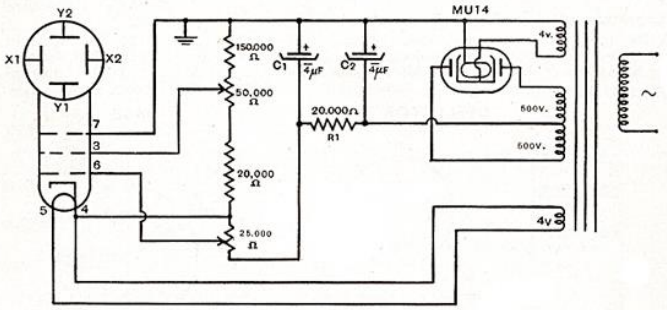
TYPE E-4103-B-4

OPERATING CONDITIONS

The attention of the user is drawn to the CODE OF PRACTICE FOR THE USE OF CATHODE RAY TUBES IN EQUIPMENT BS. 1147, 1943. Failure to observe the recommendations contained therein may 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.

Supplies for the tube may be conveniently obtained from A.C. mains by the use of the rectifier circuit shown below.



TYPICAL CIRCUIT SHOWING POWER SUPPLY TO E-4103-B-4 TUBE.