PROJECTION TUBE

Projection tube with 5-in. diameter metal-backed screen intended to provide high brightness large area displays.

MG13-38   MW13-38
MU13-38   MY13-38

The only difference between MG13-38, MU13-38, MW13-38 and MY13-38 is in the screen properties (see appropriate section of data).

PRELIMINARY DATA

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS – CATHODE RAY TUBES which precede this section of the handbook.

HEATER

This tube is suitable for parallel operation only.

V_h	6.3	V
I_h	660	mA

SPARK TRAP AND EXTERNAL CONDUCTIVE COATING

There is a conductive layer under the insulating coating in the region of the reference line of the tube, (see drawing) and it is therefore necessary to insulate the deflection coils from the neck of the tube.

The insulating coating around the cone of the tube and neck should not be in close proximity to earthed metal parts.

Incorporated within the tube is a spark trap, so positioned that it prevents any internal flash-over taking place between the anode and the grid.

The spark trap and external conductive coating must both be connected to the chassis.

CAPACITANCES

C_{g-all}	10	pF
C_{k-all}	9.0	pF

SCREEN

	MG13-38	MU13-38	MW13-38	MY13-38
Fluorescent colour	green	blue	white	yellow

The raster dimensions must not be smaller than 72 × 96mm.

Light output (measured at V_a = 50kV, I_a = 500μA, raster size 72 × 96mm)   970 mk/cm²

(1mk/cm² = 2.9 e.f.c. = 2.9ft. lamberts)

The screen should be forced-air cooled by a continuous airflow of 0.06m³/s (2.1ft³/s).

FOCUSING

Magnetic

MG13-38 MW13-38
MU13-38 MY13-38

PROJECTION TUBE

DEFLECTION

Double magnetic

MOUNTING POSITION

Any, except with screen downward and the axis of the tube making an angle of less than 50° with the vertical.

The tube socket should not be rigidly mounted but should have flexible leads and be allowed to move freely. The bottom circumference of the base shell will fall within a circle having a diameter of 50mm which is centred upon the perpendicular from the centre of the face.

OPERATING CONDITIONS

V_a	50	kV
$i_{a(pk)}$	2.5	mA
V_g for cut-off	−100 to −170	V

LIMITING VALUES (absolute ratings)

V_a max.	55	kV
V_a min.	40	kV
$-V_{g1}$ max.	200	V
$+V_{g1}$ max.	0	V
$+V_{g1(pk)}$ max.	0	V
I_a max.	500	μA
R_{g-k} max.	1.5	MΩ
Z_{g-k} max. (f = 50c/s)	500	kΩ
$V_{h-k(pk)}$ max. (cathode positive)	100	V
$V_{h-k(pk)}$ max. (cathode negative)	50	V
R_{h-k} max.	20^c	kΩ
Maximum magnification	40	times
Minimum raster dimensions	72 × 96	mm

TUBE PROTECTION

It is essential that means be provided for the instantaneous removal of the beam current, in the event of a failure of either one or both of the time-bases. Unless such a safety device is incorporated, a failure of this type will result in the immediate destruction of the screen of the tube.

X-RADIATION PROTECTION

Shielding equivalent to a lead thickness of 1mm is required to protect the observer against X-radiation.
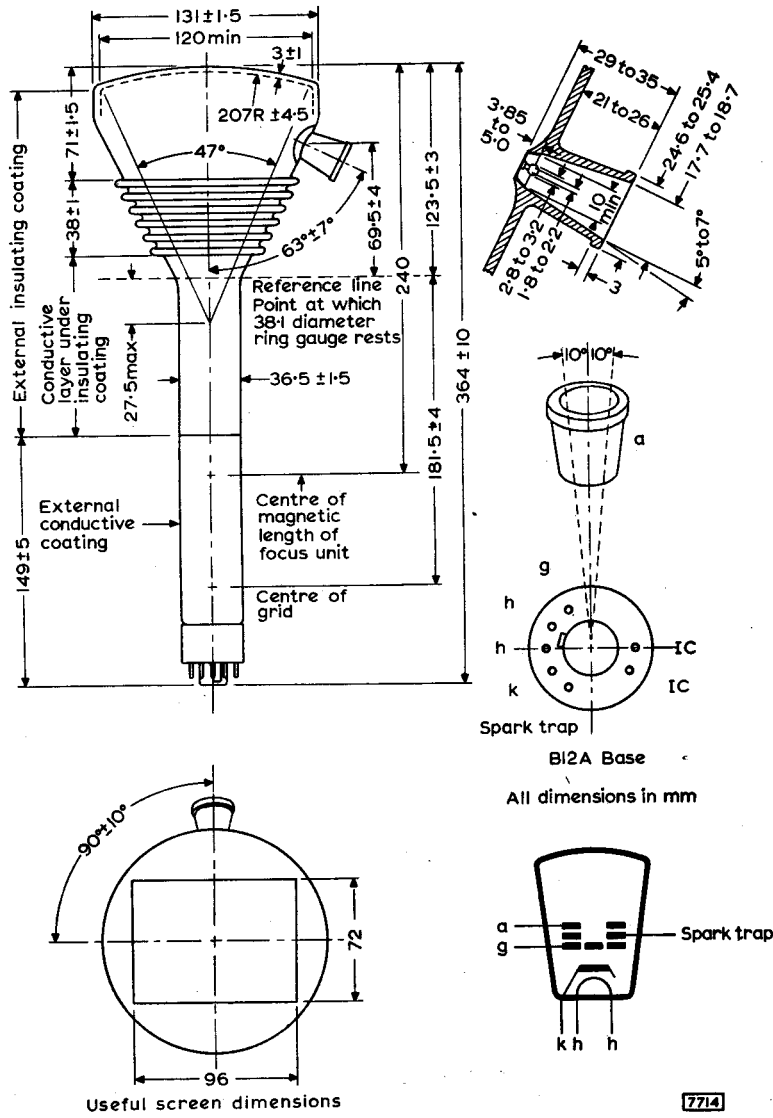

OPERATING NOTES

1. Before removing the tube from an equipment the screen and cone should be discharged.

2. A 50kΩ resistor should be included in the e.h.t. lead in order to avoid damage to the tube due to a momentary internal arc.

3. It is recommended that the connection to the final anode be made with the e.h.t. connector supplied with the tube.

4. In order to prevent the possible occurrence of a cracked tube face when operating with localised high brightness areas the mean anode current must be less than 500μA. For stationary raster patterns the maximum peak anode current is 500μA.

WEIGHT

Tube alone	$\left\{\begin{array}{l} 2 \\ 950 \end{array}\right.$	lb g
Shipping weight	$\left\{\begin{array}{l} 3 \text{ lb } 12 \text{ oz} \\ 1.7 \end{array}\right.$	 kg

MG13-38   MW13-38
MU13-38   MY13-38

PROJECTION TUBE

External insulating coating

131±1·5
120 min
3±1
207R ±4·5
47°
71±1·5
38±1
63°±7°
69·5±4
123·5±3
240
364±10
181·5±4

Reference line
Point at which
38·1 diameter
ring gauge rests

36·5±1·5

Conductive
layer under
insulating
coating

27·5max

External
conductive
coating

149±5

Centre of
magnetic
length of
focus unit

Centre of
grid

29 to35
21 to26
3·85 to 5·0
24·6 to 25·4
17·7 to 18·7
2·8 to 3·2
1·8 to 2·2
10 min
5°to7°
3

10° 10°

a

g

h

h — IC

k   IC

Spark trap

B12A Base

All dimensions in mm

a — Spark trap
g

k h h

90°±10°

72

96

Useful screen dimensions

7714
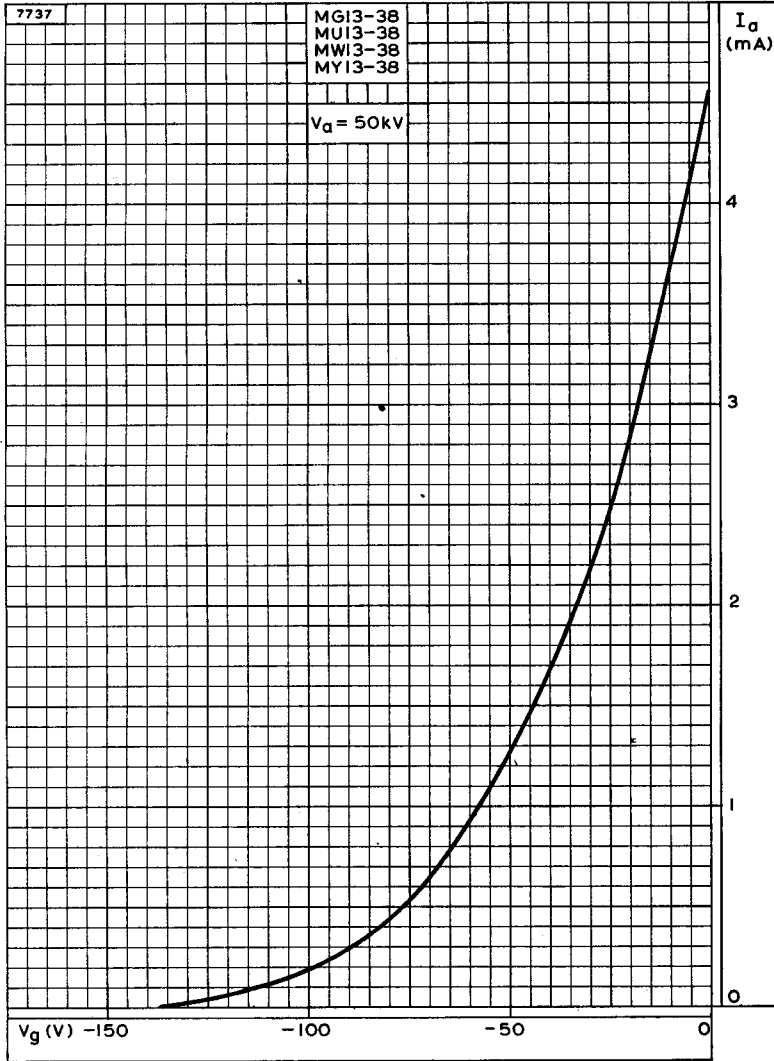
ANODE CURRENT PLOTTED AGAINST GRID VOLTAGE