



**TENTATIVE DATA**  
**TEI 1347**

**5 INCH BICOLOR HALFTONE DIRECT VIEW STORAGE TUBE**

The TEI 1347 is a direct view storage tube providing in two colors brilliant display of stored informations.

The tube includes two writing guns permitting simultaneous writing of two signals.

The informations written by the first gun are stored and visualized in green at variable brightnesses.

The informations written by the second gun are similarly treated in red.

Applications include :

- bicolor storage oscilloscopy
- bicolor presentation of stored characters in peripherals
- radar bright display improvement by visualizing in two colors :
  - map and targets
  - "friends" and "enemies"
  - targets at different altitudes

**TYPICAL PERFORMANCES**

Writing speed .....	5	mm/ $\mu$ s
Written line width .....	0.5	mm
Viewing time .....	60	s
Brightness (either in green or in red).....	10 to 50	Foot Lambert
Stored colors .....	{ - green - red - yellow by combination of red and green	

**GENERAL CHARACTERISTICS**

Electrical

- Flood and writing guns
  - Heater voltage ..... 6.3 V
  - Heater current ..... 0.6 A
- Writing guns
  - Number ..... 2
  - Focusing method ..... electrostatic
  - Deflection method ..... electrostatic

This developmental tube is intended for engineering evaluation. This given data is subject to change unless otherwise arranged. No obligations are assumed for notice of change or future manufacture of this tube.



Optical

Phosphors type .....	}	green P 22 aluminized red P 22 aluminized deposited in parallel stripes 0.25 mm in width
----------------------	---	---

Mechanical

Minimum useful diameter .....	4"
Dimensions .....	see drawing

**OPERATING CONDITIONS**

Absolute ratings

Unless otherwise stated, voltages are given with respect to ground.

**FLOODING GUN**

Heater f' voltage .....	5.7 to 6.9 V
Cathode k' voltage .....	0 V
Grid g'1 voltage (control grid or Wehnelt) .....	-200 V
Grid g'2 voltage (accelerating electrode).....	200 V
Grid g'3 voltage (first collimating electrode)..	200 V
Grid g'4 voltage (second collimating electrode)	300 V
Grid g'5 voltage (collecting electrode).....	300 V
Grid g'6 voltage (backing electrode).....	20 V
Viewing screen g'7 voltage .....	11 kV

**WRITING GUNS**

Heater f voltage .....	5.7 to 6.9 V
Cathode k voltage .....	- 2.9 kV
Grid g1 voltage (control grid or Wehnelt)w. r. t. k.	0 to - 200 V
Grids g2 and g4 voltage (accelerating electrodes)	Connected to g'2
Grid g3 voltage (focusing electrode) w. r. t. k....	1.2 kV

Typical operation

Unless otherwise stated, voltages are given with respect to ground.

**FLOODING GUN**

Cathode k' voltage .....	0 V
Grid g'1 voltage .....	adjust 0 to -150 V
Grid g'2 voltage .....	60 V
Grid g'3 voltage .....	adjust 20 to 40 V
Grid g'4 voltage .....	adjust 40 to 100 V
Grid g'5 voltage .....	210 V
Grid g'6 voltage .....	- 6 V
Viewing screen g'7 voltage .....	10 kV

**WRITING GUNS**

Cathode k voltage .....	- 2 kV
Grid g1 voltage (max. for cut-off) w. r. t. k. .	-90 V
Grids g2 and g4 voltages.....	Connected to g'2
Grid g3 voltage w. r. t. k. ....	adjust 400 to 600 V



### PHYSICAL DESCRIPTION AND OPERATING PRINCIPLE

The TEI 1347 consists of four basic assemblies (1) :

1 - The storage unit

the components of which are a fine metallic mesh called the backing electrode on which is deposited a dielectric material and a special collector mesh described below.

2 - The viewing screen

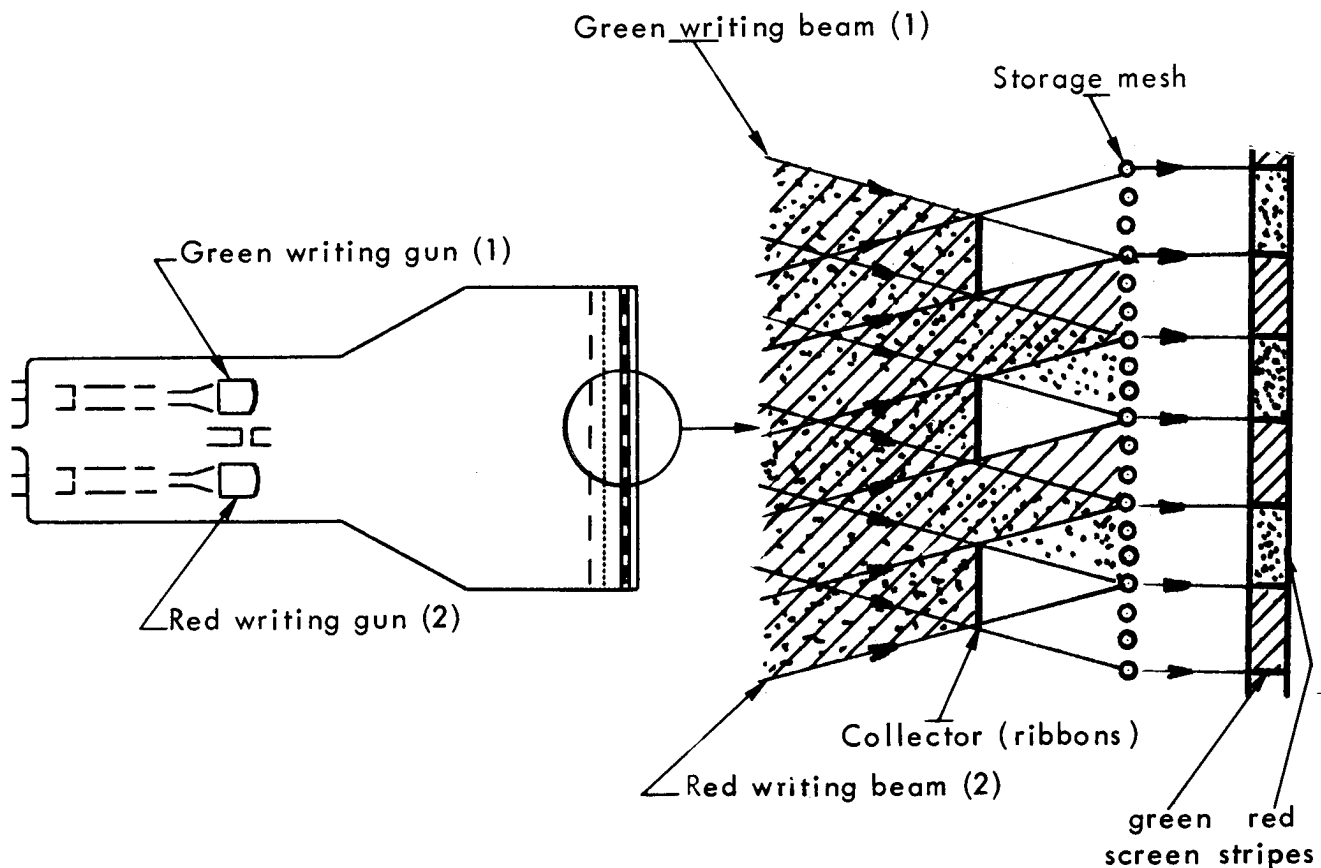
made of parallel stripes of phosphors alternatively red and green, each stripe being 0.25 mm in width.

3 - The flooding gun

produces a wide angle low velocity electron beam and is ended by a collector mesh made of parallel ribbons registered with the parallel stripes of phosphor.

4 - Two writing guns

generating fast electrons which create a charge pattern on the regions of the storage mesh which are not masked for them by the collector, ribbon-shaped, mesh.



(1) THOMSON-CSF patents.



The operating principle of standard direct view storage tubes is described in Data sheets TEV 3021 - 3022.

In this bicolor storage tube the principle is quite similar but writing gun number 1, due to the collector mesh acting as a shadow mask, is able to write on the storage mesh only on certain areas. Writing gun number 2 is able for the same reason to write only on the complementary areas of the storage mesh.

The flood electrons may cross the storage mesh through the written areas and strike the screen on green stripes if the mesh has been written on by gun 1 and on red stripes if the mesh has been written on by gun 2.

Thus data are stored and visualized in green if they are delivered to gun 1 and in red if they are delivered to gun 2.

Erasing is accomplished as in a standard DVST, either completely or progressively by pulses on the backing electrode of the storage unit.

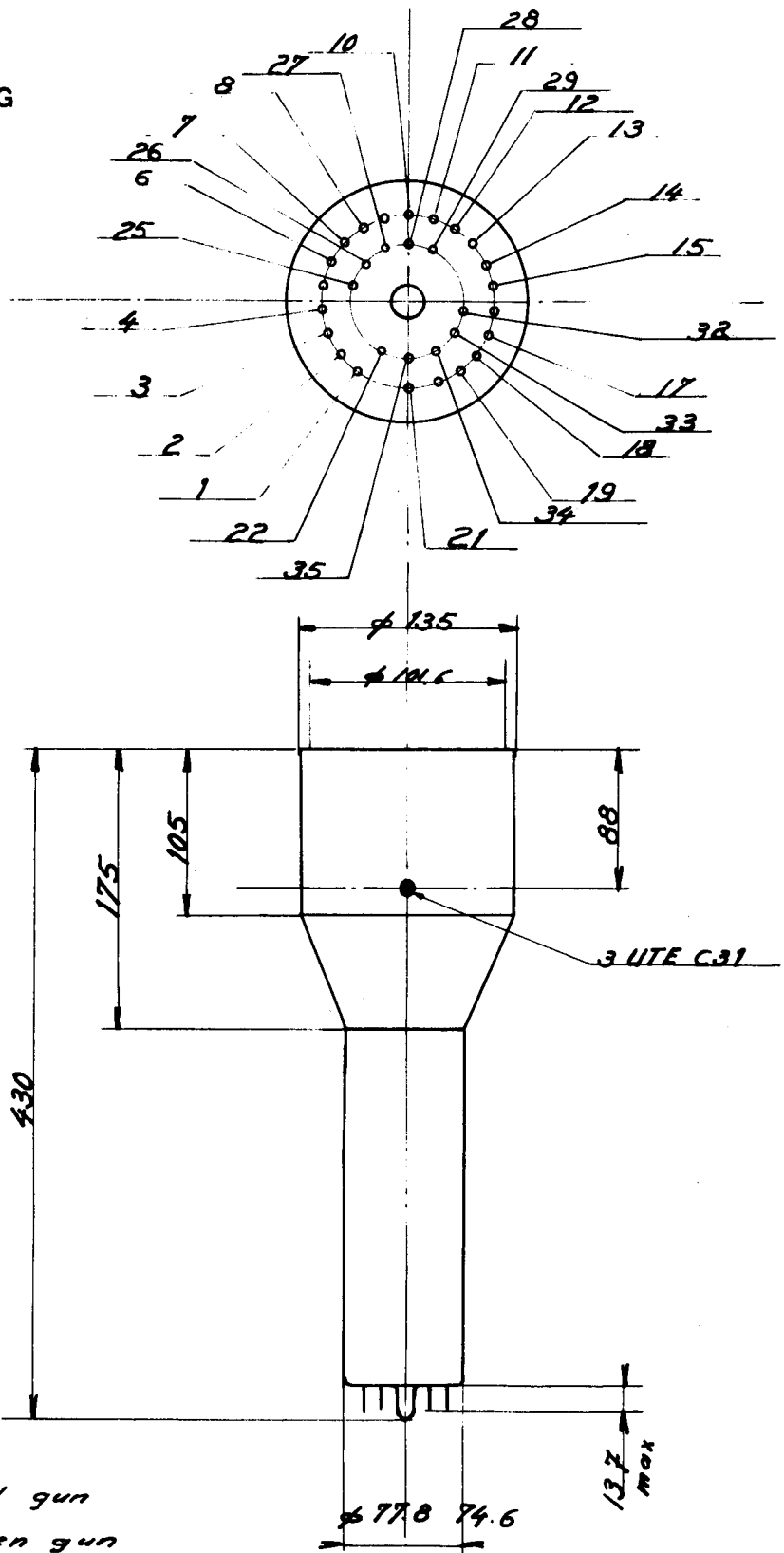
#### OPERATIONAL RECOMMENDATIONS

- 1 - The writing guns can not be allowed to write continuously without appropriate erasure otherwise the storage surface may be damaged.
- 2 - Magnetic shields is necessary to prevent stray magnetic fields altering the trajectories of low velocity flood beam.
- 3 - The tube should be handled screen upwards to avoid particles falling on the storage elements.



OUTLINE DRAWING

1	Flood gun heater
2	Flood gun cathode
3 R	Horizontal deflection plate
4 R	Horizontal deflection plate
5	
6 R	Writing gun focusing electrode
7 R	Writing gun control electrode
8 R	Writing gun heater
9	
10 R	Vertical deflection plate
11	Writing and flood guns accelerating electrodes
12	1st collimating electrode
13	Internal connection
14 G	Horizontal deflection plate
15 G	Horizontal deflection plate
16	
17 G	Writing gun focusing electrode
18 G	Writing gun control electrode
19 G	Writing gun heater
20	
21 G	Vertical deflection plate
22	Flood gun heater
23	
24	
25 R	Writing gun cathode
26 R	Writing gun heater
27	No connection
28 R	Vertical deflection plate
29	Flood gun control electrode
30	
31	
32 G	Writing gun cathode
33 G	Writing gun heater
34	No connection
35 G	Vertical deflection plate



(R) : Red gun  
(G) : Green gun

Dimensions in mm.



**THOMSON-CSF**  
GROUPEMENT TUBES ELECTRONIQUES