



TENTATIVE

TH 8804 SCAN CONVERTER STORAGE TUBE

- SMALL SIZE
- HIGH RESOLUTION
- DOUBLE ENDED
- MAGNETIC DEFLECTIONS

The TH 8804 (TMA 506) is a small size, dual gun, electrical signal storage tube. The writing beam deposits, by induced conductivity, electrons on a thin semi-conducting target. The recorded signals are read by the reading beam by use of secondary emission effects during a large and adjustable number of reading frames.

The TH 8804 (TMA 506) scan converter tube allows :

- simultaneous writing and reading without crosstalk ;
- writing in a mode of scanning and reading in a different mode ;
- adjustment of the storage time ;
- fast erasure of the written signals ;
- superimposition of several kinds of information.



Owing to its small size the TH 8804 (TMA 506) can, if necessary, be integrated into the display console.

Due to its rugged construction and low weight it may be used as well for ground, naval or airborne equipments. Its symmetrical electromagnetic deflections and the absence of collimation make it free from geometrical distortion.

TYPICAL APPLICATIONS

- Radar Bright Display (conversion of radar scan to T.V. scan) :
 - display on a T.V. monitor of a bright, sharp picture in high ambient lighting conditions.
 - visual target tracking by means of the tube storage characteristics.
 - retransmission and multiple display of the radar picture.
- Remote transmission of radar or T.V. informations over narrow bandwidth channels.
- Signal to noise enhancement by integration.
- Superimposition of several types of input data.

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

TYPICAL PERFORMANCES

- Output signal current	0.5 to 2 μ A
- Output capacitance	8 pF
- Resolution	250 P.P.I. range rings at 50 % modulation (equivalent to approximately 1300 T.V. lines)
- Decay time (50 % residual)*	adjustable from 0.1 to 20 s
- Retention time (to noise)*	1 s to several minutes
- Gray levels	7
- Fast erasing time	

* Other ranges of storage time on request.

OPERATING CONDITIONS

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

Absolute ratings

— WRITING GUN

Electrostatic focusing, electromagnetic deflection

Heater voltage (Note 1)	6.1 to 6.5	V
Cathode k' voltage	- 8	kV
Voltage between heater and cathode	± 150	V
Control grid g'1 voltage (w.r.t. cathode)	- 180 to 0	V
Anode g'2 voltage	connected to target	
Focusing g'3 voltage	- 7 to 0	kV

— READING GUN

Electromagnetic focusing and deflection

Heater voltage (Note 2)	6.1 to 6.5	V
Cathode k voltage	- 1.5	kV
Voltage between heater and cathode	± 150	V
Control grid g1 voltage (w.r.t. cathode)	- 180 to 0	V
Anode g2 voltage	- 100 to 0	V
Erasing g3 voltage	- 1.5 to 0	kV
Focusing g4 voltage	- 1.5 to 0	kV

Typical operation

— WRITING GUN

Heater voltage	6.3	V
Heater current, approx.	0.3	A
Cathode k' voltage	- 7	kV
Voltage between heater and cathode	0	V
Control grid g'1 voltage for cut-off (w.r.t. cathode)	- 90 to - 30	V
Anode g'2 voltage	connected to target	
Focusing g'3 voltage	- 5.7 to - 5.3	kV

— READING GUN

Heater voltage	6.3	V
Heater current, approx.	0.3	A
Cathode k voltage	— 1.2	kV
Voltage between heater and cathode	0	V
Control grid g1 voltage for cut-off (w.r.t. cathode)	— 90 to — 30	V
Anode g2 voltage	— 40 to 0	V
Erasing g3 voltage :		
- reading mode	0	V
- erasing mode	— 1.05 to — 0.85	kV
Focusing g4 voltage	— 1.2 to — 1.0	kV

— STORAGE ASSEMBLY

Target voltage :		
- reading mode	0	V
- erasing mode	+ 200 then — 200	V
Collector voltage	0 to 40	V
Shading corrector voltage (w.r.t. collector voltage)	0 to 20	V

NOTES :

- 1 - Heater insulated for 8 kV w.r.t. ground.
- 2 - Heater insulated for 2 kV w.r.t. ground.

OPERATING RECOMMENDATIONS

- 1 - The writing beam should never be motionless on the storage surface which might be damaged. Too high writing beam current density must be avoided.
- 2 - The reading beam should never be motionless.
- 3 - Provide a suitable shield in order to protect the tube from stray electric and magnetic fields.

PHYSICAL DESCRIPTION AND OPERATING PRINCIPLE

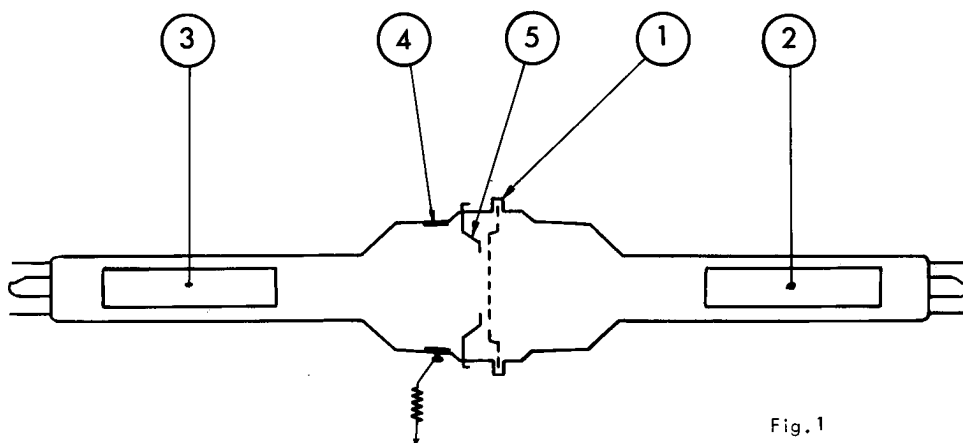


Fig. 1

The TH 8804 (TMA 506) essentially consists of (see Fig. 1) :

- a storage target (1) made of a dielectric layer deposited on a thin metallic backplate (the metallic side facing the writing gun).
- a writing gun (2).
- a reading gun (3).
- a collecting assembly made of two electrodes (4) and (5).

Due to its high velocity, the writing beam is able to penetrate the metal backplate and to create charges in the dielectric by induced conductivity (EBIC). These charges are stored on the surface of the target facing the reading gun. The quantity of stored charges depends on the scanning and current density.

The reading beam scanning the storage surface, each scan is removing a portion of the charge pattern by secondary electron emission.

The secondaries collected by the output electrode (4) give rise to a video signal progressively decreasing.

Typical decay curves given in Fig. 2 are obtained by changing both collector voltage and/or reading current.

When fast erasure is required, tube should be operated as indicated in Fig. 3.

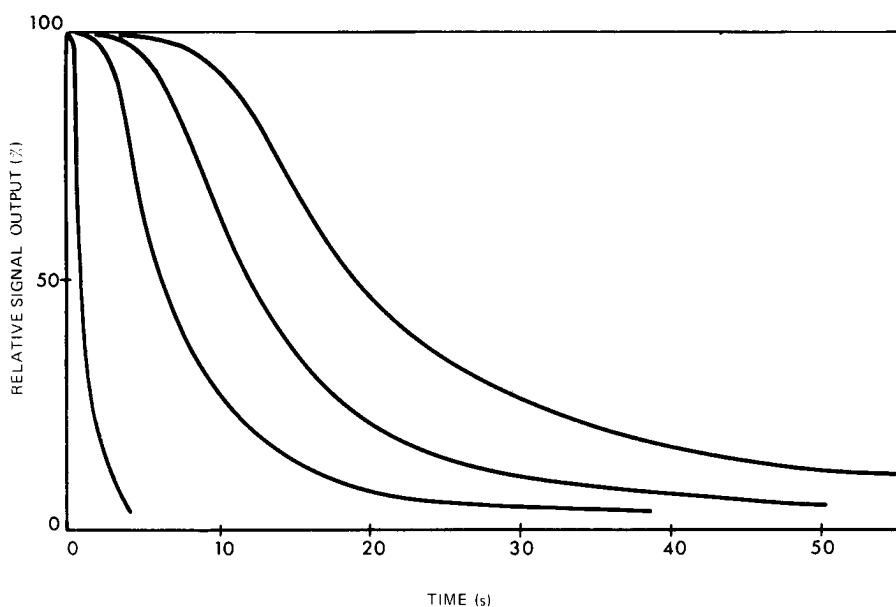


Fig. 2

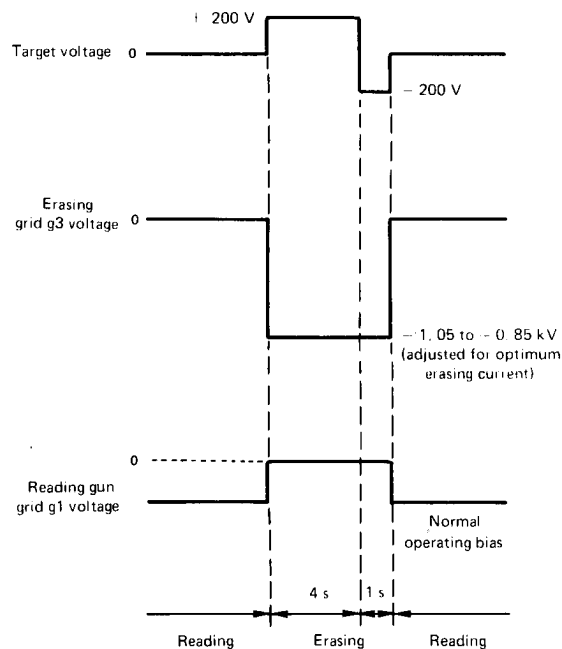
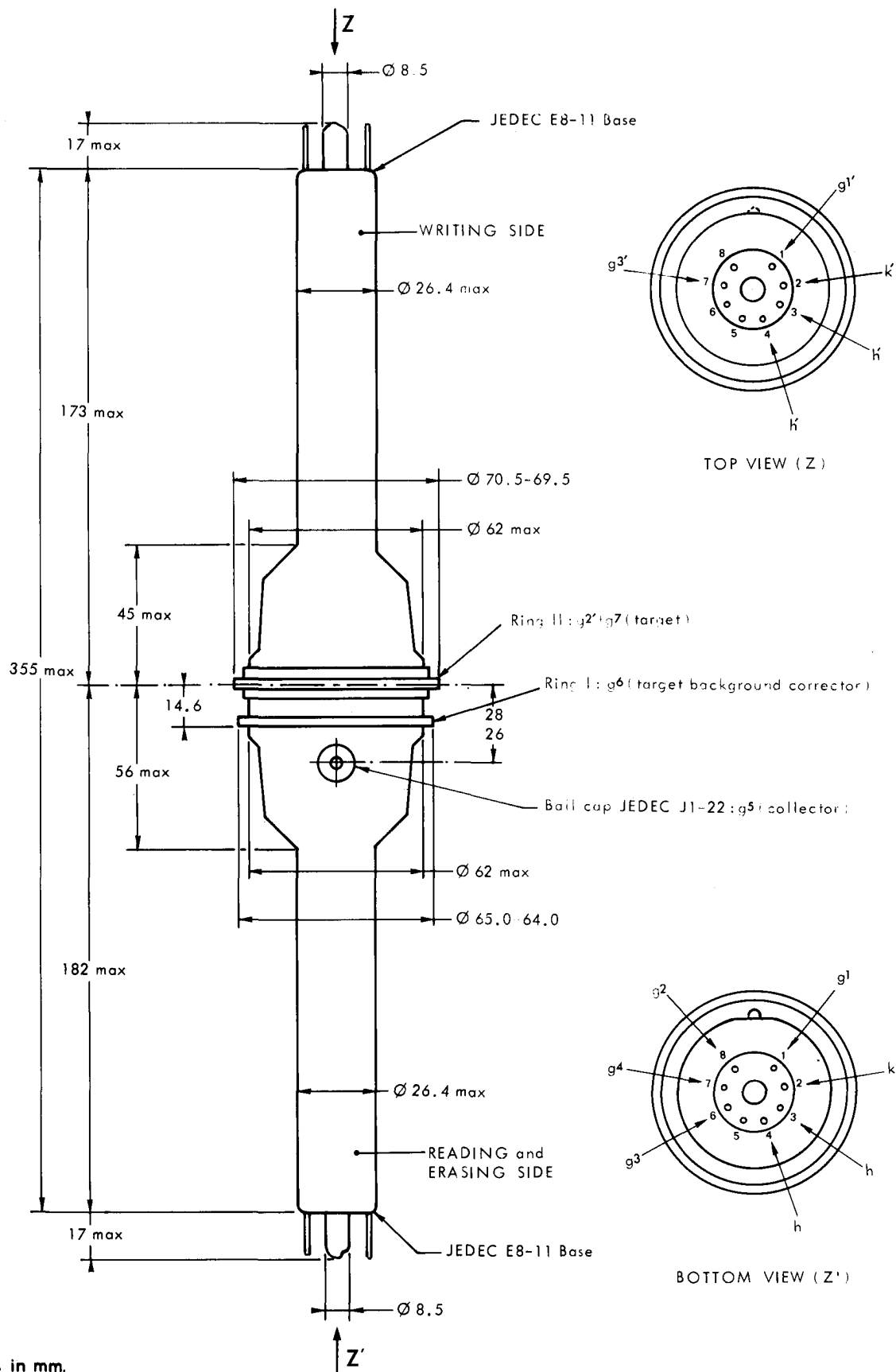
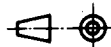


Fig. 3

OUTLINE DRAWING



Dimensions in mm.



TH 8804 (TMA 506)



THOMSON-CSF
GROUPEMENT TUBES ELECTRONIQUES



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