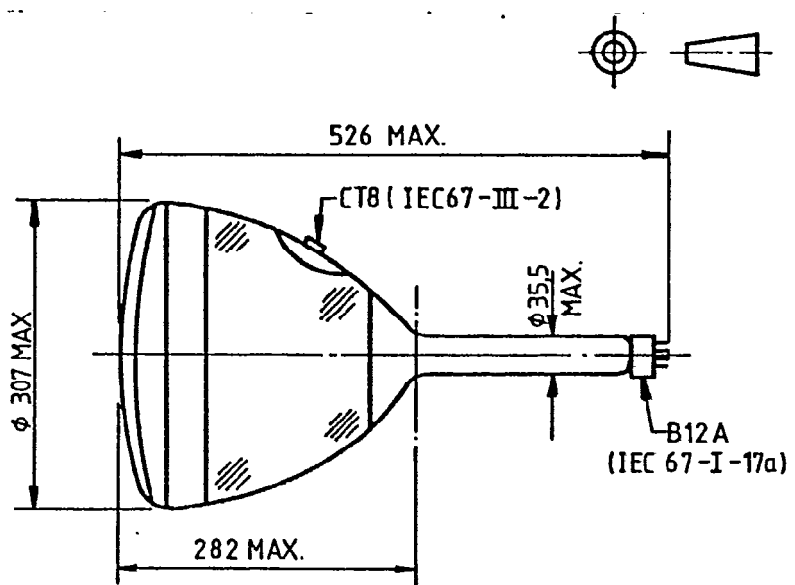


BRITISH STANDARDS INSTITUTION 2, PARK STREET, LONDON, W1A 2BS	BS CECC 11001-006 Issue 1 July 1984
Specification available from:- AS SHOWN IN PD 9002, CECC 00 200 AND THORN EMI BRIMAR LIMITED, GREENSIDE WAY, MIDDLETON, MANCHESTER M24 1SN. Tel: 061-681 7072 Telex: 665326	Page 1 of 19 pages
ELECTRONIC COMPONENTS OF ASSESSED QUALITY DETAIL SPECIFICATION IN ACCORDANCE WITH BS CECC 11000 : 1980	MANUFACTURER'S TYPE NUMBER 31M/04HCC
Outline and dimensions Third angle projection  All dimensions in millimetres For detail dimensions and base connections see Appendix B. Marking information see Clause 5.	For ordering information see Clause 6 RADAR DISPLAY CATHODE RAY TUBE Deflection: Magnetic (50° Total angle) Focus: Magnetic Useful Screen: 250 mm dia (min) Phosphor: H(Jedec P26) Colour: Orange Persistence: Very long Gun: Tetrode Laminated faceplate: Non-etched 90 % transmission External coating: Glass fibre FULL ASSESSMENT + ADDITIONAL ASSESSMENT

Data (not for inspection purposes)

- | | |
|-------------------------|---|
| 1. <u>Mechanical</u> | |
| Mounting position | Restricted (See "Additional Information") |
| Mass | 7 kg (Nom) |
| 2. <u>Environmental</u> | |
| Air Pressure | 300 kN/m ² max |

DATA CONTINUED ON NEXT PAGE

Refer to Qualified Products List PD 9002 and/or CECC 00 200 for details of manufacturers approved to this specification.



Documents

Document Sharing Hub

DATA (not for inspection purposes) continued3. Limiting Values (absolute maximum rating system IEC134)

	<u>Min.</u>	<u>Max.</u>	<u>Units</u>
Heater voltage	5.7	6.9	V
Heater to cathode, positive voltage	-	200	V
negative voltage	-	200	V
Intensity modulator electrode negative voltage	1	200	V
Intensity modulator electrode positive voltage	modulator must never become positive w.r.t. cathode		
Final anode voltage	9.0	16.0	kV
First anode voltage	250	600	V

4. Operating conditions and typical characteristics (not for inspection purposes)

	<u>Min.</u>	<u>Max.</u>	<u>Units</u>
Heater voltage	5.8	6.8	V
Heater current	270 or 540	330 660	mA
Focusing requirements	Dependent upon coil used		
Modulator cut-off voltage at final anode = 15 kV and first anode = 300 V	-30	-90	V
Useful screen dimensions	250 dia.	-	mm
Resolution (line width to 20 % level) at final anode = 15 kV, first anode = 300 V, and Ik = 50 μ A	-	0.5	mm

5. Marking The following shall be clearly and durably marked on the tube and primary pack

1. Manufacturer's type number
2. Manufacturer's code
3. Date code
4. BS CECC 11001-006
5. Manufacturer's serial number
6. NATO stock number if applicable

Special marking relating to hazards. Each tube and package shall contain a warning of hazards in respect of handling, implosion and X-rays.

6. Ordering information

Orders for components to this specification shall include the following minimum information.

1. Quantity
2. Manufacturer's type number.
3. BS-CECC 11001-006 and where applicable the NATO Stock Number.

Any special requirements and packaging instructions shall be included in the order.

7. Related documents

BS 6001	Sampling procedures and tubes for inspection by attributes.
BS 9000	General requirements for electronic components of assessed quality.
BS-CECC 11000	Cathode ray tubes: generic specification.
CECC 00 200	Qualified products list.
IEC 67	Dimensions of electronic tubes and valves.
IEC 68	Basic environmental testing procedure.
IEC 100	Methods for the measurement of direct interelectrode capacitance of electronic tubes and valves.
IEC 134	Rating systems for electronic tubes and valves and analogous semiconductor devices.
IEC 410	Sampling plans and procedures for inspection by attributes.
PD 9002	Qualified products list.

8. Structural similarity

Not applicable.

9. X-radiation

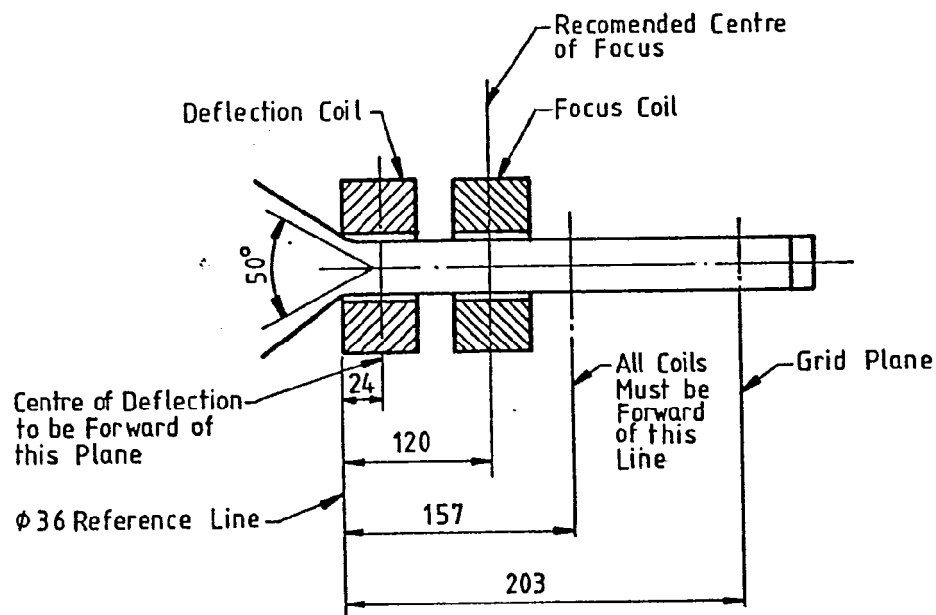
All high voltage devices operating at voltages above 5 kV produce progressively more dangerous X-rays as the voltage is increased. The device envelope usually provides only limited protection and further shielding may be required.

10. Additional information

1. The precautions taken in manufacture reduce the possibility of spontaneous implosion to a minimum, but any additional stress due to mishandling considerably increases the risk of implosion; such implosion may occur immediately or be delayed. Particular care should be taken not to scratch any part of the tube envelope especially the faceplate and the area where the faceplate and sidewalls meet as this will appreciably weaken the glass and may lead to implosion of the tube.
2. The tube should be operated at its minimum useful brightness in order to prevent damage to the screen material. There is a possibility of a rapid burn on the screen if the spot is allowed to remain stationary.
3. The tube mounting should ensure that the main support is near the faceplate and so arranged that no stresses exist between the glass envelope and the neck. Under no circumstances is the base socket to be used to support the tube.
4. The tube may be mounted in any position except with the screen down and the neck axis of the tube making an angle of less than 20° with the vertical.
5. The tube should be shielded from magnetic fields which can be detrimental to its performance.
6. In systems where high frequency character writing is required, the deflection coil assembly should not extend over the metallic electrodes, supports or getters, otherwise there may be undesirable interaction with the tube gun.

10. Additional information continued

7. Recommended Coil Position:



TEST CONDITIONS AND INSPECTION REQUIREMENTSGROUP A - Lot by lot

General test conditions (unless stated otherwise for particular tests)

Vh	Val	Va2 Final anode voltage
6.3 V	300 V	15 kV
All other electrodes, voltages as required		

Focus coil details: Brimar type FC62 or equivalent. Position coil on tube neck so that the centre of focus is 120 mm from the 36 mm ring gauge reference line.

Deflection coil details: Brimar type DY6044 or equivalent.

Raster details: 405 line or 625 line TV standard, or 200 or 300 lines, non-interlaced at a field frequency of 50 Hz. Horizontal and vertical dimensions of the display to be beyond the edge of the phosphor screen (overscanned).

Pulse conditions: Rise and fall times within 10 % of pulse duration. Droop within 10 % of pulse amplitude.

Pre-heating: Apply Vh only for 60 s minimum.

Luminance measurements made with an eye corrected photometer with a minimum aperture size of 20 mm diameter and viewed through a Wratten 22 filter.

All electrode voltages are with respect to cathode unless otherwise stated.

Astigmatism correction is not applied.

Samples submitted to tests which are marked '(D)' shall not be accepted for release under BSE 9000 (see 2.6.5 of BSE 9000 part 1).

All tests are non-destructive

AQL : given in %

INSPECTION or TEST	REFERENCE CECC 11000	CONDITIONS of TEST	INSPECTION REQUIREMENTS				
			MIN.	MAX.	UNITS	IL	AQL
SUB-GROUP A1						100 %	
- Visual inspection	4.3	No voltages	See 4.3				
- Non operating endurance	4.9.1	Duration = 24 h min.					
- Gas content coefficient	4.6.1	Val = 200 V Va2 = -40 V Adjust Vmod for Ik equals 400 μ A Measure Ia2		0.2	nA/ μ A		

SUB-GROUP A1 CONTINUED

INSPECTION or TEST	REFERENCE CECC 11000	CONDITIONS of TEST	INSPECTION REQUIREMENTS				
			MIN.	MAX.	UNITS	IL	AQL
- Intensity modulator electrode cut-off voltage	4.6.2	No deflection	-30	-90			
			(record value)				
- Cathode emission	4.6.3	Minimum cathode factor $K = 2$. Overscan raster (unfocused)	Calculated		μA		
			$I_k(\min) = K(V_{mod})^{3/2}$				
- Quality of fluorescent screen and faceplate	4.6.10	Defocused raster. Adjust V_{mod} for convenient screen luminance. Useful screen area.	As blemish specification See Appendix A				
		Uniformity of brightness (visual only)	250		mm		
			dia.				
			No significant variation over useful screen area				
- Luminance characteristics	4.6.4	Focused raster 250 x 250 mm. Adjust V_{mod} to give screen luminance 1.92 cd/m^2 at centre of screen. Measure I_k .		7	μA		
- Resolution (pulsed line) measured to 20 % peak luminance at screen centre only	4.6.14.3	Line length = 250 mm Pulse duration = 50 to 100 μs . p.r.f. = 25 or 50 Hz $I_k = 50 \mu A$ peak. Adjust focus.		0.5	mm		
	or						
	4.6.14.1	Raster scan Line length = 250 mm. $I_k = 50 \mu A$ Adjust focus.		0.4	mm		
- Stray emission	4.6.6	$V_{a1} = 600 \text{ V}$ $V_{a2} = 18 \text{ kV}$ Adjust V_{mod} to cut-off. Screen horizontal and uppermost.	See 4.6.6				