



ELECTRONIC TUBE REFERENCE

179003TB

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

CATHODERAY

Electrostatically focused, magnetically deflected cathode-ray tube explicitly intended for radar, monitor, and display service, with 90-degree deflection, a white short-persistence T phosphor, and typical operation near 15.5 kV.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 300 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	18000 V
<i>Published Ferranti ratings, capacitances, and typical operating data promoted where applicable; additional electrical values retained as parameters.</i>	

179003TB Picture Monitor Tube

The **179003TB** (also designated as **1790/03TB**) is a 17-inch rectangular picture monitor tube designed primarily for use in television monitoring equipment. It features a metal-backed screen, low-voltage electrostatic focusing, and magnetic deflection. The tube is designed to be mounted in any position.

Physical Construction and Screen Characteristics

The 179003TB is constructed with a rectangular glass envelope and a metal-backed screen. The screen has a nominal 17-inch diagonal and a 90° deflection angle. The standard phosphor configuration is Type

'T' (Silver Activated), which provides white fluorescence, though other phosphors can be supplied upon request.

An external conductive coating is applied to the envelope, which may be utilized for Extra High Tension (E.H.T.) smoothing. The physical dimensions of the tube are as follows:

- **Maximum Overall Length:** 420 mm (with drawing specifications indicating 410 ± 10 mm)
- **Nominal Neck Diameter:** 37 mm (with drawing specifications indicating 36.5 ± 1.5 mm)
- **Width:** 390.5 ± 3.5 mm
- **Height:** 311 ± 3.5 mm
- **Diagonal:** 422 ± 3.5 mm

The useful screen area is defined by the following minimum dimensions:

- **Minimum Width:** 382 mm
- **Minimum Height:** 273 mm
- **Minimum Diagonal:** 390 mm

The tube utilizes a B12A (Duodecal) base for electrical connections and a CT8 cavity-type anode cap for the high-voltage connection.

Heater Ratings and Pinout Configuration

The 179003TB is equipped with an indirectly heated cathode. The nominal heater ratings are:

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.3 A

The B12A Duodecal base connections, viewed from the bottom of the tube, are assigned as follows:

Pin	Connection
Pin 1	Heater
Pin 2	Grid
Pin 3	No Pin
Pin 4	No Pin
Pin 5	No Pin
Pin 6	3rd Anode
Pin 7	No Connection
Pin 8	No Pin
Pin 9	No Pin
Pin 10	1st Anode

Pin	Connection
Pin 11	Cathode
Pin 12	Heater
Side Contact	2nd & 4th Anodes

Electrical Ratings and Operating Conditions

The electrical limits and typical operating parameters of the 179003TB are structured around its multi-anode electrostatic focusing system.

Absolute and Design-Maximum Ratings

These ratings represent the limiting values for safe and reliable operation of the tube:

- **First Anode (A1) Voltage:** 200 V (minimum) to 500 V (maximum)
- **Second and Fourth Anode (A2 + A4) Voltage:** 12 kV (minimum) to 18 kV (maximum)
- **Third Anode (A3) Voltage:** -500 V (maximum negative) to +500 V (maximum positive)
- **Maximum Heater-to-Cathode Voltage (V_{h-k}):** 200 V
- **Maximum Grid-to-Cathode Resistance (R_{g-k}):** 1.5 MΩ
- **Maximum Heater-to-Cathode Resistance (R_{h-k}):** 1.0 MΩ

Typical Operating Points

Under typical operating conditions, the tube is configured with the following electrical values:

- **Heater Voltage:** 6.3 V
- **First Anode (A1) Voltage:** 300 V
- **Second and Fourth Anode (A2 + A4) Voltage:** 15 kV
- **Third Anode (A3) Focus Voltage:** -300 V to +300 V (the optimum focus point lies within this range)
- **Grid Voltage (V_g) for Visual Cut-off:** -30 V to -90 V

During operation, the modulator (grid) must never be allowed to become positive with respect to the cathode. The single exception to this rule is immediately after switching off the equipment, at which point the modulator voltage may be permitted to rise to a maximum of +1 V.

Interelectrode Capacitances

The direct interelectrode capacitances of the 179003TB are specified as follows:

- **Cathode to all other electrodes (C_{k-all}):** Less than 8 pF
- **Grid to all other electrodes (C_{g-all}):** Less than 8 pF
- **Anode to external conductive coating (C_{a-ext. coating}):** Approximately 1500 pF

The capacitance between the anode and the external conductive coating provides the capacitance necessary for E.H.T. smoothing when the coating is grounded.

Technical Summary

The **179003TB** is a specialized 17-inch rectangular picture monitor tube designed for television monitoring applications. It features a 90° deflection angle, magnetic deflection, and low-voltage electrostatic focusing via a third anode adjustable from -300 V to +300 V. Operating with a 6.3 V, 0.3 A heater, the tube utilizes a B12A Duodecal base and a CT8 cavity anode cap. With design-maximum ratings supporting an anode potential up to 18 kV and an integrated external conductive coating for E.H.T. smoothing, the 179003TB provides a robust display solution for professional monitoring environments.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1963 Ferranti

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 FERRANTI

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Electrostatic	—
Deflection method	Magnetic	—
Deflection angle	90 deg	—
Fluorescence	White	—
Persistence	Short	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor type	T	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Radar / monitor / display CRT	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Second/fourth-anode voltage maximum	18000 V	—
Third-anode positive voltage maximum	500 V	—
Third-anode negative voltage maximum	-500 V	—
Heater-cathode voltage maximum	200 V	—
First-anode operating voltage	300 V	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Second/fourth-anode operating voltage	15500 V	—
Third-anode focus voltage minimum	-300 V	—
Third-anode focus voltage maximum	300 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode-to-all capacitance maximum	8 pF	—
External-coating capacitance approximate	1500 pF	—