



ELECTRONIC TUBE REFERENCE

16J12

Power - Triode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
TRIODE

Directly heated forced-air-cooled transmitting triode with thoriated-tungsten filament, designed for substantial RF transmitter service and direct filament switching.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	8 V / 26 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Triode	
TRANSCONDUCTANCE	0.0065 S
AMPLIFICATION FACTOR	5.5
MAXIMUM PLATE VOLTAGE	7500 V
MAXIMUM PLATE DISSIPATION	3000 W
MAXIMUM CATHODE CURRENT	6 A

16J12 — Forced Air Cooled Transmitting Triode

The **16J12** is a directly heated, forced-air-cooled power triode designed by Associated Electrical Industries Limited (AEI) for use in transmitting equipment. Featuring an external anode construction and a thoriated tungsten filament, this tube is engineered for high-power high-frequency applications up to 40 Mc/s. The filament design is specifically rated to support direct switching.

Construction and Physical Dimensions

The 16J12 is built with an external anode integrated into a large cooling radiator assembly. The physical installation of the tube requires a vertical mounting position with the base oriented upwards.

The radiator is designed to fit into specific glass supports, designated as GC1, GC2, GC5, GC6, and GC7. The physical dimensions of the tube and its cooling assembly are highly detailed:

- **Maximum Overall Height:** 240 mm (9.5 inches)
- **Maximum Radiator Diameter:** 152 mm (6.0 inches)
- **Nominal Radiator Height:** 103 mm (4-1/16 inches)
- **Lower Radiator Section Height:** 62 mm (2-7/16 inches) nominal
- **Maximum Body Diameter:** 80 mm
- **Maximum Width Across Clamps:** 222 mm (8-3/4 inches)
- **Mounting Center Distance:** 207 mm between clamp centers
- **Clamp Screws:** 1/4-inch Whitworth (WHIT) thread
- **Clamp Thickness:** Two sections, each measuring 12.7 mm (1/2 inch)
- **Maximum Clamp Width:** 35 mm (1-3/8 inches)

Filament and Base Configuration

The 16J12 utilizes a thoriated tungsten filament designed for direct heating. The filament is robust enough to handle direct switching without requiring specialized step-start circuitry to limit inrush current.

The electrical requirements for the filament are:

- **Nominal Filament Voltage:** 8.0 V (with an allowable tolerance of $\pm 5\%$)
- **Nominal Filament Current:** 26 A
- **Calculated Filament Power Consumption:** 208 W (calculated as $8.0 \text{ V} \times 26 \text{ A}$)

The tube features a special base configuration with four pins arranged on a 48 mm pitch circle diameter (PCD). The pins are divided into two pairs with different diameters to prevent incorrect insertion:

- **Filament Pins:** Two pins with a diameter of $9.525 \pm 0.178 \text{ mm}$ ($0.375 \pm 0.007 \text{ inches}$)
- **Grid Pins:** Two pins with a diameter of $7.938 \pm 0.178 \text{ mm}$ ($0.3125 \pm 0.007 \text{ inches}$)
- **Pin Length:** All pins have a length of 16 mm minimum to 18 mm maximum.

Electrical Characteristics and Operating Limits

The 16J12 is rated for high-voltage transmitting service. The manufacturer's tentative specifications define the absolute maximum ratings and typical operating characteristics.

Maximum Ratings

These limits represent the absolute boundaries for safe operation and must not be exceeded under any operating conditions:

- **Maximum D.C. Anode Voltage:** 7.5 kV
- **Maximum Peak Cathode Current:** 6.0 A
- **Maximum Anode Dissipation:** 3.0 kW
- **Maximum Operating Frequency:** 40 Mc/s

Typical Operating Characteristics

At a typical operating point, the tube exhibits the following parameters:

- **Anode Voltage:** 7 kV
- **Anode Current:** 400 mA
- **Mutual Conductance (Transconductance):** 6.5 mA/V
- **Amplification Factor:** 55
- **Calculated Plate Resistance:** Approximately 8,462 ohms (calculated from the relationship of amplification factor divided by mutual conductance, using $55 / 0.0065 \text{ A/V}$)

Technical Summary

The **16J12** is a high-power, forced-air-cooled transmitting triode featuring a thoriated tungsten filament and an external anode. Operating with an 8.0 V, 26 A filament supply, the tube is capable of handling up to 7.5 kV on the anode and dissipating up to 3.0 kW of power. With an amplification factor of 55 and a maximum operating frequency of 40 Mc/s, the 16J12 is optimized for vertical, base-upwards installation in high-power transmitter stages, utilizing specialized glass supports and heavy-duty mounting clamps.



SOURCE OPERATING CONDITIONS

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1961 AEI Industrial Valves

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

1961 AEI INDUSTRIAL VALVES

Section 1 · Triode

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum operating frequency	40 MHz	—

CHARACTERISTIC

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Characteristic anode voltage	7 kV	—
Characteristic anode current	400 mA	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1961 Associated Electrical Industries

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1961 ASSOCIATED ELECTRICAL INDUSTRIES

Section 1 · Triode

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum operating frequency	40 MHz	—

CHARACTERISTIC

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Characteristic anode voltage	7 kV	—
Characteristic anode current	400 mA	—