



**PRASAR BHARATI
BROADCASTING CORPORATION OF INDIA
DIRECTORATE GENERAL: ALL INDIA RADIO
(PLANNING & DEVELOPMENT UNIT)**

No.18/1/2005- E.I

Specification for: Valve type 4CX- 35000C
 High power ceramic Tetrode

Specification no. : Spec./18/1/2005/ TM/1003

No. of pages : 4+ Drawing one page

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Para wise compliance report for all the clauses of the specification must be done, without it tender will be rejected.

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Specifications No.: Spec./18/1/2005/ TM/1003

Specifications of ceramic Tetrode Valve Type- 4CX- 35000C

Para wise compliance report for all the clauses of the specification must be done, without it tender will be rejected.

1. Scope:

The ceramic Tetrode is being used in AIR's 50 KW MW CEC Make Transmitter in PA stage.

2. General characteristic of the valve:

Plate Dissipation (Max.)	35,000 watts
Screen Dissipation (Max.)	1,750 watts
Grid Dissipation (Max.)	500 watts
Frequency for Maximum ratings (CW)	30 MHz
Cooling	Forced Air
Filament	Thoriated Tungsten
Voltage	10.0 volts
Current	295 amperes
Capacitances (GND Cathode Connection)	
Input	440 pf
Output	55.0 pf
Feed-through	2.30 pf
Capacitances (GND Grid Connection)	
Input	175 pf
Output	57.0 pf
Feed-through	0.4 pf
Amplification Factor (g_1-g_2)	4.5

Mechanical:

(For details please see attached Drawing.)

Base	Special graduated rings
Mounted in socket	SK-1500 & SK-1510Series
Max. Seal & Anode Core Temperature	250°C
Maximum Length	17.34 in; (440.00 mm)
Maximum Diameter	9.75 in; (248.00 mm)
Weight (approx.)	50 lb; 22.70 kg
Operating Position	Vertical

Class of Operation	Type of Service	Maximum Ratings	
		Plate Voltage (volts)	Plate Current (amps)
C	RF Power Amplifier	20,000	15.0
C	RF Power Amplifier Plate Modulated	14,000	15.0

AB ₁	RF Linear Amplifier	20,000	15.0
AB ₁	AF Amplifier or Modulator	20,000	15.0

Class of Operation	Type of Service	Typical Operation				
		Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Power Amplifier	19,000	750	7.0	258	110
C	RF Power Amplifier Plate Modulated	12,000	750	5.4	125	55
AB ₁	RF Linear Amplifier	15,000	1500	5.7	--	55
AB ₁	AF Amplifier or Modulator	12,000	1500	9.2	--	70

3. Eligibility of the supplier:

- a. The supplier must possess valid ISO 9001/ 2000 Certificate in production.
- b. Original Equipment Manufacturer or their Authorised agent shall only be eligible to quote.
- c. Authorisation letter must be ink signed by the OEM and submitted along with the tender. Name and address of the OEM and location of its manufacturing facilities is to be given.
- d. The supplier must possess an experience of at least 2 years in manufacturing.
- e. The supplier must provide past record of timely and good quality supply of tendered items to Broadcast Organisations in the preceding two years supported with copies of orders placed by the Broadcast Organisation with the Manufacturing firm, and Broadcaster's satisfaction letters regarding the tendered item.

Any offer which fails to meet the above eligible condition will be summarily rejected.

4. Tube Cooling:

Anode of the valve should be forced- air-cooled.

5. . Certificate of Origin:

- i. In order to verify that each tube supplied by OEM comes from an ISO-9001/2000 certified factory, the vendor should provide country of origin and type of the tube, and Sr. No., if any, must be engraved or inked on the body of each tube and it must be visible easily even while in operation.
- b) In the absence of such a certificate of origin on the tubes, the tubes shall be considered as rebuilt or not manufactured by vendor.
- c) Rebuilt/ Refurbished/Reconditioned tube will not be accepted

8. Package and Marking

Please refer to the relevant clause in the booklet “ **Instructions to Bidders**”

9. INSURANCE AGAINST WAR AND MARINE RISK:

Please refer to Commercial terms for transportation by air, sea and land up to ultimate consignee.

10. Tube Appearance

The tube (Valve) brazing area, ceramic cleanliness, electrical connections, coolant connection, plating, shining silver plated surface around anode, cathode grid rings should be of high quality.

The shining of silver plated on cathode, grid and anode ring should be as good as new after the run of 500 hours operation of the tube.

11. Delivery

Delivery should be completed within nine months after the issue of the AT. The lot of tubes should be duly insured (Insurance as per commercial terms) and be delivered at the destination of ultimate consignee (AIR Stations in India Malad-Mumbai (India) mentioned in the AT.

12. Guarantee Conditions

The electron tubes shall be free from defects in design, material and workmanship. The tube will be operated within pre designed fixed parameters and dynamic broadcast parameters, by taking all cooling conditions into account.

The tube shall be guaranteed for 5000Hrs. of heater/filament operation or 2 years from the date of receipt which ever occur first. In case of failure of the tube within the first 500 Hrs. full free replacement with a **New and of first quality tube** is to be provided by the OEM/ supplier. Prorata credit will be for failure of tube between 500hrs. and 5000hrs. The claim shall be settled by the **Supplier/OEM without any option** as given below :

If the tube fails after 500 hours and within guaranteed 5000 hours, then prorata

$$C = \frac{P(G-H)}{G}$$

C - Credit

G - Guaranteed no. of hours

H - Useful filament hours served by the defective tube.

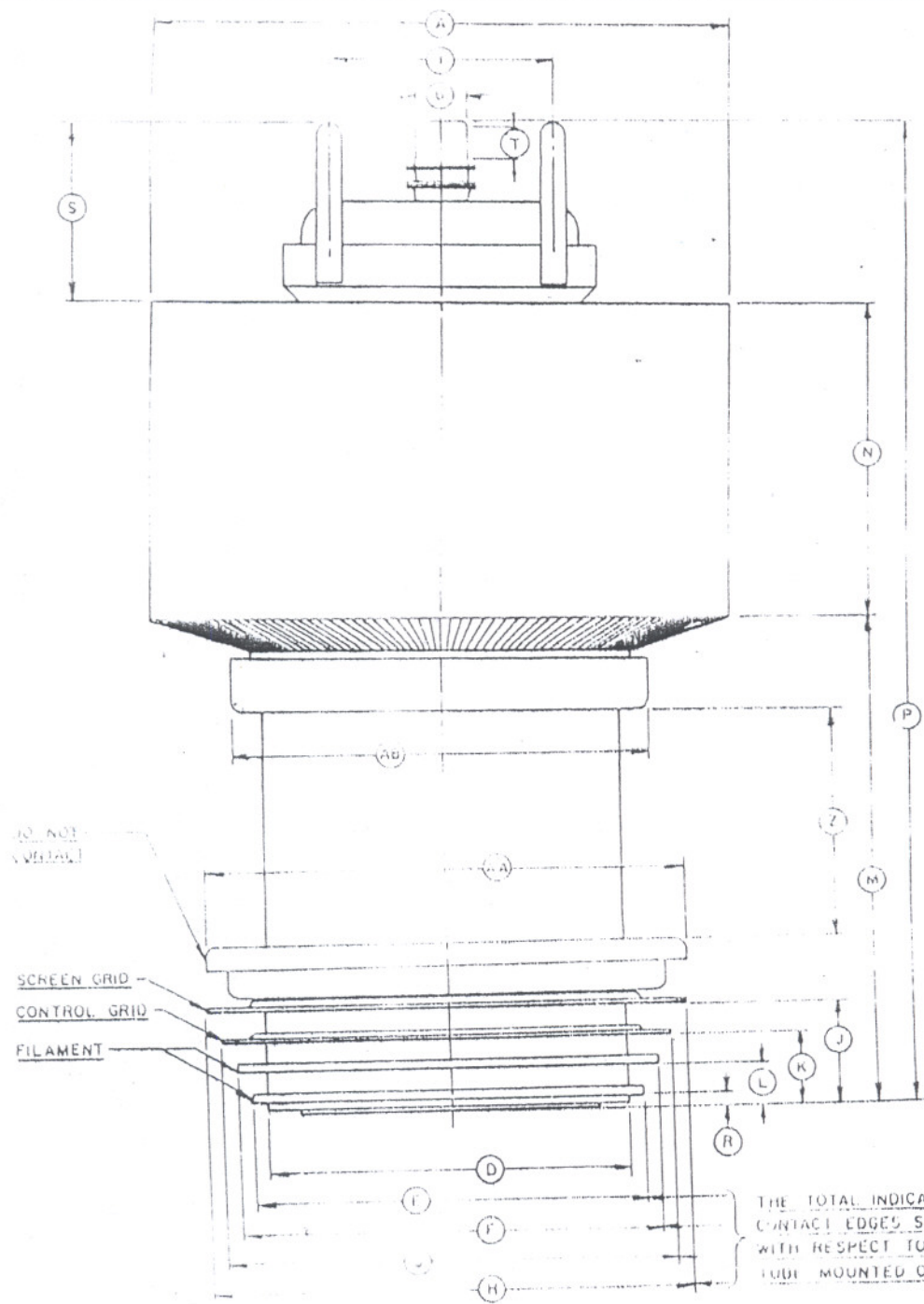
P - Purchased price of defective tube.

13. Performance Guarantee

As per DGS and D rule

14. Literature

Necessary literature, catalogues concerning to the article in supply and the company profile including the manufacturing procedure etc. must be supplied by the Bidder.

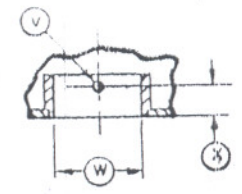


DIMENSIONS IN INCHES

DIMENSIONAL DATA

DIM	MIN.	MAX.	REF
A	9.500	9.750	
B	860	890	
D	5.980	6.020	
E	6.510	6.560	
F	6.980	7.020	
G	7.480	7.520	
H	7.975	8.015	
J	1.750	1.800	
K	1.220	1.270	
L	690	740	
M	8.442	8.692	
N	5.375	5.625	
P	17.070	17.340	
R	173	213	
S			3.062
T	485	515	
V		135	
W	1.250	1.270	
X	490	530	
Y			4.500
Z			5.750
AA			0.000
AB			0.875

NOTE 1. REFERENCE DIMENSIONS ARE FOR INFORMATION ONLY AND ARE NOT REQUIRED FOR INSPECTION PURPOSES.



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