

ABRIDGED DATA

8½-inch Diameter Radar Tubes intended primarily for marine radar P.P.I. displays. The narrow scan angle permits the use of valve or transistor scan amplifiers.

Neck Diameter	1.378 inches (35 mm)
Deflection Angle	41 Degrees
Deflection Method	Magnetic
Focus Method	Electrostatic
E.H.T. Voltage	16 kV

GENERAL DATA

Electrical and General

Cathode	Indirectly Heated, Oxide Coated
Heater Voltage (<i>See Note 1</i>)	6.3 V
Heater Current	0.3 ± 10% A
Screen (<i>See Note 2</i>)	Aluminised
Inter-electrode Capacitances:		
Grid to all other electrodes, less than	8.0 pF
Cathode to all other electrodes, less than	8.0 pF
Anode 2 + Anode 4 to external conductive coating (<i>See Note 3</i>)	1000 pF

Mechanical

Overall Length	18.110 inches (460 mm)	Max
Overall Diameter	8.524 inches (216.5 mm)	Max
Useful Screen Diameter	7.756 inches (197 mm)	Min
Neck Diameter	1.400 inches (35.5 mm)	Max
Net Weight	5½ pounds (2.6 kg)	Approx
Base (<i>See Note 4</i>)		B8H
Anode 2 and Anode 4 Connection	B.S.448-CT8 Cavity Cap	
Mounting Position (<i>See Note 4</i>)		Any

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MAXIMUM AND MINIMUM RATINGS

(Absolute Values. See Note 5)

	<i>Min</i>	<i>Max</i>	
Anode 2 and Anode 4 Voltage (See Note 6)	8.0	18	kV
Anode 3 Voltage:			
Positive value	—	1.0	kV
Negative value	—	0.5	kV
Anode 1 Voltage	0.2	0.8	kV
Grid Voltage (negative value)	1.0	200	V
Grid to Cathode Impedance (at 50c/s)	—	0.5	MΩ
Grid to Cathode Resistance	—	1.5	MΩ
Heater to Cathode Voltage:			
Heater positive with respect to cathode			
D.C.	—	150	V
Peak	—	250	V
Heater negative with respect to cathode			
D.C.	—	150	V
Peak	—	300	V
Heater to Cathode Resistance			See Note 7

TYPICAL OPERATING CONDITIONS

Anode 2 and Anode 4 Voltage	12 to 16	kV
Anode 3 Voltage	0 to 400	V
Anode 1 Voltage	600	V
Anode 3 Current	-15 to +15	μA
Anode 1 Current (positive or negative)	15	μA
Grid Voltage for visual cut-off	-32 to -48	V
Cathode Voltage for visual cut-off (See Note 8)	30 to 45	V

NOTES

1. The heater is suitable for either series or parallel operation. In series operation, the surge heater voltage when switching on must not exceed $9.5V_{r.m.s.}$ and a current limiting device may be required in the circuit to reduce the surge voltage below this value.
2. Tubes in the T964 series have screens with the following characteristics.

Type	EEV Screen	Equivalent	Fluorescent Colour	Persistence
T964Y T964Z	Y* Z*	P33 P26	Orange Orange	Long Very Long

The tube can be manufactured with alternative screens, and customers' enquiries are invited.

*This is fluoride screen which is sensitive to burn and should not be operated with slow moving spots.

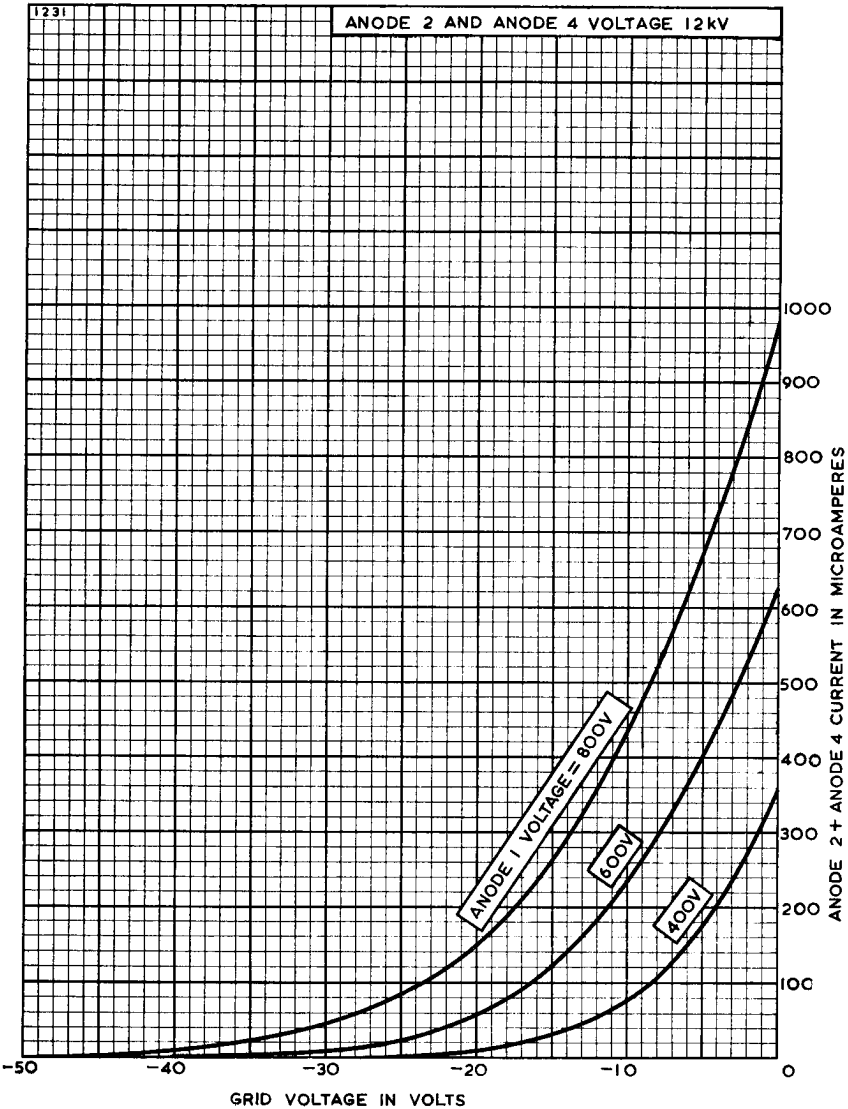
3. The capacitance of anode 2 and anode 4 to the external conductive coating may be used to provide smoothing for the e.h.t. supply.
4. The tube should not be supported by the base alone and under no circumstances should the socket be used for support purposes.
5. All voltages are with respect to cathode except where otherwise specified.
6. The associated equipment should be adequately protected against damage caused by possible high voltage flashovers inside the tube.
7. When the heater is in a series chain or earthed, the impedance between the cathode and earth at 50c/s must not exceed $100k\Omega$. When the heater is supplied from a separate transformer, the heater to cathode resistance must not exceed $1M\Omega$.
8. For cathode modulation, all voltages are with respect to the grid.

X-RAY WARNING

X-rays are produced when the T964 is operated above 16kV (absolute value). These rays can constitute a health hazard unless the tube is adequately shielded for X-ray radiation. This is entirely a function of high voltage devices and does not reflect upon the design of the tube.

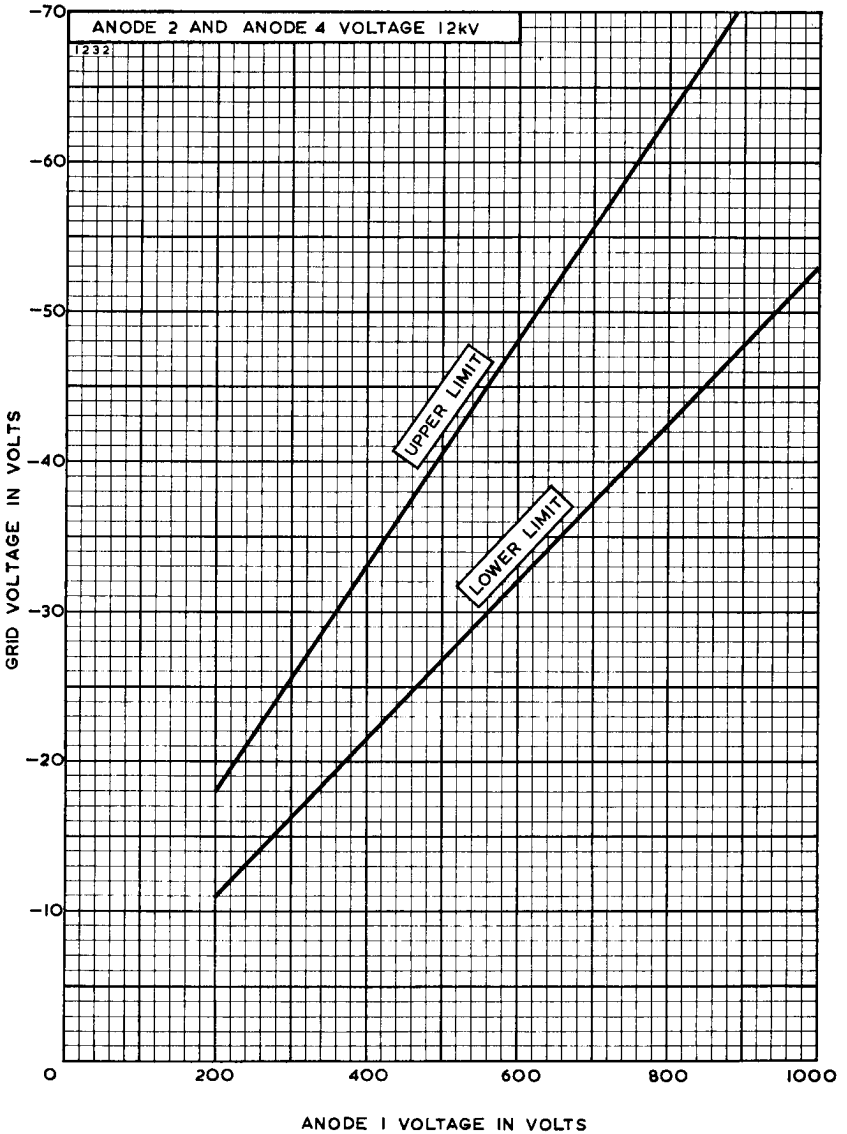


GRID VOLTAGE CHARACTERISTICS



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GRID CUT-OFF VOLTAGE LIMITS



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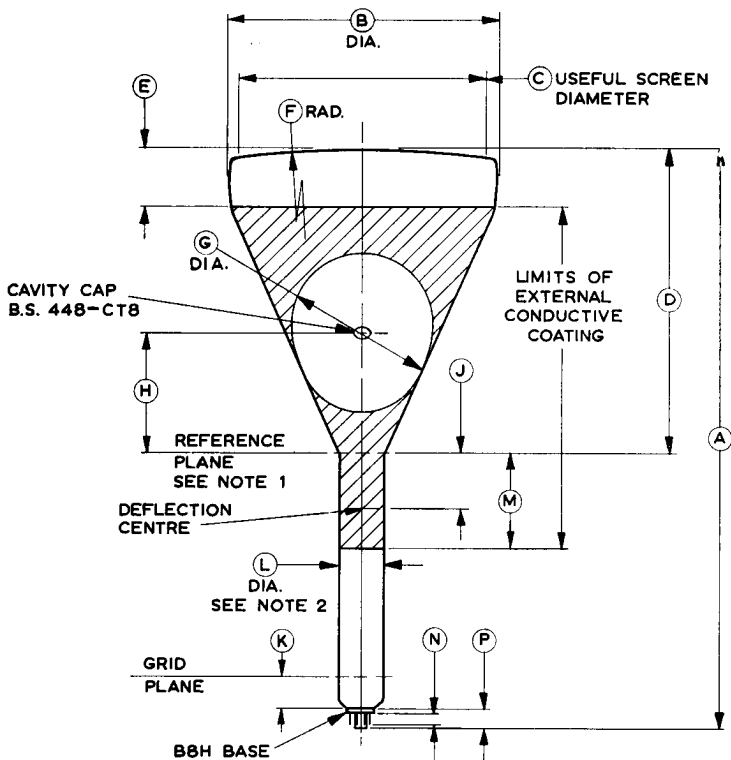
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*Telephone:
Chelmsford 3491*

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OUTLINE

1140A



Ref.	Inches	Millimetres	Ref.	Inches	Millimetres
A	18.110 Max	460.0 Max	J	1.240 Max	31.5 Max
B	8.425 ± 0.098	214.0 ± 2.5	K	0.984	25.0
C	7.756 Min	197.0 Min	L	1.378 +0.020 -0.039	35.0 +0.5 -1.0
D	9.449 ± 0.157	240.0 ± 4.0	M	2.953 ± 0.197	75.0 ± 5.0
E	1.772 ± 0.197	45.0 ± 5.0	N	0.333 Max	8.46 Max
F	33.460	850.0	P	0.630	16.0
G	4.331 ± 0.394	110.0 ± 10.0			
H	3.780 ± 0.157	96.0 ± 4.0			

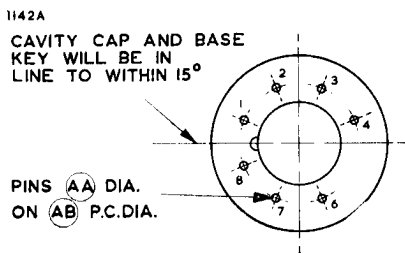
Inch dimensions have been derived from millimetres.

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Chelmsford 3491

OUTLINE DETAILS



Ref.	Inches	Millimetres
AA	0.040	1.02
AB	0.600	15.24

Millimetre dimensions have been derived from inches.

Pin	Element
1	Heater
2	Internal Connection
3	Anode 1
4	Anode 3
5	No Pin
6	Grid
7	Cathode
8	Heater
Cavity Cap	Anode 2 and Anode 4

OUTLINE NOTES

1. The Reference Plane is determined by the position where 36.0mm internal diameter ring gauge rests.
2. A ring gauge 36.0mm internal diameter \times 100.0mm long will pass over the neck and base to the reference plane.