Ferranti

KLYSTRON

A High Power 4 Cavity Broad Band Amplifier Klystron for CW operation at 'X' Band frequency.

PHYSICAL DETAILS.

Base	None.
Overall Length (valve) ...	14″ (356 mm.)
Overall Length (Magnet Assembly)	17⅜″ (442 mm.)
*Output Waveguide... ...	Rect. 1·122″×0·497″ I.D.
*Input Waveguide	Rect. 1·122″×0·497″ I.D.
For other dimensions see drawing on Page 3.	
Water Connections ...	⅛ B.S.P. Unions.
Mounting Position	Vertical—Cathode end down
Weight (in permanent magnet assembly)	90 lbs.

HEATER.

Heater Power ...	27·6 to 37·2 Watts
Heater Resistance at 32 watts ...	3·1 to 3·4 Ohms
Cold Heater resistance ...	0·2 Ohms
†Max. switch-on surge current	9 Amps
‡Min. heating delay time ...	3 Mins

RATINGS.

Maximum Beam Volts ...	13 kV
Maximum Beam Current ...	700 mA
Maximum Power Output ...	3 kW

FREQUENCY.

**Operating Frequency	8000—9000 Mc/s
††Valve Bandwidth	16 Mc/s

WATER COOLING.

Minimum water flow through block at 20°C.	1·5 litre/min
Minimum water flow through collector at 20°C. ...	6 litres/min
Pressure drop through block at 1·5 litre/min. ...	0·5 lbs./sq. in.
Pressure drop through collector at 6 litres/min....	4 lbs./sq. in.

Note: The block and collector may be run in series with a 6 litres/min. water flow. The water must enter the block first.

Pressure drop through block at 6 litres/min.... ...	4 lbs./sq. in.

TYPICAL OPERATION.

Beam Voltage	13 kV
Beam Current ...	530 to 600 mA
§Magnetic Field ...	1500 to 1700 Gauss.
Output Power	≮2000 watts
Efficiency	33 to 38 %
R.F. Gain	32 to 47 dB
Loss current:	
No R.F. at 13 kV. ...	≯3% of beam current.
2 kW. at 13 kV. ...	≯100 mA

*Pressure joint to dowelled plate-further details will be sent on request.

†See 'Notes on Operation' (1) overleaf.

‡The time which must elapse after application of full heater volts before the E.H.T. can be run up.

**Valves can be supplied tuned to any frequency in this band.

††See graph on page 4.

§This field can either be supplied by a permanent magnet system or by electromagnet. Details of the electromagnet can be supplied on request.

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NOTES ON OPERATION.

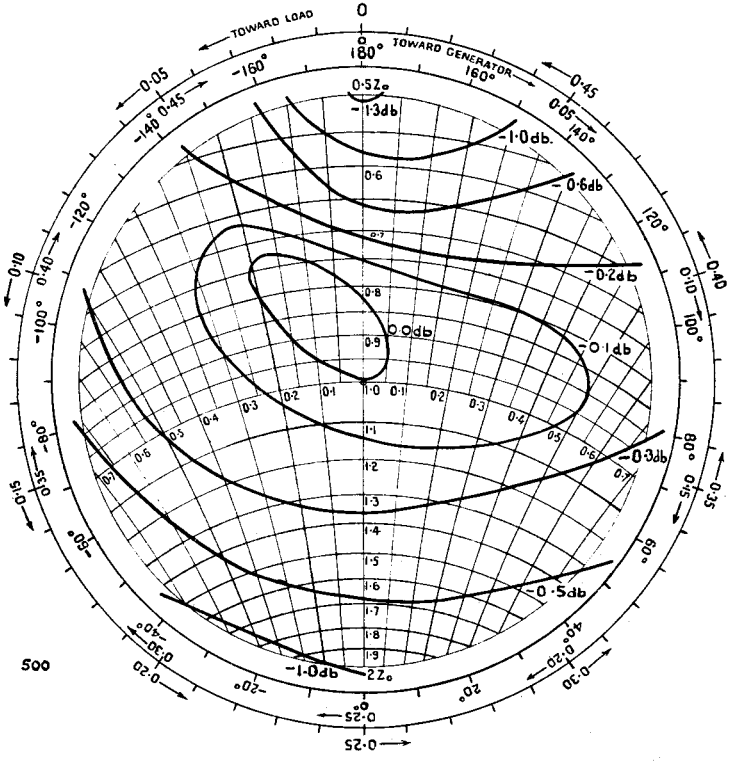
(1) The heater should either be increased slowly from zero to satisfy the surge current specification, or a resistance should be inserted in series with the supply voltage so that application of this voltage will not produce a surge current greater than the specified figure.

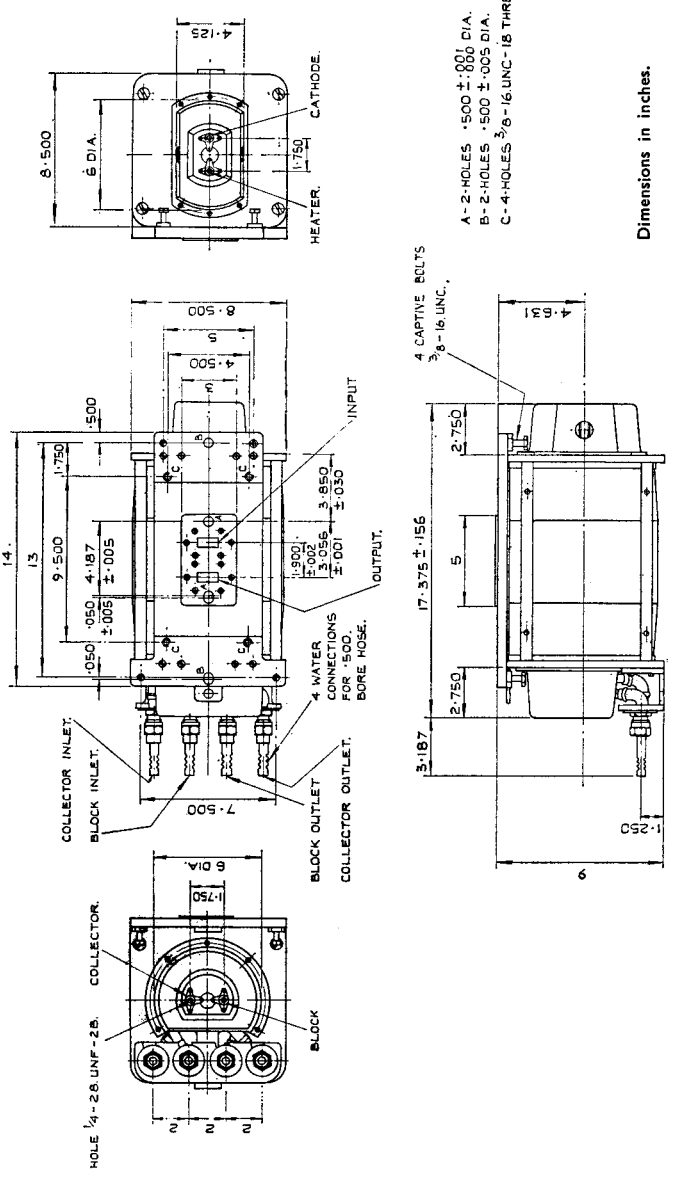
(2) The cavity block and collector are insulated from each other, and, current taken by the block can be therefore measured separately. This current should not exceed 200 mA. An H.T. trip set to operate at 200 mA. is a safeguard against H.T. Flash-over.

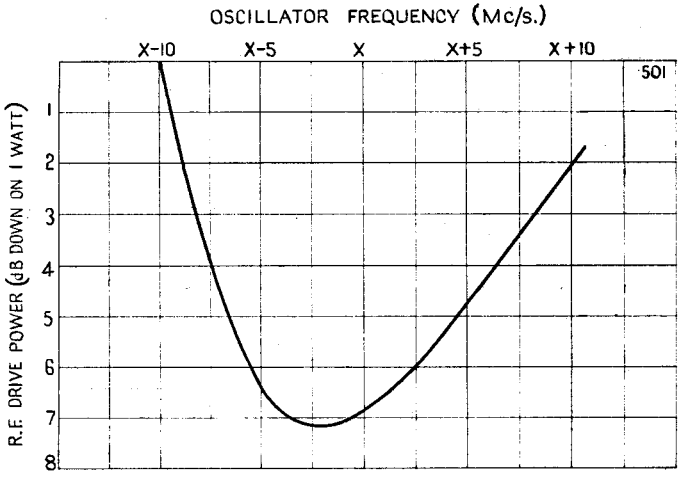
(3) Care should be taken not to exceed 2:1 VSWR in the output circuit, otherwise the output window may puncture. A VSWR higher than 2:1 may also make it impossible to obtain the stated output.

(4) A 200 ohms resistor of suitable wattage should be connected in series with the cathode H.T. supply to limit the current drawn in the event of flash-over.

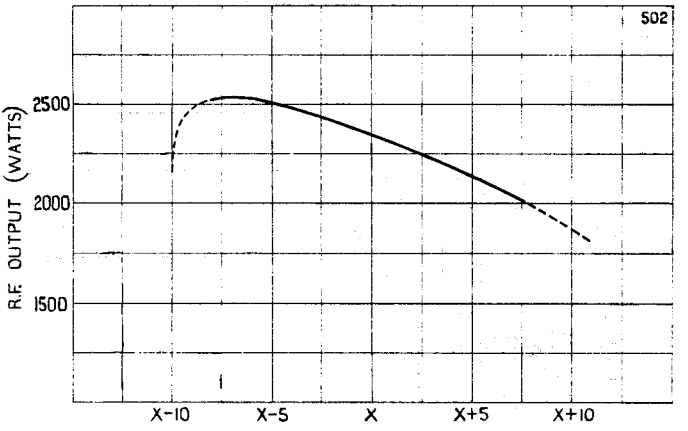
RIEKE DIAGRAM.




8·500
6 DIA.
4·125
1·750
CATHODE.
HEATER.
A - 2 HOLES ·500 +·001 -·000 DIA.
B - 2 HOLES ·500 ±·005 DIA.
C - 4 HOLES 3/8 - 16 UNC - 1B THREAD.
Dimensions in inches.
8·500
5
4·500
1·750
·500
14·
13
9·500
4·187 ±·005
·050 ±·005
·050
3·850 ±·030
1·900 +·002 -·001 3·056
INPUT
OUTPUT.
4 WATER CONNECTIONS FOR ·500. BORE HOSE.
COLLECTOR INLET.
BLOCK INLET.
BLOCK OUTLET
COLLECTOR OUTLET.
7·500
4 CAPTIVE BOLTS 3/8 - 16 UNC.,
4·631
2·750
17·375 ±·156
5
2·750
3·187
1·250
6
6 DIA
1·750
COLLECTOR.
BLOCK
HOLE 1/4 - 28 UNF - 2B.
2
2
2



'X' IS THE TUNED FREQUENCY OF THE SY41.



'X' IS THE SET FREQUENCY OF THE SY41 IN Mc/s.