TUNABLE MAGNETRON

JNT1-500

Frequency: *'L' band, mechanically tunable.*
Power output: *600kW, pulsed.*
Construction: *Unpackaged, forced-air cooled.*

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS—MICROWAVE DEVICES: INTRODUCTION and RADAR AND COMMUNICATION MAGNETRONS which precede this section of the handbook.

CHARACTERISTICS

	Min.	*Max.*	
Frequency			
Tunable over the range	1.22 to 1.35		Gc/s
Pulse voltage			
(I_{pulse} = 46A, H = 1.4kG)	26.5	31.5	kV
R.F. pulse power output			
(I_{pulse} = 46A, H = 1.4kG)	400	—	kW
Frequency pulling factor			
(v.s.w.r. = 1.5)	—	5.0	Mc/s
Frequency pushing factor	—	60	kc/s per A
Frequency temperature coefficient	—	−30	kc/s per °C

CATHODE

Indirectly heated

V_h	23.5	V
I_h	2.2	A
$I_{h(surge)}$ max.	4.0	A

Heating time. At ambient temperatures above 0°C the cathode must be heated for at least 3 minutes before the application of h.t. Below this temperature the heating time must be increased to at least 5 minutes.
It is necessary to reduce the heater voltage immediately after the application of h.t. and if operation substantially different from that shown under typical operation is envisaged Mullard Ltd. should be consulted.

TYPICAL OPERATION

f	1.285	Gc/s
Heater voltage (running)	15.5	V
Pulse duration	1.0	μs
Pulse repetition frequency	1000	p/s
Duty cycle	0.001	
Pulse current	46	A
Pulse voltage	27.2	kV
Pulse input power	1.25	MW
R.F. pulse output power	610	kW
Mean input current	46	mA
Mean input power	1.25	kW
Mean r.f. output power	610	W
Frequency pulling (v.s.w.r. = 1.5)	4.0	Mc/s
Rate of rise of pulse voltage	60	kV/μs
Magnetic field strength	1.4	kG

OPERATING NOTES

1. The magnetron is designed to feed into a 50Ω, $1\frac{5}{8}$ inch coaxial transmission line.
2. The maximum torque to be applied to the driving gear wheel for tuning the magnetron should not exceed 8lb. in (9.2kg.cm).
3. The coaxial outlet should be protected by a dust cover when the magnetron is not in use.

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COOLING

It is necessary to direct a flow of cooling air between the radiator fins, and on the cathode and heater seals, in order to keep the temperature below the permitted maximum.

LIMITING VALUES (absolute ratings)

	Min.	*Max.*	
Pulse current	25	60	A
Pulse voltage	24	34	kV
Pulse duration	1.0	6.0	μs
Duty cycle	—	0.002	
Mean input power	—	1.8	kW
Rate of rise of voltage pulse			
$t_p \leqslant 1.0\mu s$	—	70	kV/μs
$t_p > 1.0 \leqslant 5.0\mu s$	—	30	kV/μs
Load mismatch (v.s.w.r.)	—	1.5	
Temperature of anode block	—	125	°C

MOUNTING POSITION

Any

PRESSURISING

The output system may be pressurised up to a pressure of 1550torr.

PHYSICAL DATA

Weight of magnetron	19lb 13oz / 9 kg
Weight of magnetron in carton	37lb 8oz / 17 kg

ACCESSORY

Permanent magnet 55302

DIMENSIONS

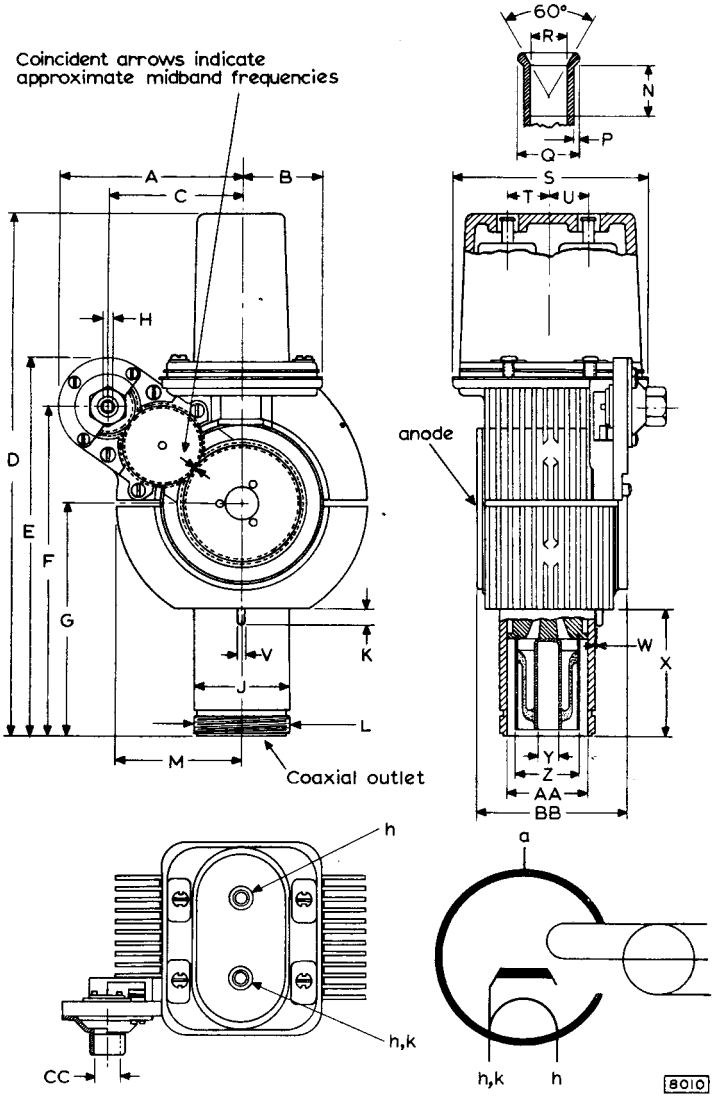
	Inches	*Millimetres*			*Inches*	*Millimetres*	
A	4.496	114.2	max.	P	0.012	0.31	min.
B	2.000	50.8	max.	Q	0.281±0.003	7.135±0.075	
C	3.374	85.7	max.	R	0.169±0.005	4.30±0.13	
D	12.500	317.5	max.	S	4.750	120.65	max.
E	9.185	233.3	max.	T	1.036	26.31	
F	8.000±0.185	203.2±4.7		U	0.904	22.96	
G	5.469±0.061	138.90±1.55		V	0.125±0.003	3.175±0.075	
H	0.250±0.002	6.35±0.05 (square hole)		W	0.010	0.25	max.
				X	3.055±0.007	77.585±0.185	
J	2.310±0.003	58.6625±0.0625		Y	0.564±0.010	14.325±0.255	
K	0.376±0.014	9.55±0.35		Z	1.577±0.010	40.05±0.25	
*L	2.312	58.7		AA	1.931±0.004	49.05±0.10	
M	3.000	76.2	max.	BB	3.505±0.055	89.025±1.395	
N	0.592±0.002	15.04±0.04	max.	CC	0.375±0.002	9.525±0.055	

*Thread specification—5 full threads minimum

Maximum major diameter = 58.75mm, 2.313in.
Minimum major diameter = 58.37mm, 2.298in.
Maximum pitch diameter = 57.69mm, 2.271in.
Minimum pitch diameter = 57.48mm, 2.263in.
Minimum minor diameter = 56.78mm, 2.235in.

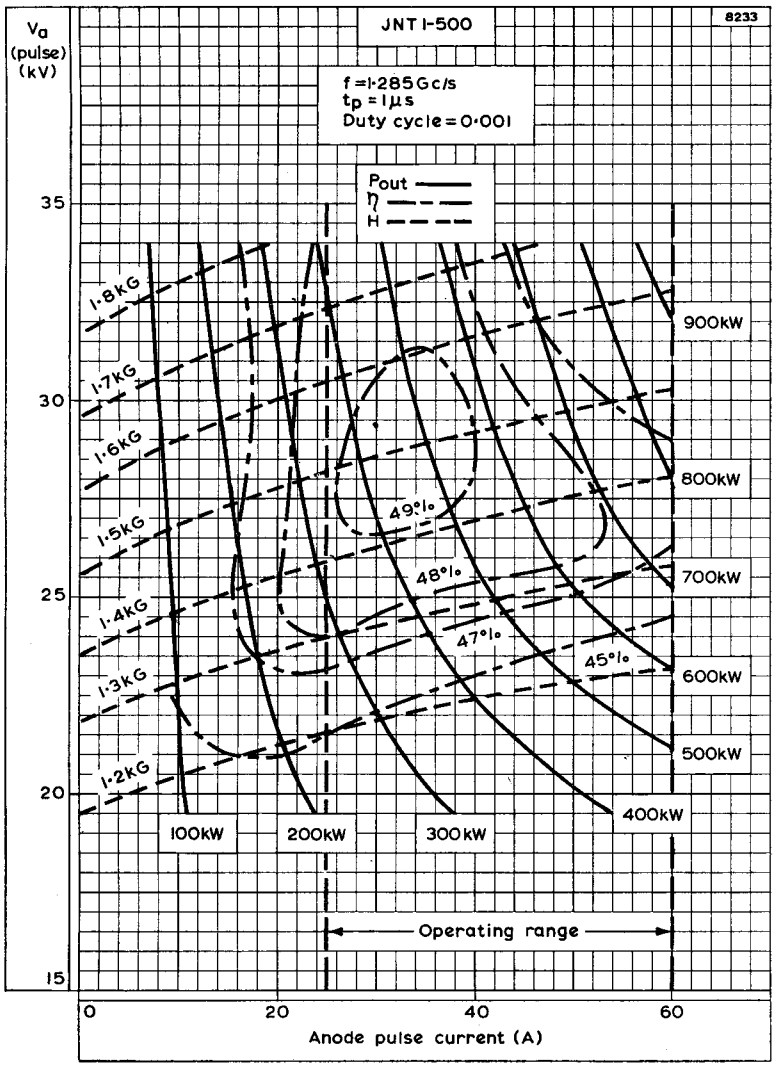
TUNABLE MAGNETRON

JNTI-500



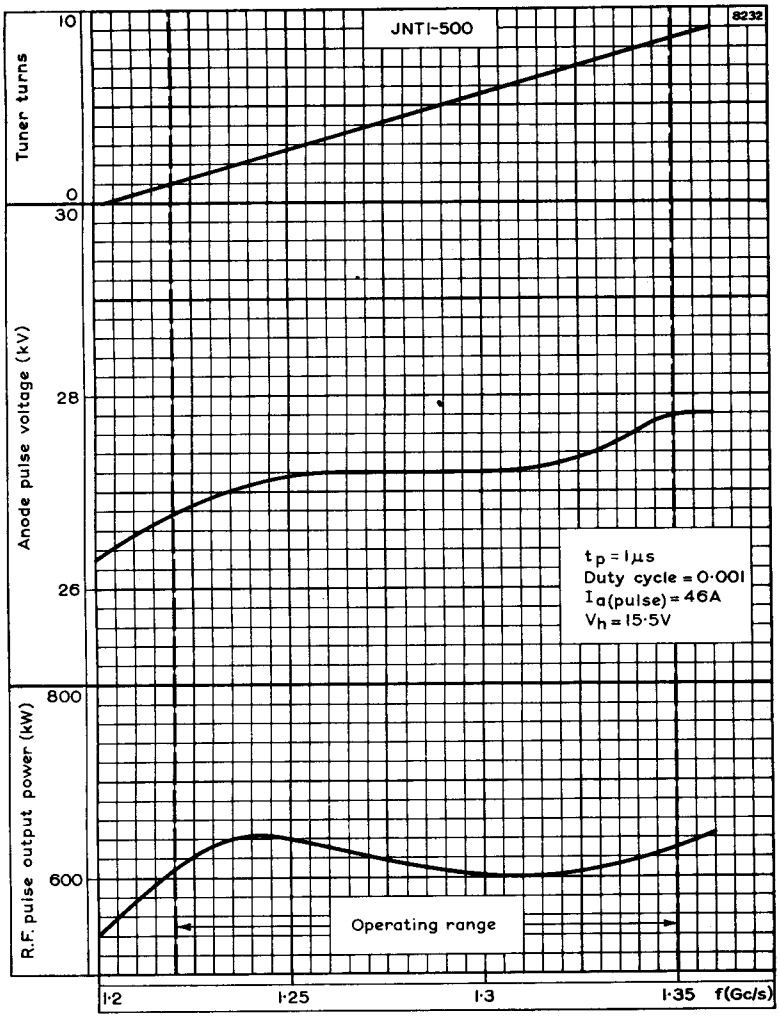
TUNABLE MAGNETRON

JNT1-500



ANODE PULSE VOLTAGE PLOTTED AGAINST ANODE PULSE CURRENT WITH R.F. PULSE POWER OUTPUT, MAGNETIC FIELD STRENGTH AND EFFICIENCY AS PARAMETERS

JNT1-500 TUNABLE MAGNETRON



TUNER TURNS, ANODE PULSE VOLTAGE AND R.F. PULSE OUTPUT POWER PLOTTED AGAINST FREQUENCY