

MAGNETRON

Frequency: 'X' band.
 Power output: 250kW pulsed.
 Construction: Packaged, forced-air cooled.

JP9-250 Series

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS - MICROWAVE DEVICES which precede this section of the handbook.

CHARACTERISTICS

Frequency:	Min.	Max.	
Fixed within band			
JP9-250	9.345 to 9.405		Gc/s
JP9-250A	9.003 to 9.168		Gc/s
JP9-250B	8.830 to 8.995		Gc/s
JP9-250C	8.865 to 8.995		Gc/s
JP9-250D	8.665 to 8.830		Gc/s
JP9-250E	8.500 to 8.665		Gc/s
Pulse voltage ($I_{\text{pulse}} = 27.5\text{A}$)	20	23	kV
R.F. pulse power output ($I_{\text{pulse}} = 27.5\text{A}$)	225	—	kW
Frequency pulling factor (v.s.w.r. = 1.5)	—	15	Mc/s
Frequency temperature coefficient	—	-250	kc/s per °C
Position of phase of sink from face of mounting plate towards load	0.25	to 0.4	λg

CATHODE

Indirectly heated			
V_h		13.75	V
I_h		3.25	A
I_h (surge)		15	A
r_h (cold)		0.58	Ω

Heating time. The cathode must be heated for at least 3 minutes before the application of h.t.

It is necessary to reduce the heater voltage immediately after the application of h.t. in accordance with the input power-heater voltage rating chart on page C2.

TYPICAL OPERATION

	0.001	0.001	0.001	
Duty cycle				
Heater voltage (running)	6.6	7.4	9.3	V
Pulse duration	0.5	2.0	5.0	μs
Pulse repetition frequency	2000	500	200	p/s
Pulse current	27.5	25	18	A
Pulse voltage	21.5	21.3	20.7	kV
Pulse input power	590	532	373	kW
R.F. pulse output power	250	225	155	kW
Mean input current	27.5	25	18	mA
Mean input power	590	532	373	W
Mean r.f. output power	250	225	155	W
Frequency pulling (v.s.w.r. = 1.5)	14	14	14	Mc/s
Rate of rise of pulse voltage	140	110	90	kV/ μs

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.

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LIMITING VALUES (absolute ratings)

	Min.	Max.	
Pulse current $\leq 1.2\mu\text{s}$	15	27.5	A
$= 6.0\mu\text{s}$	15	18	A
Pulse voltage	18.5	23	kV
Pulse duration	—	6.0	μs
Duty cycle	—	0.001	
Mean input power	—	750	W
Rate of rise of voltage pulse	70	160	kV/ μs
Load mismatch (v.s.w.r.)	—	1.5	
Temperature of anode block	—	150	$^{\circ}\text{C}$
Temperature of cathode and heater seals	—	165	$^{\circ}\text{C}$

MOUNTING POSITION

Any

PRESSURISING

The valve can be operated in the pressure range 600 to 2050mm of mercury.

PHYSICAL DATA

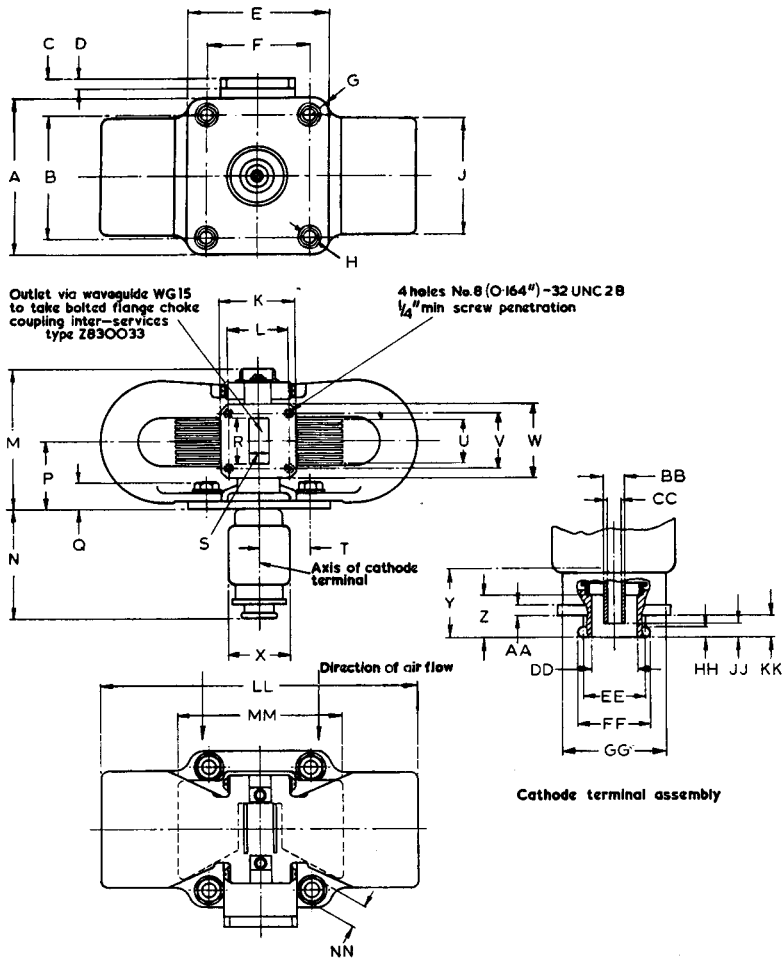
Weight of magnetron	{ 10	lb
	{ 4.5	kg
Weight of magnetron in carton	{ 13	lb
	{ 6.0	kg
Dimensions of storage carton	{ 7.0 × 9.6 × 11.2	in
	{ 178 × 244 × 284.5	mm

DIMENSIONS

	Inches	Millimetres		Inches	Millimetres	
A	3.874	98.4	max.	W	1.830 ± 0.01	46.48 ± 0.25
B	3.000 ± 0.01	76.20 ± 0.25		X	1.500	38.1 max.
C	0.906 ± 0.02	23.0 ± 0.5		Y	0.750	19.05 min.
D	0.250	6.35		Z	0.516	13.1 min.
E	3.469	88.1	max.	AA	0.115	3.175
F	2.500 ± 0.01	63.50 ± 0.25		BB	0.250 ± 0.02	6.35 ± 0.40
G	0.512	10.3R		CC	0.169 ± 0.004	4.3 ± 0.1
H	0.281	7.14		DD	0.539 + 0.004	13.7 + 0.1
J	2.874	73	max.		-0.008	-0.2
K	1.830	46.48		EE	0.750	19.05
L	1.474 ± 0.004	37.44 ± 0.10		FF	0.830 + 0.008	21.08 + 0.20
M	3.603	91.52	max.		-0.004	-0.10
N	2.680 ± 0.06	68.25 ± 1.50		GG	1.252	31.8
P	1.653 ± 0.02	41.99 ± 0.50		HH	0.125 ± 0.01	3.175 ± 0.250
Q	0.625 ± 0.03	15.88 ± 0.80		JJ	0.125	3.175 min.
R	1.122	28.50			0.187	4.75 max.
S	0.497	12.62		KK	0.250	6.35
T	1.250	31.75		LL	7.687	195.25 max.
U	1.000 ± 0.04	25.4 ± 1.0		MM	4.000	101.6
V	1.352 ± 0.004	34.34 ± 0.10		NN	0.500	12.7

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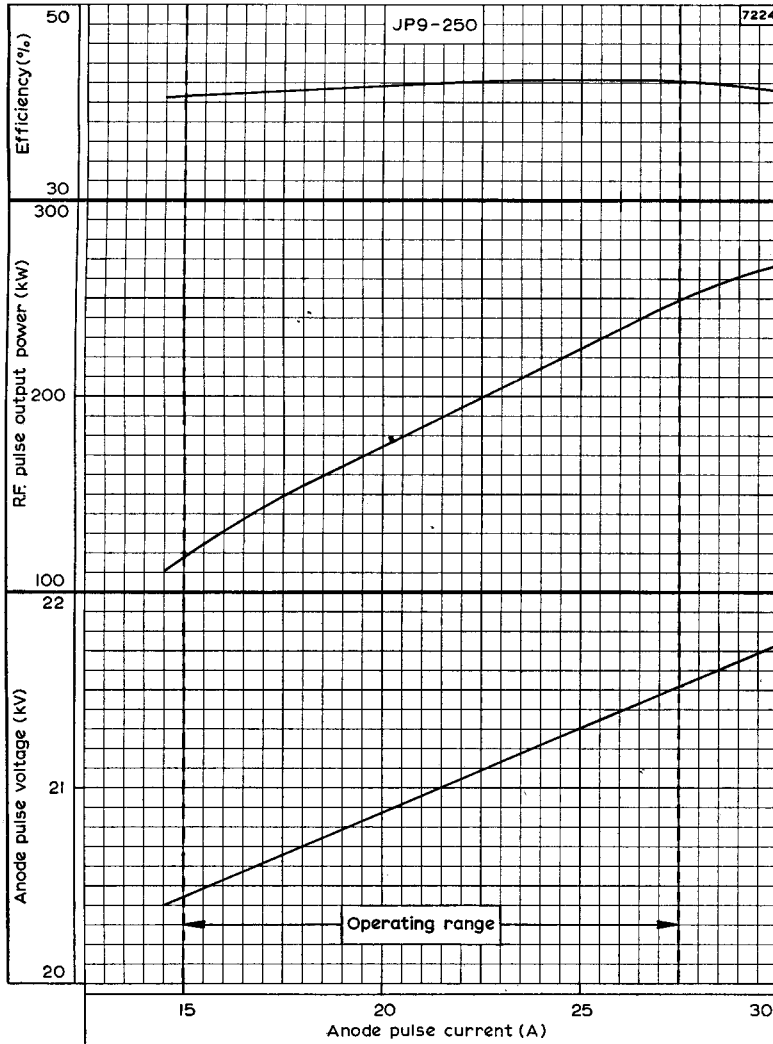
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The common heater cathode terminal is the sleeve of the cap, the other heater terminal is the centre contact. The anode connection is terminated at the base plate.



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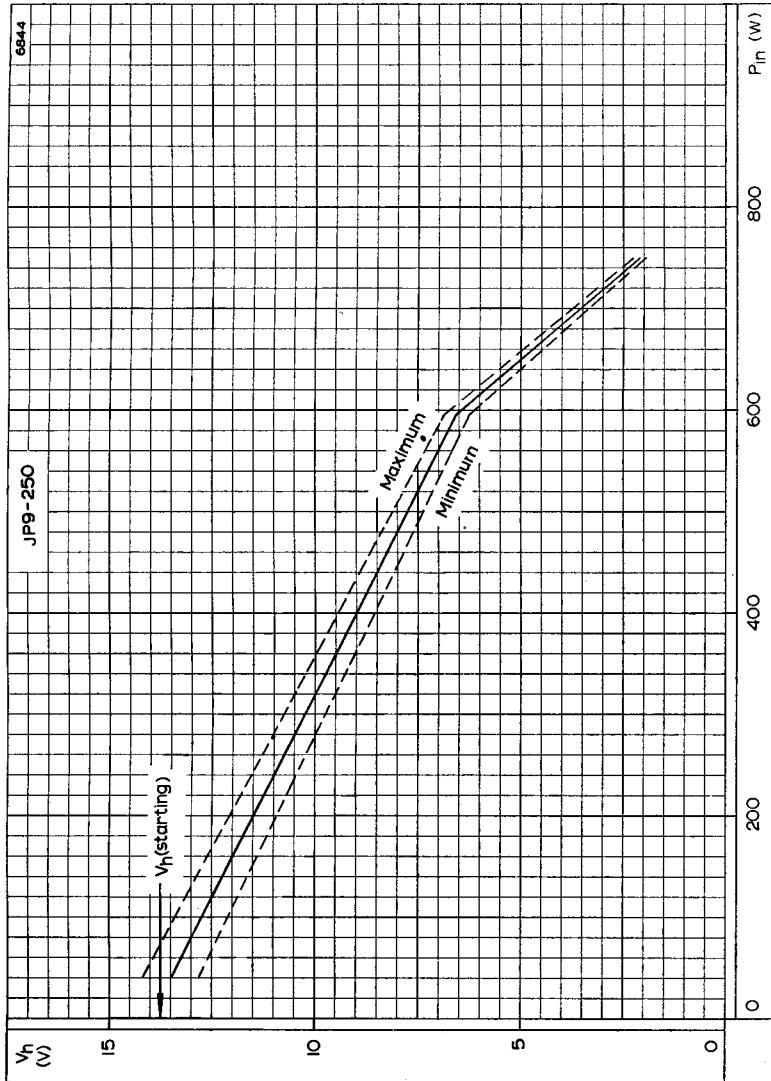
ANODE PULSE VOLTAGE R.F. PULSE OUTPUT POWER AND EFFICIENCY
PLOTTED AGAINST ANODE PULSE CURRENT



JP9-250

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HEATER VOLTAGE PLOTTED AGAINST MEAN INPUT POWER

