

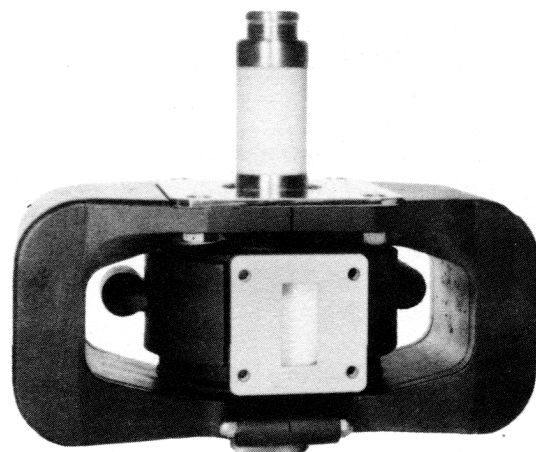
MCV. 1479 COAXIAL MAGNETRON

The MCV.1479 is a coaxial magnetron for use in airborne and ground-based radars. This tube delivers a peak output power of at least 200 kW over the frequency range of 8.5 to 9.6 GHz.

The MCV.1479 is mechanically tunable, the coaxial structure provides exceptional frequency stability, under the most severe environmental conditions.

This magnetron is liquid-cooled, incorporates integral magnets and features all metal and ceramic construction.

The MCV.1479 is ideal for frequency adjustable systems and is a direct replacement for the 4J50-TO and other conventional magnetrons.



GENERAL CHARACTERISTICS

Electrical

	min.	avg.	max.	
Frequency	8.5	-	9.6	GHz
Heater voltage (warm-up)	-	9	-	V
Heater current (for $V_f = 9$ V)	2.4	-	2.9	A
Peak RF output power	200	-	-	kW
Average anode current	-	27.5	-	mA
Peak anode voltage	20	-	24	kV
RF bandwidth (1)	-	-	2/tp	MHz
Side lobe ratio (1)	9	-	-	dB
Stability, missing pulses (1)	-	-	1	%
Pulling (2)	-	-	5	MHz
Pushing	-	-	100	kHz/A
Temperature coefficient	-	-	0.25	MHz/°C

(1) At the worst phase of 1.5 : 1 VSWR.

(2) For VSWR = 1.5 : 1



ABSOLUTE RATINGS

	min.	max.	
Warm-up voltage	8	15	V
Heater surge current	-	15	A
Warm-up time	180	-	s
Peak anode current	17	30	A
Rate of rise of voltage	70	160	kV/ μ s
Peak anode power	-	660	kW
Load VSWR	-	1.5 : 1	
RF output pressurization (1)	-	3.0	bar
Cooling liquid pressure	-	5.0	bar
Anode temperature (2)	-40	+125	$^{\circ}$ C
Cathode connection temperature (2)	-40	+165	$^{\circ}$ C
Duty cycle	-	0.0011	
Pulse duration	-	2.5	μ s

(1) See "Operating instructions".

(2) Measurement point indicated on drawing

TYPICAL OPERATION

(frequency 9 GHz)

Pulse duration	0.5	μ s
Duty cycle	0.001	
Peak anode voltage	22	kV
Peak anode current	27.5	A
Heater voltage	0	V
Side lobe ratio	12	dB
Pulling	3	MHz
Peak RF power	225	kW
Cooling water flow	2	l/mn
Load VSWR	1.05 : 1	
RRV	150	kV/ μ s

OPERATING INSTRUCTIONS

Heater protection

The heater should be protected against arcing by a capacitor of at least 0.004 μ F, connected in parallel on the heater and as close as possible from the output terminals.

Handling the tube

Do not exert any strains on the heater and cathode terminals.

Avoid shocks or stresses.

All magnetic materials should be kept away from the tube by at least 10 cm.

Pressurization

The MCV.1479 magnetron may be operated without breakdown in output at normal atmospheric pressure

- with dry air and perfectly clean output waveguides,
- VSWR less than 1.05 : 1
- peak output power less than 100 kW.

If all these conditions are not obtained, a minimum pressurization of 1.7 bar (absolute) is necessary.



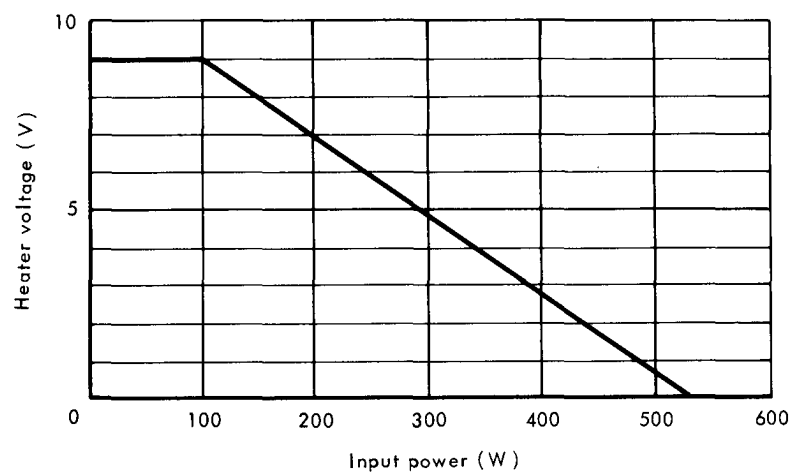
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HEATER VOLTAGE ADJUSTMENT



$$P_i < 100 \text{ W}$$

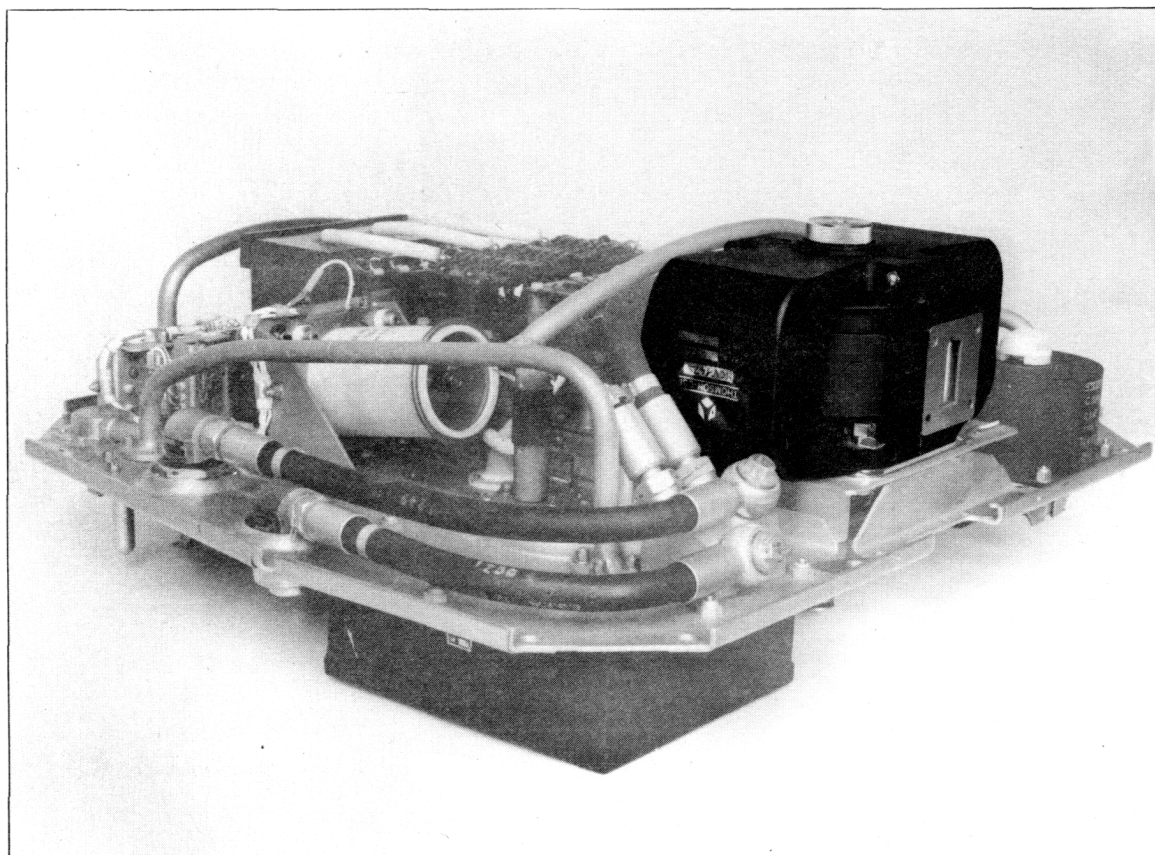
$$V_F = 9 \text{ V}$$

$$P_i > 525 \text{ W}$$

$$V_F = 0 \text{ V}$$

$$100 \text{ W} \leq P_i \leq 525 \text{ W}$$

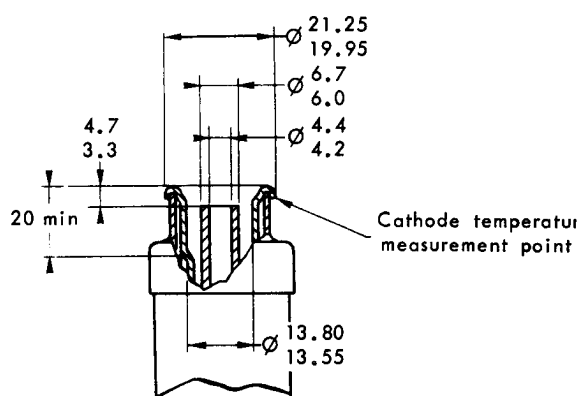
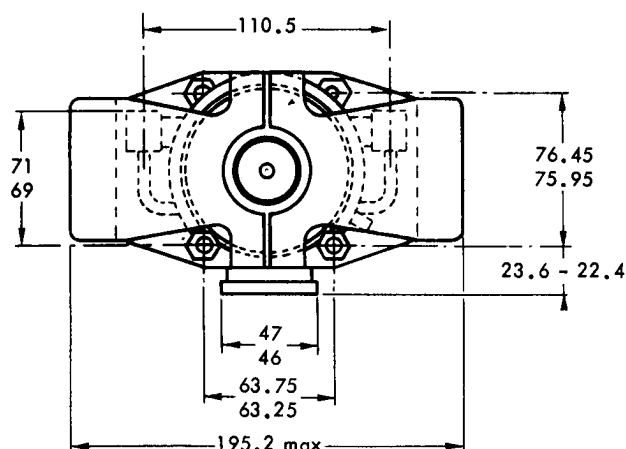
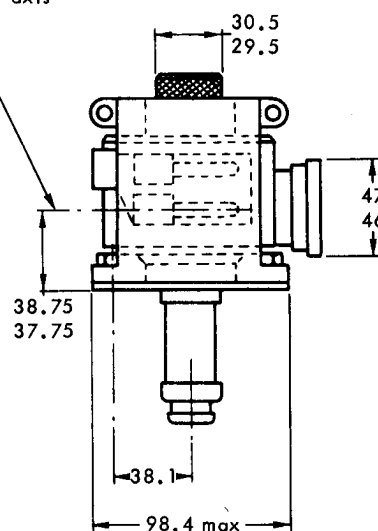
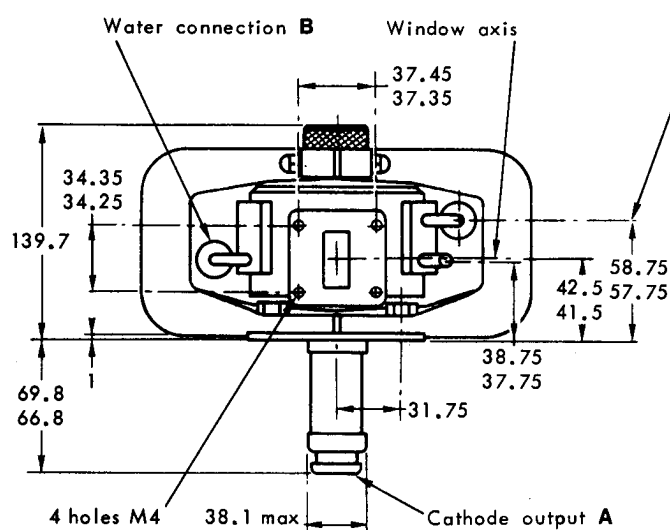
$$V_F = 100 - 0.19 P_i \text{ (W)}$$



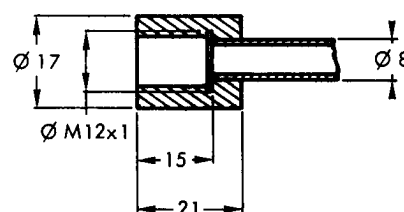
The MCV.1479 Magnetron is used in the "CYRANO" airborne radar.



OUTLINE DRAWING



DETAIL A



DETAIL B

Dimensions in mm.

