

X-band 70kW Magnetron

■ GENERAL DESCRIPTION

M1926 is a mechanically tunable frequency pulsed type X-band magnetron designed to operate in the frequency range of 9330MHz to 9470MHz with a peak output power of 70kW.

It is a waveguide output type and is forced air cooled.

A permanent magnet is packaged as part of the magnetron.



■ GENERAL CHARACTERISTICS

ELECTRICAL

PARAMETERS		
Heater voltage (note 4).		12.6 V
Heater current		2.2 A
Minimum preheat time		120 sec

MECHANICAL

PARAMETERS		
Dimensions		See outline drawing
Net weight		4 kg approximately
Mounting position		Any
Cooling		Forced air.
Output coupling (note 2).		UG-52B/U See page 5

■ MAXIMUM AND MINIMUM RATINGS(ABSOLUTE)

These ratings cannot necessarily be used simultaneously and no individual ratings should be exceeded.

PARAMETERS	Min	Max	Units
Heater voltage	-	13	V
Heater current		2.5	A
Heater surge current		10	A
Cathode preheating time	120	-	sec
V.S.W.R at load	-	1.5:1	—
Rate of rise of voltage pulse	50	150	kV/μs
Anode temperature (note 3)	-55	150	°C
Cathode bushing temperature (note 3)	-55	185	°C
Anode current (peak)	5	18	A
Anode input power (peak)	-	280	kW
Duty cycle	-	0.001	—
Pulse duration	0.15	2.5	μs
Pulse recurrence rate	-	5000	pps
Pressurizing of output circuit	1	3.2	kg/cm ² (abs.)

■ ELECTRICAL CHARACTERISTICS

Test conditions	Oscillation	Units
Heater voltage (preheating)	12.6	V
Heater voltage (for test) (note 4)	8.85	V
Anode current (peak)	14	A
Pulse duration	0.9	μs
Duty cycle	0.0009	—
Preheat time	120	sec

Limits	Min	Max	Units
Heater current (note 4)	2.0	2.4	A
Anode voltage (peak) (note5)	13.0	16.0	kV
Output power (peak) (note5)	70	-	kW
Frequency (note7,8)	9330	9470	MHz
Stability (note1,6) (V.S.W.R not less than 1.5:1)	-	0.1	%
Frequency pulling: (note 1,6) (V.S.W.R. not less than 1.5:1)	—	18	MHz
Frequency pushing (note 1, 6) (Anode current (peak)=13~15A)	-	100	kHz/A
Temperature coefficient of frequency(note1,3,6)	-	0.25	MHz/°C

Notes

1. Design test only
2. Output flange uses UG-52B/U or an equivalent thing.
3. The anode temperature and cathode terminal temperature measured at the point indicated on the outline drawing.
4. It heats until cathode becomes a temperature of operation, before applying anode voltage. Therefore heater voltage is set to 12.6V±5% and heated for more than 120 seconds with no anode input power.

During high voltage operation it is essential to operate the heater according to the following schedule:

$$E_f = 12.6 - 0.021P_i \pm 10\% \text{ V}$$

Where P_i = mean input power in watts

5. These tests are carried out 9350, 9410 and 9450MHz.
6. These tests are carried out at 9410 MHz.
7. The tuner dial setting value over the frequency code shown below is displayed on an electron tube.

Frequency code

9350MHz : f1

9410MHz : f2

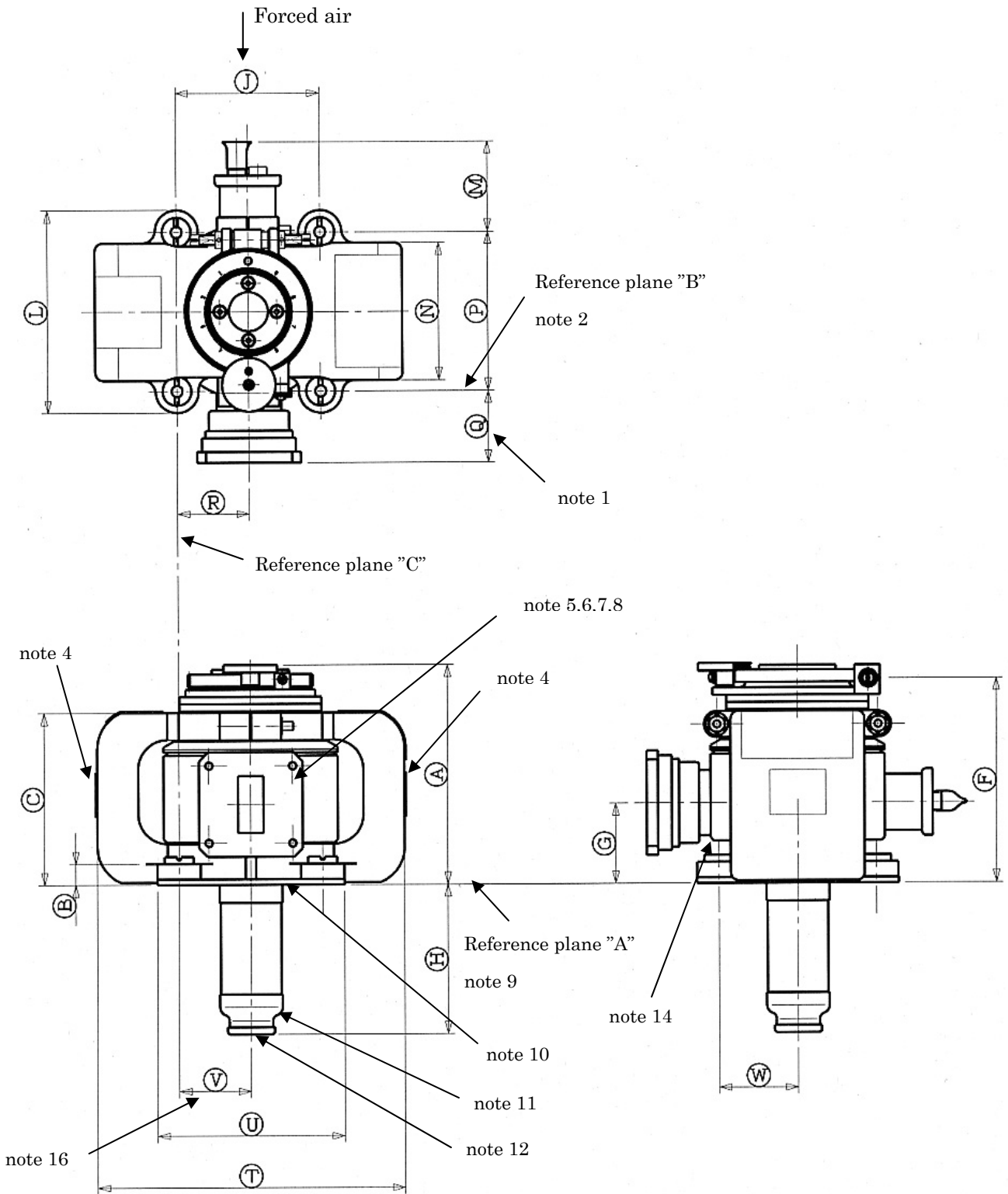
9450MHz : f3

8. Oscillation frequency becomes high when rotating a frequency alignment gear part clockwise.

X-RAY WARNING

High voltage magnetrons emit a significant intensity of X-rays not only from the cathode sidearm but also from the output waveguide. These rays can constitute a health hazard unless adequate shielding for X-ray radiation is provided. This is a characteristic of all magnetrons and the X-rays emitted correspond to a voltage much higher than of the anode.

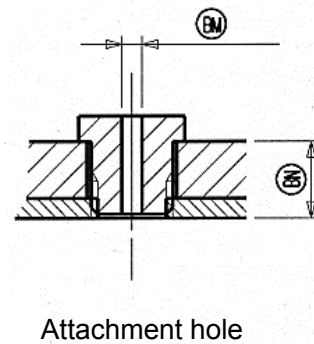
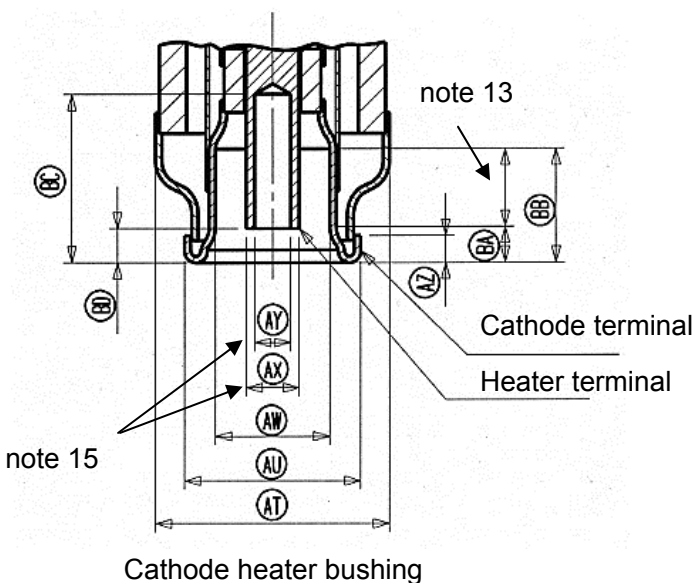
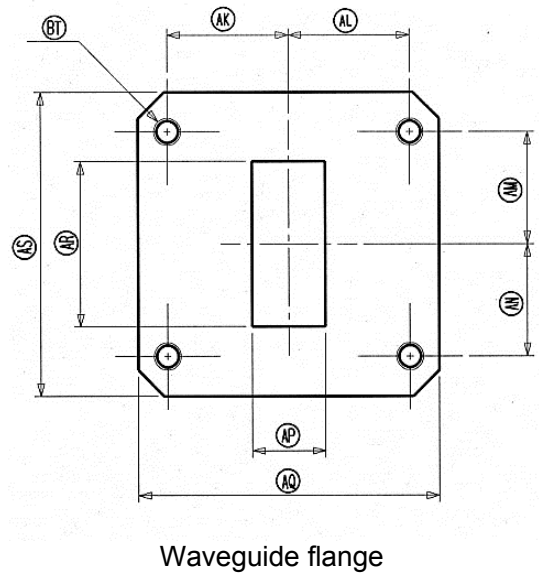
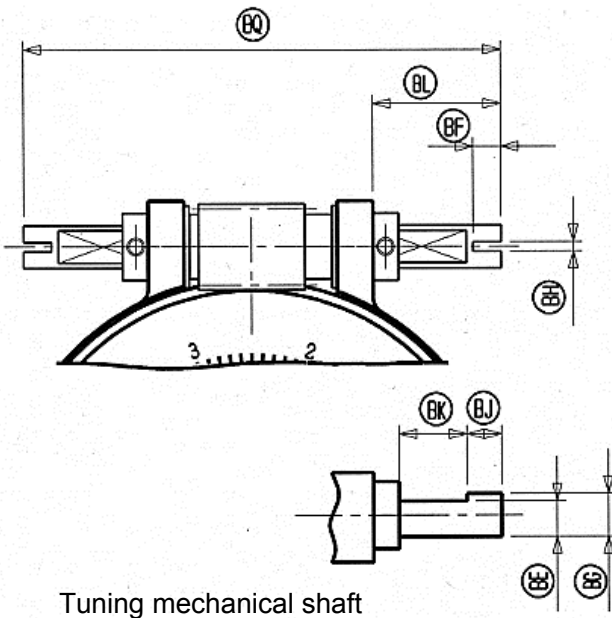
■ OUTLINE M1926



Outline Dimensions (All dimensions without limits are nominal)

Ref	Inches	Millimeters	Ref	Inches	Millimeters
A	4.1max	104.14max	N	2.425max	61.6max
B	0.5	12.7	P	2.781±0.015	70.64±0.38
C	30.5max	77.47max	Q	1.272±0.024	32.31±0.61
F	3.66max	92.97max	R	1.265	32.131
G	1.406±0.02	35.71±0.51	T	6.162	156.52max
H	2.63±0.06	66.8±1.53	U	3.3	83.82
J	2.531±0.015	64.29±0.38	V	1.265	32.131
L	3.56	90.424	W	1.39	35.306
M	1.772max	45max			

Each part detail view



Ref	Inches	Millimeters	Ref	Inches	Millimeters
AK	0.737±0.005	18.72±0.13	BA	0.156max	3.963max
AL	0.737±0.005	18.72±0.13	BB	0.516min	13.1min
AM	0.676±0.005	17.17±0.13	BC	0.75min	19.05min
AN	0.676±0.005	17.17±0.13	BD	0.156±0.031	3.96±0.79
AP	(0.445)	(11.3)	BE	0.156±0.005	3.96±0.13
AQ	1.83±0.015	46.48±0.38	BF	0.125±0.01	3.18±0.25
AR	(0.996)	(25.3)	BG	0.188±0.0016 DIA	4.78±0.04 DIA
AS	1.83±0.015	46.48±0.38	BH	0.0429±0.0031	1.09±0.08
AT	1.093±0.031 DIA	27.76±0.79 DIA	BJ	0.148±0.0075	3.77±0.19
AU	0.8315±0.0067 DIA	21.12±0.17 DIA	BK	0.297	7.55
AW	0.539±0.0067 DIA	13.68±0.17 DIA	BL	0.565	14.35
AX	0.25±0.016 DIA	6.35±0.41 DIA	BM	0.193±0.0031	4.9±0.08
AY	0.169±0.005 DIA	4.29±0.13 DIA	BN	0.34	8.636
AZ	0.125±0.01	3.18±0.25	BQ	2.111	53.62
			BT	#8-32NC-2	#8-32NC-2

Outline Notes

1. The deviation and angle of the side are included.
2. Reference plane "B" is a plate passing through the center of the hole of the mounting plate which goes to the Reference plane "A" direct and is shown in an outside figure.
3. Reference plane "C" is a plate passing through the center of the hole of the mounting plate which intersects perpendicularly with the Reference plane "A" and "B" mutually, and is shown in an outside figure.
4. It is a cautions display.(KEEP 6cm AWAY FROM STEEL)
5. A protection cover is attached when not using an electron tube.
6. Waveguide WR112 or equivalent is attached.
7. Choke flange UG-52B/U fits the output flange.
8. Allowance for rough surface of output flange is less than 0.254mm.
9. Reference plane "A" is on a parallel with plane of the base plate surface.
10. "N" pole of the magnet is at the input side of electron tube.
11. Input bushing temperature is measured at this point.
12. Connectors shown in connectors Cat. No.90-006, 90-030; Jettron Product Inc. Hanover N.J. or equivalent is applicable to input connector.
13. In this portion of the cathode heater bushing, (AW) means the exact length of the diameter.
14. Test point for anode temperature.
15. Allowance between these centers of the heater terminal circle and cathode terminal circle in a concentric circle is less than 0.254mm.

16. Dimension (V) means the length between Reference plane "C" and the center line of cathode heater bushing diameter (AW).
17. Melamine coating (black) is applied to the surface.