

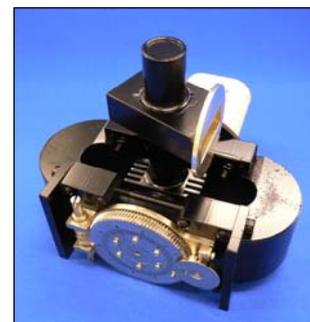
X-band 40kW Magnetron

■ GENERAL DESCRIPTION

M118 is a mechanically tunable frequency pulsed type X-band magnetron designed to operate in the frequency range of 8.5 GHz to 9.6 GHz with a peak output power of 40kW.

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 1).	6.3 V
Heater current	1.0 A
Minimum preheat time	120 sec

MECHANICAL

PARAMETERS	
Dimensions	See outline drawing
Net weight	2.3 kg approximately
Mounting position	Any
Cooling (note 5).	Forced air.
Output coupling	M85/1-073 with M3922/59-007 choke flange

■ 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	-	7.0	V
Peak anode voltage	-	16	kV
Peak anode current	-	16	A
Average anode power input (note 2)	-	230	W
Duty cycle	-	0.0012	—
Pulse duration	-	1.0	μs
Anode temperature (note 5)	-	150	°C
V.S.W.R at output coupler	-	1.5:1	—

■ ELECTRICAL CHARACTERISTICS

Test conditions	Oscillation	Units
Heater voltage (preheating)	6.3	V
Heater voltage (operating) (note 1)	0	V
Pulse duration (note 3)	1.0	μs
Duty cycle	0.001	—
Rise time of voltage pulse (note 4)	0.2 Max.	μs
Average Anode current	14	mA
V.S.W.R. at the output coupler	1.1Max	—

Limits	Min	Max	Units
Peak anode voltage (note 7)	13	15	kV
Average output power	40	-	W
Frequency	8.5	9.6	GHz
R.F. bandwidth at 1/4 power (note 7)	-	3	MHz
Frequency pulling: (note 7) (V.S.W.R. not less than 1.5:1)	—	18	MHz
Heater current(note 6)	0.9	1.1	A

Notes

1. Heater voltage must be reduced within 3 sec after the application of high voltage according to the following schedule.

$$E_f = 6.3 \sqrt{1 - \frac{P_i}{150}} \text{ (V)}$$

For average input power greater than 150 W, the heater voltage must be reduced to 0 V.

2. The various parameters are related by the following formula:

$$P_i = i_b \times e_p \times D_u$$

w P_i = mean input power in watts

h

e

r

e

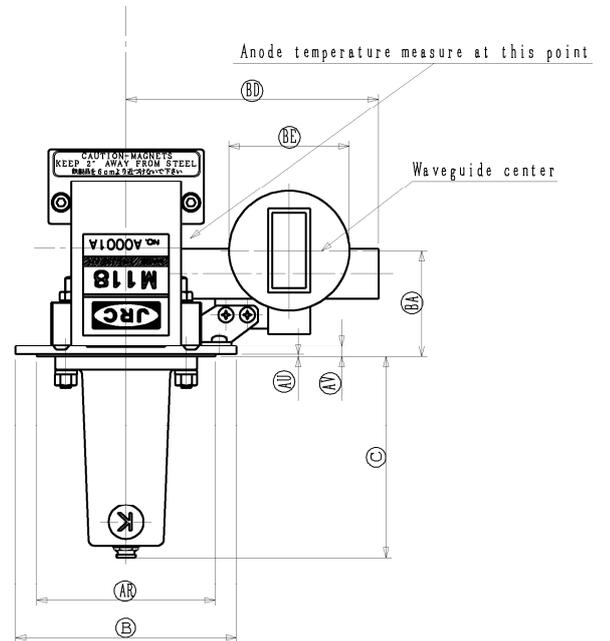
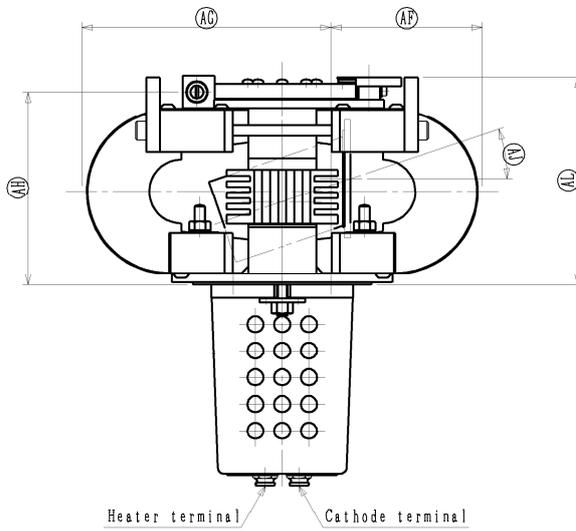
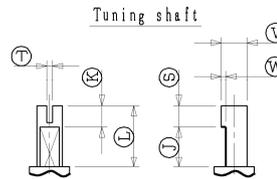
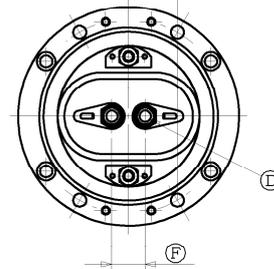
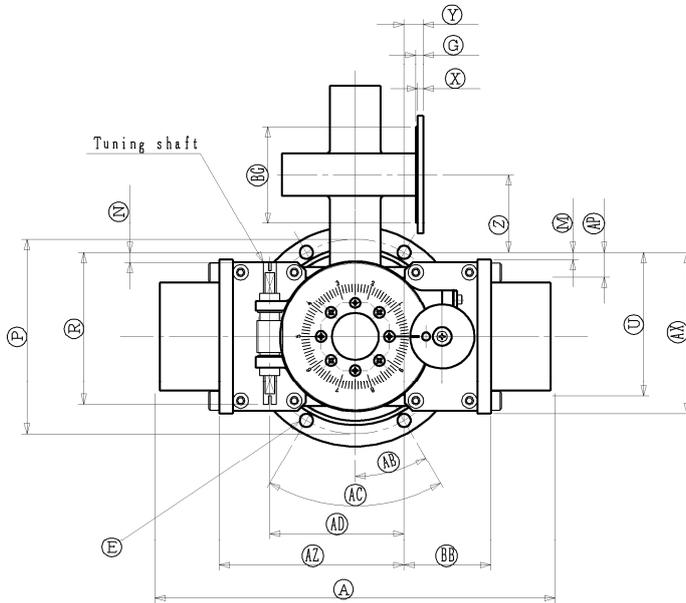
i_b = peak anode current in amperes

e_p = peak anode voltage in volts

D_u = duty cycle

3. Tolerance $\pm 10 \%$
4. Defined as the rising time of the high voltage pulse between 10 % and 90 % amplitude. Any capacitance in the viewing system must not exceed 6.0pF.
5. The anode temperature measured at the point indicated on the outline drawing must be kept below the limit specified by means of a suitable flow of air.
6. Measured with heater voltage of 6.3 V and no anode input power.
7. Peak anode voltage, R.F. bandwidth at 1/4 power and frequency pulling are measured at 9.3GHz.

■ OUTLINE M118



Outline Dimensions (All dimensions without limits are nominal)

(Mark "***" put on the symbols means design test only.)

Symbol	Min	Max
A	-	150.8
** B	ϕ 81.8	ϕ 83.3
** C	74.2	77.4
D	ϕ 4.16	ϕ 4.42
E	ϕ 4.82	ϕ 4.98
F	12.45	12.95
** G	3.2	
** J	5.0	
** K	2.8	3.3
** L	11.15	
M	1.1	-
N	2.85	5.87
P	ϕ 72.87	ϕ 73.18
R	56.47	57.99
** S	3.8	
** T	1.1	
U	-	55.6
** V	ϕ 4.74	ϕ 4.81
** W	3.96	
X	2.03	2.29
Y	6.63	7.64
Z	29.8	30.8
** AB	30°	
AC	59°48'	60°12'
AD	49.63	50.39
AF	-	57.2
AG	-	93.7
AH	72.0	73.0
** AJ	18°42'	
** AL	-	78.2
AP	7.8	-
** AR	ϕ 66.5	ϕ 66.8
AU	0.6	1.0
AV	3.96	-
AX	-	6.23
AZ	-	70.6
BA	39.17	40.19
BB	-	34.1
BD	-	99.2
BE	ϕ 44.27	ϕ 44.63
BG	ϕ 36.53	

Dimensions in millimeters