ELECTRON TUBE DEPARTMENT ■ COMPONENTS DIVISION
INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION, CLIFTON, NEW JERSEY

F-7340 TRAVELING WAVE TUBE

(FORMERLY D-95)

DESCRIPTION:

The F-7340 is a 1 kilowatt pulse traveling wave amplifier tube having 30 db gain and 8000 to 9600 mc frequency range. It is constructed in a rugged metal envelope with a helix type slow wave structure. The integral matching circuit is in 50 ohm coaxial line and is provided with type 'N' connectors. The tube is self-aligning in the external solenoid which is required to provide a uniform magnetic field. A convergent beam gun and oxide impregnated cathode are used. Duty cycles up to .005 and pulse lengths up to 10 microseconds can be used.

A control grid suitable for grid pulsing is provided.

ELECTRICAL RATINGS, ABSOLUTE VALUES:

Heater Voltage	6.3 (±5%)	volts
Heater Current	5.2	amperes
Maximum Anode Voltage (Note 1)	12,000	volts
Maximum Shell Current	1.5	ampere peak
Maximum Collector Dissipation (Note 2)	180	watts average
Maximum R-F Input Power	10	watts average
Maximum R-F Output Power	10	watts average
Maximum Duty Cycle	.005	
Maximum Pulse Width	10	μ seconds
Maximum Cathode Current	3.0	amperes peak
Maximum Grid Voltage		
Negative	-300	volts
Positive (Note 5)	+450	volts
Maximum Grid Current	.27	ampere peak

ELECTRICAL INFORMATION:

Maximum Frequency (Note 3)	9600	mc
Minimum Frequency (Note 3)	8000	mc
Minimum Transmission Loss		
at Grid Bias = -200 volts	60	db

ELECTRICAL INFORMATION (Continued)

Capacitance		
Control Grid to All Other Elements	9	μμfd

MECHANICAL INFORMATION:

Type of Cathode	Oxide Impregnated Unipotential	
Base (Note 8)	JEDEC Designation B6-65	
Molded Silicone Rubber Base with Flying Leads or Small Shell Duodecal, 6 Pin		
Type of Envelope		Metal
Magnetic Field Strength	2400	gauss
Length of Magnetic Field	6.75	inches uniform
Mounting Position		Any
Weight of Tube	1 lb.	7 oz.
R-F Connections (Note 8)	Type N Jack	UG-23 B/U
Type of Cooling	Forced Air	
Air Flow on Collector Radiator (Note 2)	300	cfm
Maximum Glass Temperature	160	°C

TYPICAL OPERATION AS POWER AMPLIFIER:

Center Frequency	9000	mc
Anode Voltage (Note 1)	9600	volts
Cathode Current	1.8	amperes peak
Power Output (at center frequency)	1.8	kw peak
Bandwidth	8.0 to 9.6	kmc
Gain (Note 4)	30	db
Duty	.001	
Pulse Width	2.0	μ seconds
Grid Bias (for cut-off)	-100	volts
Grid Voltage during Pulse (Note 6)	+350	volts
Grid Current during Pulse	0.1	ampere peak

Note 1: All voltages shown are with respect to cathode. Anode and helix are connected internally to the shell. Helix connection is center conductor of coax. Shell is normally operated at ground potential and connection is made to the shell of the solenoid.

Note 2: Forced air cooling is required for average collector power in excess of 10 watts. As the collector power is increased, the air flow required increases. At the maximum collector power of 150 watts, a minimum air flow of 30 cfm through the cooling fins is required.

Note 3: Useful gain and power output exists below 8000 mc and above 9600 mc and can be utilized by adjusting anode voltage to optimize the frequency range desired. However, bandwidth cannot be extended both upward and downward simultaneously and maximum gain and power output outside the normal bandwidth will be lower than rated values.

Note 4: This gain is obtained over the 8.0 to 9.6 kmc bandwidth at the power level indicated. Since this is in the power saturation region, small signal gain will be approximately 10 db higher. Fine grain structure of small signal gain is normally less than ± 3 db.

Note 5: Positive voltage must not be applied to the grid in the absence of anode voltage.

Note 6: The positive grid voltage pulse should be the minimum consistent with normal power output.

Note 7: Mismatch up to and including a short circuit in input or output lines will not cause oscillation.

Note 8: Unless otherwise specified on Purchase Order, tube will be provided with small shell duodecal base and type N jack. Waveguide flange, UG 40 A/U, r-f connections can also be provided.

GENERAL OPERATING INSTRUCTIONS:

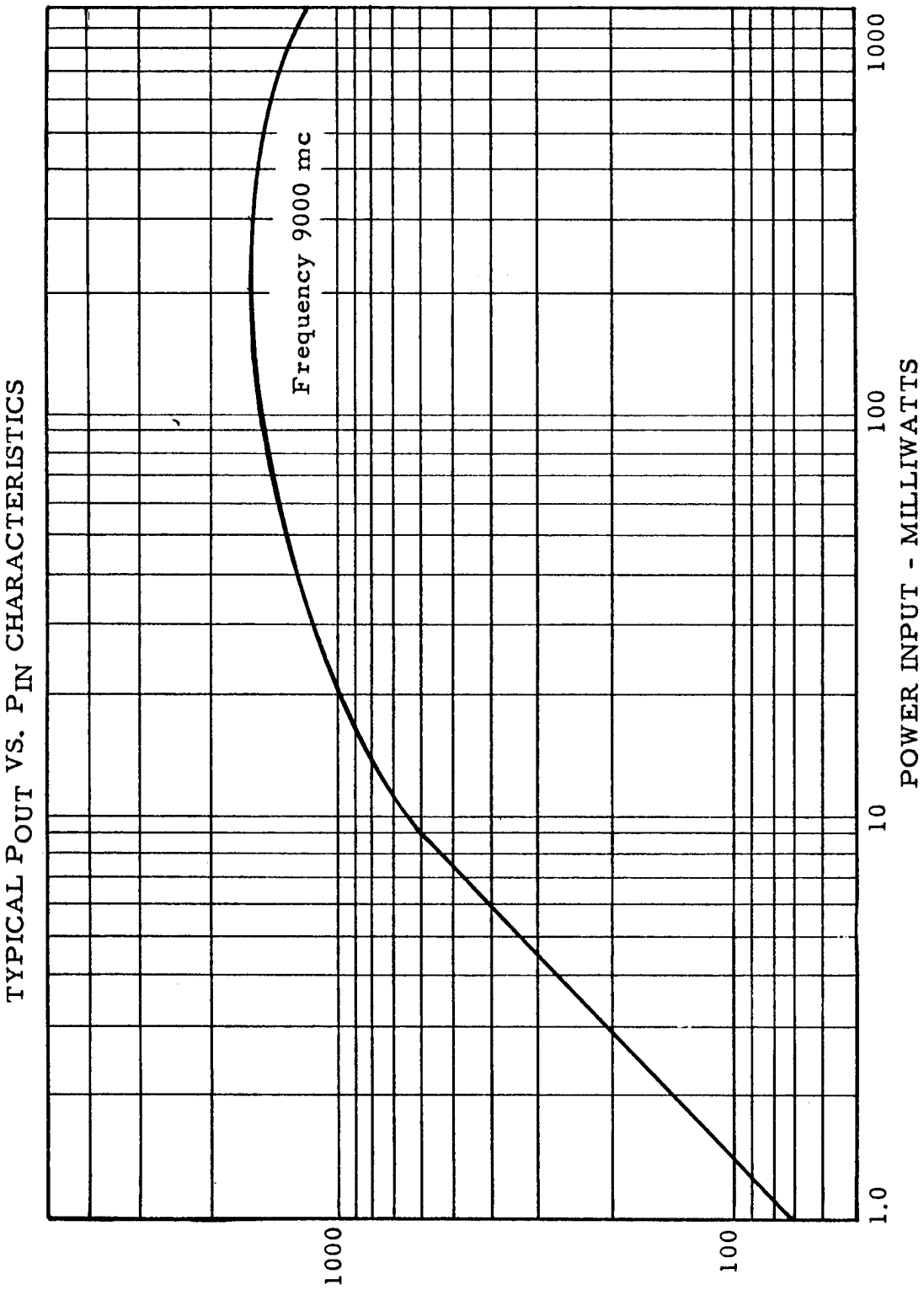
(1) Heater warm up of 2 minutes before applying high voltage is recommended.

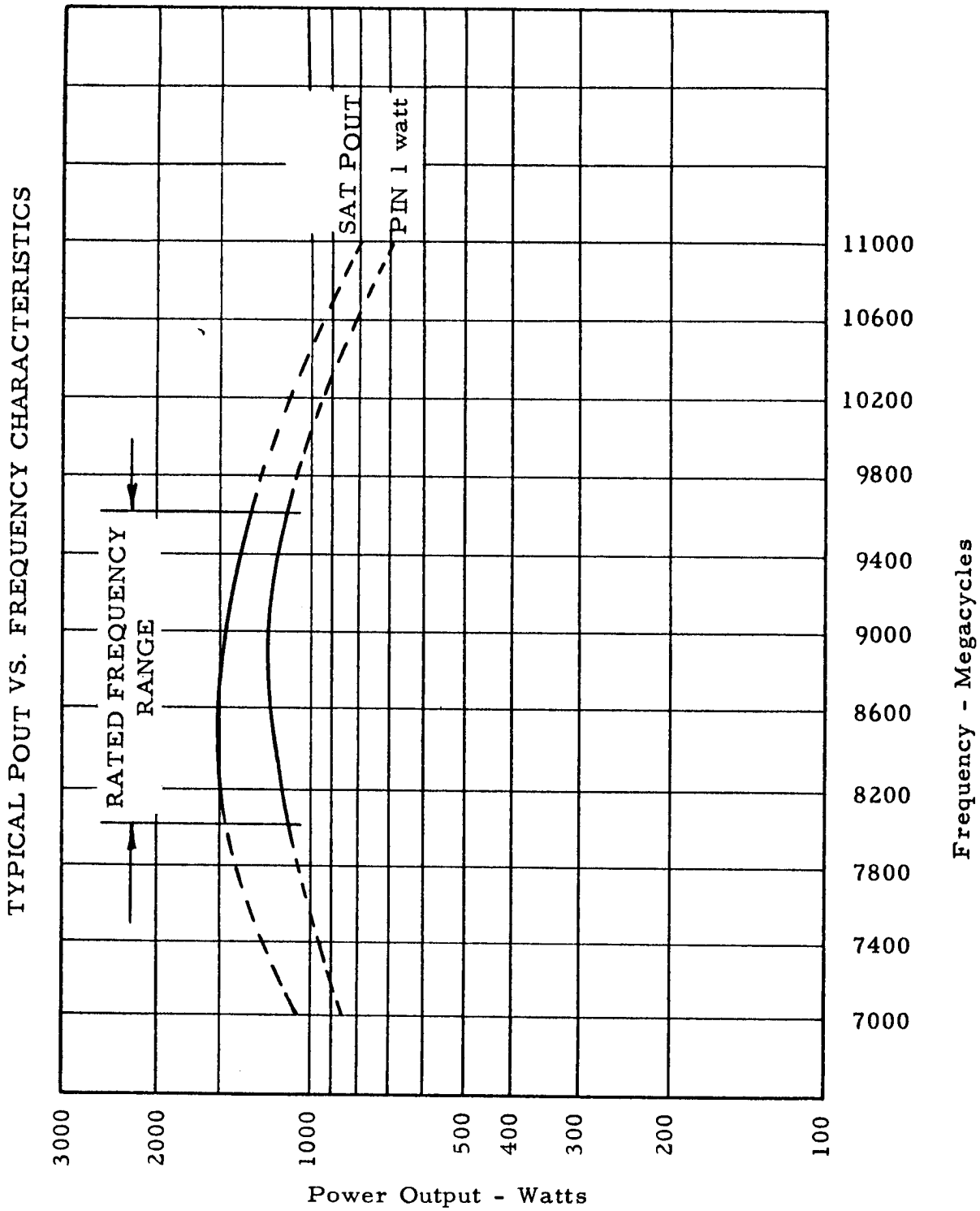
(2) High voltage must not be applied in the absence of proper grid bias and magnetic field. Positive grid pulse voltage must not be applied in the absence of high voltage.

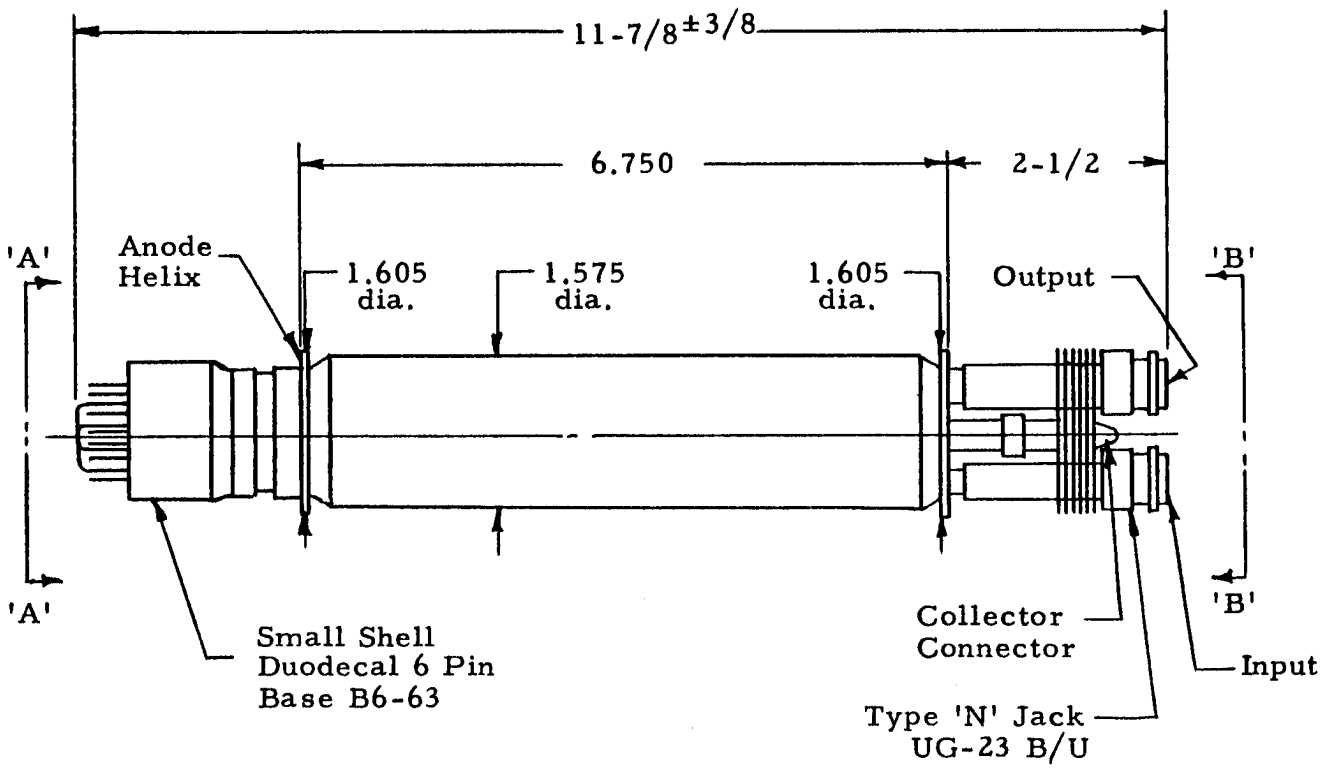
(3) Initial adjustments should be done at low duty cycle (less than .001) to prevent tube damage dùe to high shell (interception) current.

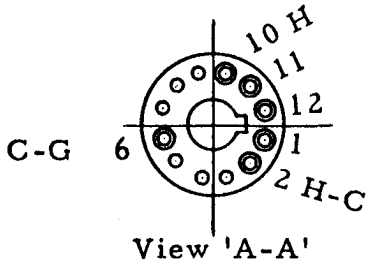
Additional information for specific applications can be obtained from the

Electron Tube Applications Section
ITT Components Division
P. O. Box 412
Clifton, New Jersey


TYPICAL POUT VS. PIN CHARACTERISTICS
Frequency 9000 mc
POWER INPUT - MILLIWATTS
1000
100
10
1.0
1000
100

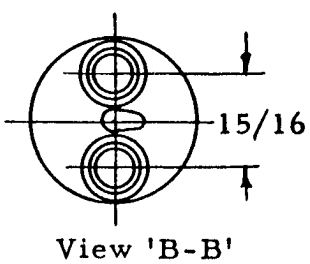

TYPICAL POUT VS. FREQUENCY CHARACTERISTICS
SAT POUT
PIN 1 watt
RATED FREQUENCY RANGE
11000
10600
10200
9800
9400
9000
8600
8200
7800
7400
7000
Frequency - Megacycles
3000
2000
1000
500
400
300
200
100
Power Output - Watts





BASING

PIN	ELEMENT
1	No conn.
2	Heater-Cathode
6	Control Grid
10	Heater
11	No conn.
12	No conn.



OUTLINE

TRAVELING WAVE TUBE F-7340