



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

**F-7066
TRAVELING
WAVE TUBE**

TENTATIVE

DESCRIPTION

The F-7066 is a 50 mw CW traveling wave amplifier tube having 30 db gain and 8.0 to 12.0 kmc 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 female TNC 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 coated cathode are used. The tube is suitable for either CW or pulse service.

ELECTRICAL RATINGS, ABSOLUTE VALUES

Heater Voltage	6.3 ($\pm 5\%$)	volts
Heater Current	0.85	ampere
Maximum Anode Voltage (Note 1)	1600	volts
Maximum Helix Current (Note 2)	2	ma
Maximum Collector Dissipation (Beam Power)	15	watts
Maximum Control Electrode Voltage (Note 3)	-500	volts

ELECTRICAL INFORMATION:

Maximum Frequency	12.0	kmc
Minimum Frequency	8.0	kmc
Minimum Cold Transmission Loss	50	db
Capacitance		
Control Electrode to All Elements	10	μf (max.)

MECHANICAL:

Type of Cathode	Oxide Coated Unipotential
Gun Connections	Flying Leads
R-F Connections	Female TNC
Magnetic Field Strength (nominal)	900 gauss
Mounting Position	Any
Weight (tube only)	1 pound
Type of Cooling	Conduction to Solenoid

TYPICAL OPERATION:

Anode Voltage	1500	volts
Anode Current	5	ma
Helix Current	0.5	ma
Control Electrode Voltage (Note 4)	-15	volts
Power Output	50	mw, nominal
Gain	30	db, nominal
Duty Cycle (Note 4)		
R-F	Variable to 1.0	
Beam	1.0	

Note 1: All voltages shown are with respect to cathode. Anode and collector are connected internally to the shell, and the outer coax conductor of the r-f connections is also at shell potential. The helix is connected to the center conductor of the coax line and a d-c connection to the helix must be provided externally in the r-f circuitry.

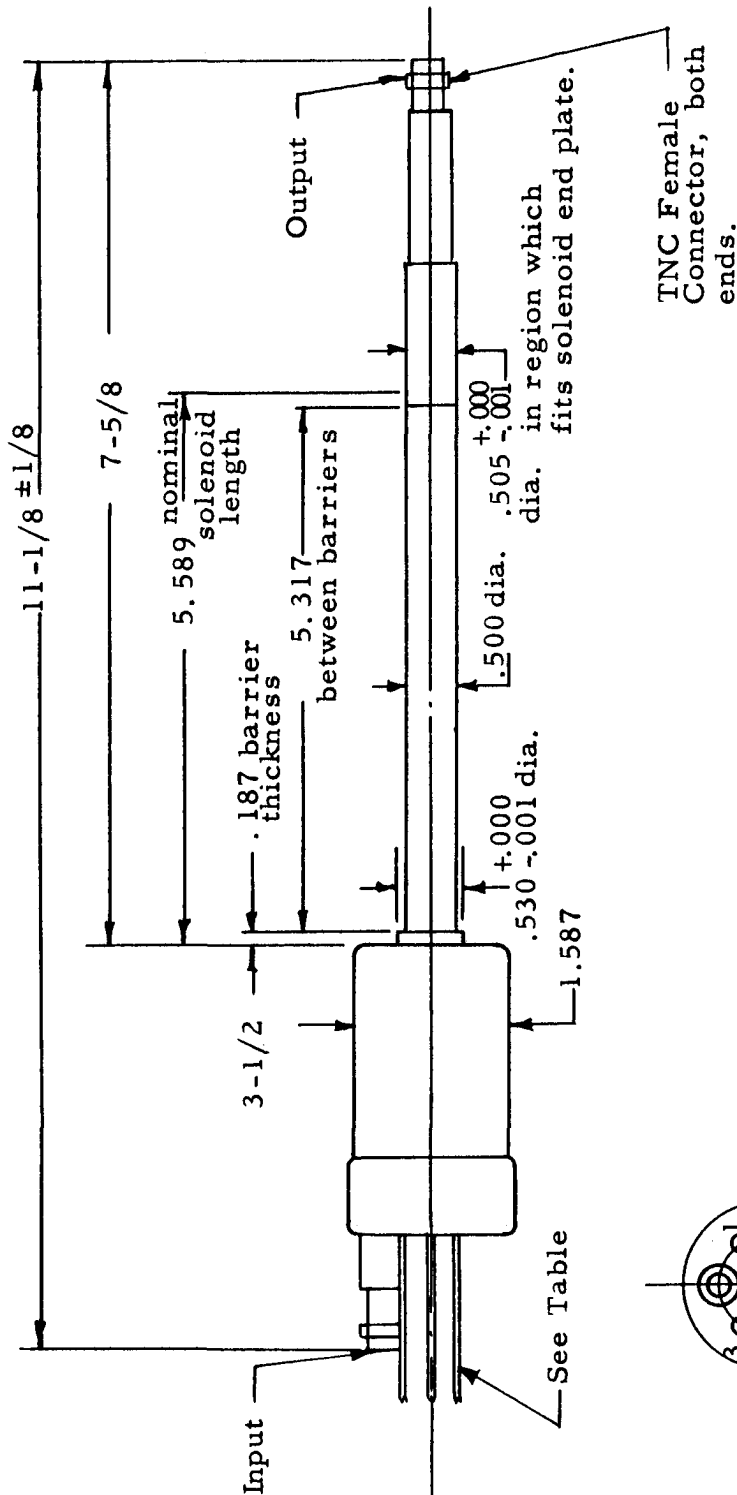
Note 2: The helix current should, in general, be minimized and must be less than the maximum rating. The control electrode voltage and magnetic field (solenoid current) can be properly adjusted before connection of r-f cables by monitoring current to the center coax conductor. It is desirable, when possible, to monitor this current during operation and to provide overload protection. In pulsed beam operation, the peak helix current may exceed 2 ma, but care should be taken to operate at reasonably low values and average current must not exceed 2 ma.

Note 3: The control electrode voltage is adjusted for best transmission for CW operation (normally about -15 volts). Beam gate off can be accomplished by applying voltage of -400 to -500 volts. Operation in the region of control electrode voltage between approximately -15 volts and -400 volts can be utilized with the control electrodes used as a gain control.

Note 4: Gated beam operation can also be utilized by applying -400 to -500 volts to the control electrode for gate off and approximately -15 volts (this value adjusted for best transmission) for gate on. In this type of operation, the values of power output, anode current and helix current become peak values.

Additional information for specific applications can be obtained from the

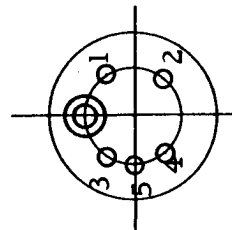
Electron Tube Applications Section
ITT Components Division
Box 412 - Clifton, New Jersey



Pin	Color Code	Connections
1	Green	Focus
2	Brown	Heater
3	Yellow	Cathode
4	Black	Anode
5	Brown	Heater

Flexible Leads, 12" min. length

OUTLINE - F-7066 TRAVELING WAVE TUBE





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WAVE TUBE

OPERATING INSTRUCTIONS FOR THE F-7066 TRAVELING WAVE TUBE

THE F-7066 IS A 50 MILLIWATT CW TRAVELING WAVE TUBE OPERATING OVER THE BAND OF 8.0 TO 12.0 KMC. IT REQUIRES A MAGNETIC FIELD OF 900 GAUSS FOR PROPER FOCUSING. BASIC POWER REQUIREMENTS ARE 10 MA AT 1500 V AND A 50 VOLT BIAS SUPPLY, AS WELL AS 6.3 VOLTS AT 1.0 AMPERE FOR THE HEATER.

WHEN PLACING THE F-7066 IN OPERATION FOR THE FIRST TIME, THE FOLLOWING PROCEDURE SHOULD BE FOLLOWED:

1. MAKE A VISUAL INSPECTION OF THE TUBE TO CHECK FOR LOOSE CONNECTIONS OR OTHER MECHANICAL DEFECTS.
2. PLACE THE TUBE IN THE PROPER SOLENOID AND MAKE CONNECTIONS TO THE TUBE AND SOLENOID. OBSERVE COLOR-CODING OF THE TUBE LEADS AND POLARITY MARKING ON THE SOLENOID.
3. APPLY COOLING TO THE SOLENOID.
4. APPLY THE FOLLOWING VOLTAGES IN THE FOLLOWING ORDER:
 - 4.1 HEATER VOLTAGE (6.3 VOLTS).
 - 4.2 SOLENOID VOLTAGE (ADJUST SOLENOID CURRENT TO YIELD 900 GAUSS).
 - 4.3 CONTROL ELECTRODE VOLTAGE (APPLY BIAS VOLTAGE SPECIFIED ON DATA SHEET SUPPLIED WITH TUBE.)
 - 4.4 CATHODE VOLTAGE (ADJUST SLOWLY TO THE VALUE INDICATED ON THE DATA SHEET; USUALLY ABOUT MINUS 1400 VOLTS WITH RESPECT TO THE SHELL. AT ALL TIMES MONITOR HELIX CURRENT AND OBSERVE THE 2.0 MA MAXIMUM LIMIT.)
5. R.F. INPUT SHOULD BE LIMITED TO 10 MW.
6. THE CATHODE VOLTAGE MAY BE OPTIMIZED FOR OPTIMUM POWER OUTPUT AT THE DESIRED FREQUENCIES.

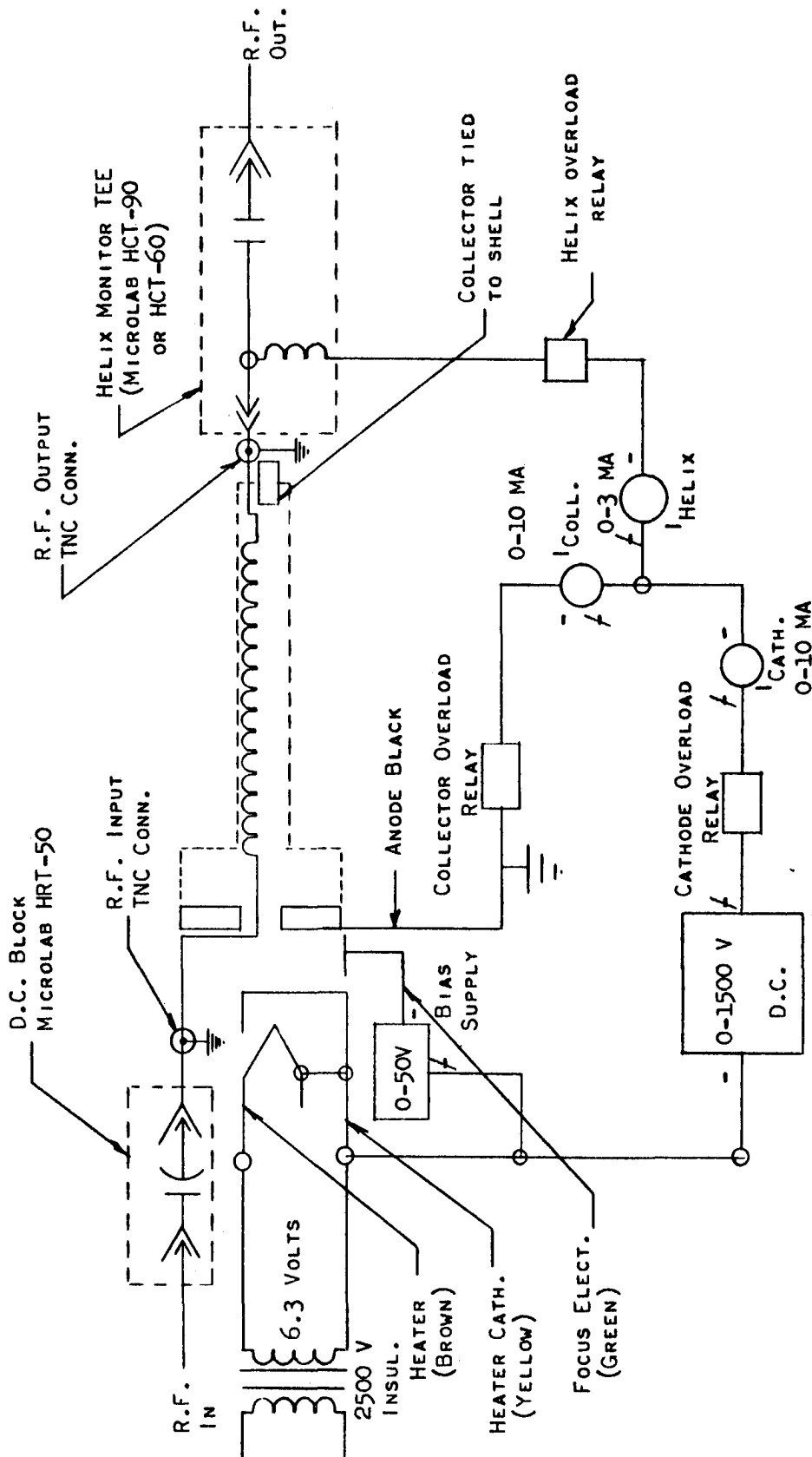
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THE FOLLOWING PRECAUTIONS SHOULD BE TAKEN WHEN OPERATING THE TRAVELING WAVE TUBE:

1. NEVER OPERATE THE F-7066 WITHOUT PROPER MAGNETIC FIELD. BE SURE SUFFICIENT COOLING IS SUPPLIED TO TUBE AND SOLENOID.
2. NEVER OPERATE THE F-7066 WITH HELIX CURRENT IN EXCESS OF 2.0 MA. UNDER MOST CONDITIONS HELIX CURRENT WILL BE 1.0 MA OR LESS. IT IS IMPORTANT THAT HELIX OVERLOAD PROTECTION BE PROVIDED.
3. BE SURE COAXIAL CABLES TO BE CONNECTED TO THE TUBE INPUT AND OUTPUT CONNECTORS ARE ASSEMBLED CORRECTLY. IF THE INNER CONDUCTOR OF THE CABLE CONNECTOR IS TOO LONG, PRESSURE WILL BE APPLIED TO A CERAMIC BEAD, WHICH MAY CAUSE DAMAGE TO THE TUBE. IF IT IS TOO SHORT, A POOR CONNECTION WILL RESULT CAUSING POOR R.F. PERFORMANCE.

THE ATTACHED SCHEMATIC IS A SUGGESTED METHOD OF CONNECTING THE F-7066 AND SHOWS THE LOCATION OF PROTECTION CIRCUITS AND METER POLARITY.



NOTES:

1. ALL OVERLOADS OPERATE TO DISCONNECT HIGH VOLTAGE SUPPLY.
2. HELIX MONITOR AND D.C. BLOCK TO BE SUPPLIED BY USER.

BASIC SUPPLY AND METERING
REQUIREMENTS FOR F-7066
TWT AMPLIFIER