



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

\*  
**F-7525**  
**TRAVELING**  
**WAVE TUBE**

## T E N T A T I V E

### DESCRIPTION:

THE F-7525 IS A 5 WATT CW TRAVELING WAVE AMPLIFIER TUBE HAVING 20 DB GAIN AND 8.0 TO 12.0 KMC FREQUENCY RANGE. IT IS CONSTRUCTED IN A RUGGED METAL CERAMIC 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 PACKAGED IN AN OIL COOLED SOLENOID WITH INTEGRAL COLLECTOR COOLER, WHICH IS REQUIRED TO PROVIDE A UNIFORM MAGNETIC FIELD. A CONVERGENT BEAM GUN AND OXIDE IMPREGNATED CATHODE ARE USED. THE TUBE IS SUITABLE FOR EITHER CW OR PULSE SERVICE.

### ELECTRICAL INFORMATION:

|                                   |           |          |
|-----------------------------------|-----------|----------|
| HEATER VOLTAGE                    | 6.3 (±5%) | VOLTS    |
| HEATER CURRENT                    | 1.7       | AMPERES  |
| MAXIMUM FREQUENCY                 | 12.0      | KMC      |
| MINIMUM FREQUENCY                 | 8.0       | KMC      |
| MINIMUM COLD TRANSMISSION LOSS    | 50        | DB       |
| CAPACITANCE                       |           |          |
| CONTROL ELECTRODE TO ALL ELEMENTS | 10        | UUF MAX. |

### ELECTRICAL RATINGS, ABSOLUTE VALUES:

|                                            |      |       |
|--------------------------------------------|------|-------|
| MAXIMUM ANODE VOLTAGE (NOTE 1)             | 4000 | VOLTS |
| MAXIMUM HELIX CURRENT (NOTE 2)             | 3    | MA    |
| MAXIMUM COLLECTOR DISSIPATION (BEAM POWER) | 240  | WATTS |
| MAXIMUM CONTROL ELECTRODE VOLTAGE (NOTE 3) | -500 | VOLTS |

### SOLENOID DATA:

|                  |            |             |
|------------------|------------|-------------|
| TYPE OF COOLANT  | OS 45      | OIL         |
| PRESSURE MAXIMUM | 100        | PSI         |
| FLOW             | 1          | GALLON/MIN. |
| SOLENOID CURRENT | 1 TO 2     | AMPS.       |
| SOLENOID VOLTAGE | 140 TO 200 | VOLTS D.C.  |

\* FORMERLY D-2005-A

MECHANICAL INFORMATION:

TYPE OF CATHODE  
GUN CONNECTIONS  
R-F TERMINALS  
MOUNTING POSITION

OXIDE COATED UNIPOTENTIAL  
FLYING LEADS  
FEMALE TNC CONNECTORS  
ANY

TYPICAL OPERATION:

|                                    |      |               |
|------------------------------------|------|---------------|
| ANODE VOLTAGE                      | 3800 | VOLTS         |
| ANODE CURRENT                      | 50   | MA            |
| HELIX CURRENT                      | 1.0  | MA            |
| CONTROL ELECTRODE VOLTAGE (NOTE 3) | -30  | VOLTS         |
| POWER OUTPUT                       | 5    | WATTS NOMINAL |
| GAIN                               | 20   | DB NOMINAL    |
| DUTY CYCLE (NOTE 3)                |      |               |
| R-F                                | 1.0  |               |
| BEAM                               | 1.0  |               |

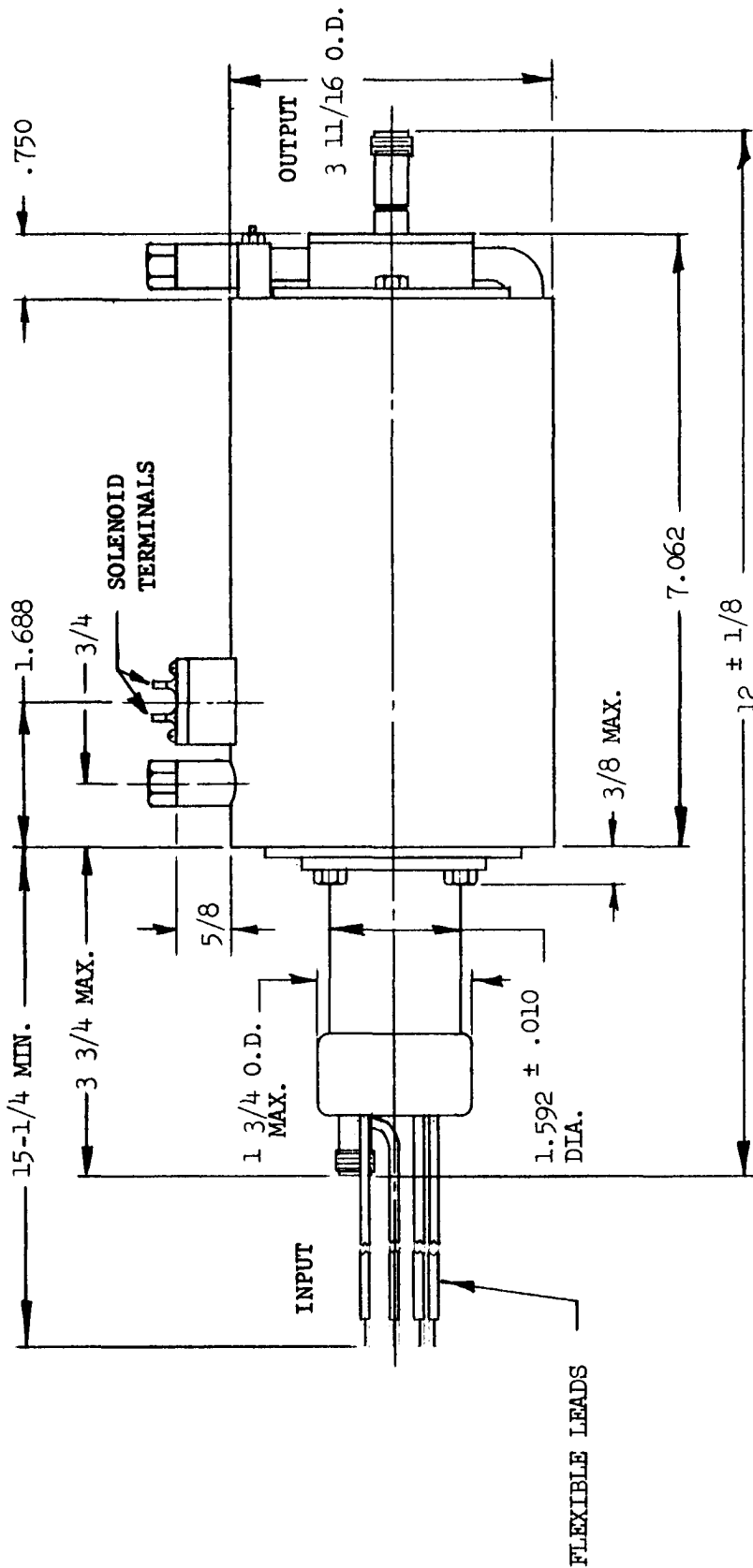
NOTE 1: ALL VOLTAGES SHOWN ARE WITH RESPECT TO CATHODE. ANODE, COLLECTOR AND OUTER COAX CONDUCTOR OF THE R-F TERMINALS ARE CONNECTED INTERNALLY TO THE SHELL AND ARE OPERATED AT GROUND POTENTIAL. THE HELIX IS CONNECTED TO THE CENTER CONDUCTOR OF THE COAX LINE AND A D.C. CONNECTION FROM THE HELIX TO THE SHELL MUST BE PROVIDED EXTERNALLY IN THE R-F CIRCUITRY.

NOTE 2: THE HELIX CURRENT SHOULD BE MINIMIZED AND MUST BE LESS THAN THE MAXIMUM RATING. IT IS DESIRABLE TO MONITOR THIS CURRENT DURING OPERATION AND TO PROVIDE OVERLOAD PROTECTION. IN PULSED BEAM OPERATION, THE PEAK HELIX CURRENT MAY EXCEED 3 MA BUT CARE SHOULD BE TAKEN TO OPERATE AT REASONABLY LOW VALUES AND AVERAGE CURRENT MUST NOT EXCEED 3 MA.

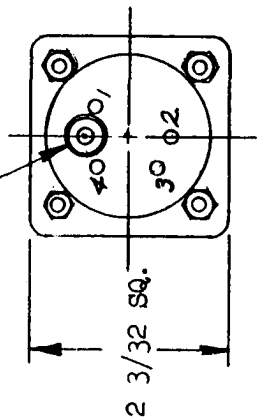
NOTE 3: THE CONTROL ELECTRODE VOLTAGE IS ADJUSTED FOR BEST TRANSMISSION FOR CW OPERATION (NORMALLY ABOUT -30 VOLTS). BEAM GATE OFF CAN BE ACCOMPLISHED BY APPLYING VOLTAGE OF -400 TO -500 VOLTS. THE TUBE SHOULD NOT BE OPERATED WITH CONTROL ELECTRODE VOLTAGE IN THE RANGE OF -50 TO -400 VOLTS. FOR GATED BEAM (PULSE) 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  
POST OFFICE BOX 7065  
ROANOKE, VIRGINIA



TVC CONNECTOR  
FEMALE - (BOTH ENDS)



# LEAD CONNECTIONS

| Lead | Color Code | Connections       |
|------|------------|-------------------|
| 1    | Yellow     | Heater-Cathode    |
| 2    | Green      | Control Electrode |
| 3    | Black      | Anode             |
| 4    | Brown      | Heater            |

OUTLINE TUBE TYPE - 7525

