

## SECTION 2

INSTALLATION2.1. UNPACKING.

After the unit has been removed from the packing box, inspect the unit for loose screws or bolts. Be certain all controls, such as switches, dials, etc. work properly. In case of damage, file all claims promptly with the transportation company. If a claim for damage is to be filed, the original packing case and material must be preserved. Check all tubes to see that they are fully in their sockets. See figure 2-1 for tube placement.

2.2. PLACING TRANSMITTER.

The console type cabinet is designed to be placed on the operating table along with the receiving equipment. Allow enough space at the rear for making the necessary external connections and for replacement of fuses. Sufficient clearance at the sides should be provided for full circulation of air.

2.3. EXTERNAL CONNECTIONS.

Place the two power switches in the off position before attempting to make any external connections. The external connections are as follows:

- |                        |                                |
|------------------------|--------------------------------|
| (1) AC Power Line      | (5) Receiver Disabling Circuit |
| (2) Microphone and Key | (6) CW Sidetone                |
| (3) Radiation System   | (7) Receiver Muting            |
| (4) Remote Relay       |                                |

2.3.1. POWER LINE. - The 32V-2 operates from a 115 volt, single phase, 50/60 cycle power source. The supply line should be checked for these specifications. The maximum power required from the line is 500 watts. Insert the 115 volt plug into a convenient standard outlet.

2.3.2. MICROPHONE AND KEY. - The microphone plug is inserted in the microphone jack J201 on the front of the transmitter. Make sure the clamping ring on the microphone plug is tightly turned on the thread around the input receptacle. Push-to-talk control connections are made to pin number 2 to ground in the microphone plug where the microphone being used is equipped with a push-to-talk switch. When using a microphone that does not have such a switch, the transmitter can still be controlled from a remote position by running a pair of leads from terminal 11 and 12 on the rear terminal strip (E308) to a switch box located at some point convenient to the operator.

CAUTION

Do not get the microphone and push-to-talk connections reversed when assembling the microphone plug since the relay voltage present could damage certain types of microphones.

The telegraph key is plugged into the key jack, J101, on the front panel.

2.3.3. RECEIVER DISABLING CIRCUIT. - Terminals 13 and 14 on the rear terminal strip (E308) are connected to normally closed contacts on the carrier control

relay and are to be used for connections to the receiver disabling circuit. Remove the jumper on the receiver terminals and connect terminals 13 and 14 to these two terminals. The receiver can then be made inoperative when the push-to-talk switch is pressed or whenever the HV switch is operated.

2.3.4. REMOTE RELAY CONNECTIONS. - Terminals 7,8,9 and 10 on the rear terminal strip may be used for operating an antenna change-over relay or a relay for turning on the plate power of a power amplifier stage when the 32V-2 is used as an exciter. If a 115 volt ac type relay is used, connect the leads from the relay coil to terminals 7 and 10. In this manner, the relay coil will be energized thru contacts 8 and 9 of relay K301 whenever the push-to-talk switch or HV switch is operated. If a dc type of relay is used, remove the jumper from terminals 8 and 9 and use terminals 9 and 10 to control the operations of the remote relay thru the contacts of the transmitter relay.

CAUTION. - Do not use the RECEIVER DISABLING CIRCUIT AND REMOTE RELAY CONNECTIONS for conducting large currents, as damage to the relay contacts may result.

CAUTION. - For safety reasons, remove the 115 volt plug from the AC power outlet while making connections to the rear terminal strip.

Switch pi S101H, located at the rear of the band switch, can be used to automatically operate antenna selector relays, etc., as the band switch is turned. Connections to this switch section will have to enter the cabinet through a ventilation slot at the side of the cabinet.

2.3.5. CW SIDETONE. - Any 500 ohm or higher impedance headphone or 500 to 1000 ohm speaker can be connected between terminals 16 and 12 (gnd) at the rear of the unit for sidetone output. The sidetone will be operative when the EMISSION switch is in the CW position. Sidetone pitch is controlled from within the top door while the volume is controlled by the AUDIO GAIN control.

2.3.6. RECEIVER MUTING. - If a Collins Model 75A receiver is used for receiving, CW break-in operation can be improved by connecting terminal B on the receiver to terminal 15 on the 32V and terminal G to terminal 12 (gnd). This connection mutes the receiver audio when the key is pressed. For CALIBRATION, the receiver limiter switch should be in the OUT position.

2.3.7. RADIATION SYSTEM. - The output network will match impedance of 26 to 600 ohms on all bands. It will tune out inductive or capacitive reactances normally encountered. The output network is unbalanced with respect to ground and may be used to feed directly into unbalanced systems. Connection to the antenna transmission line is made by means of a PL-259 52 ohm coaxial connector. Do not end feed antennas which are multiples of 1/2 wave in length directly from the antenna terminals; rather, use an external antenna tuner. Random length antennas must not fall on exact odd multiples of 1/4 wave-length long but should be 10 to 20% longer or shorter.

2.3.8. EXTERNAL ANTENNA TUNER. (Not Supplied)

To feed balanced transmission lines, tuned or untuned, couple the transmitter to the transmission line with a simple tuned circuit illustrated below. This arrangement will match a wide range of impedances. It will also add further attenuation to harmonics causing TVI. Figure 2-2 illustrates an antenna tuner which will function satisfactorily in this application. The

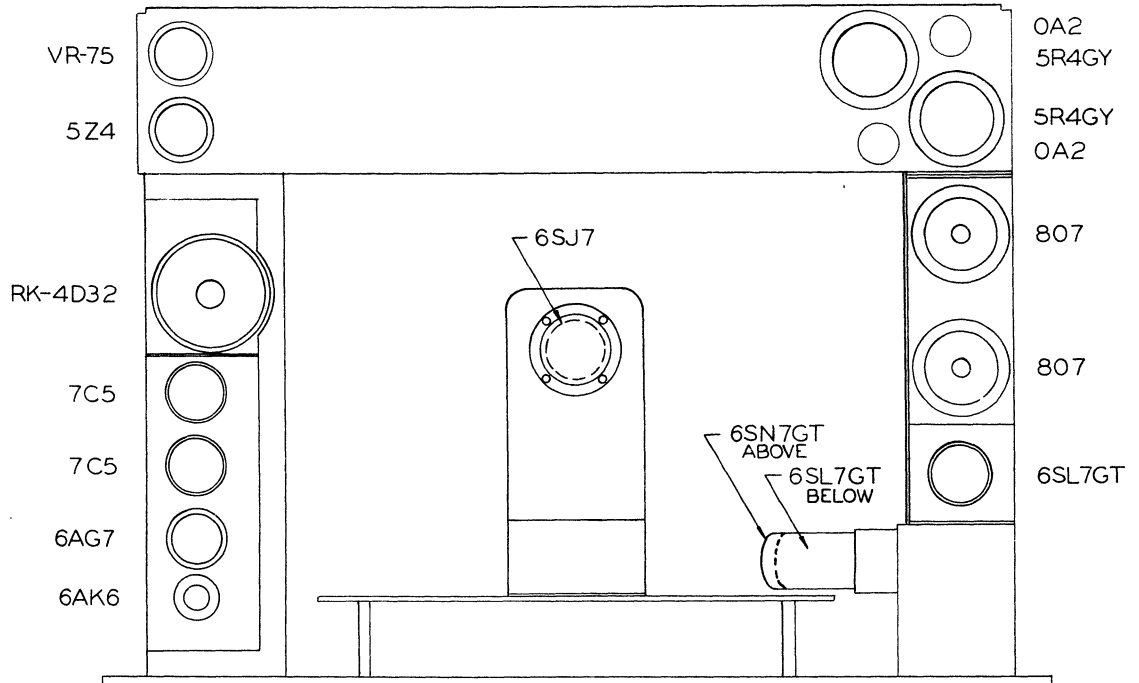


Figure 2-1 Tube Placement Diagram

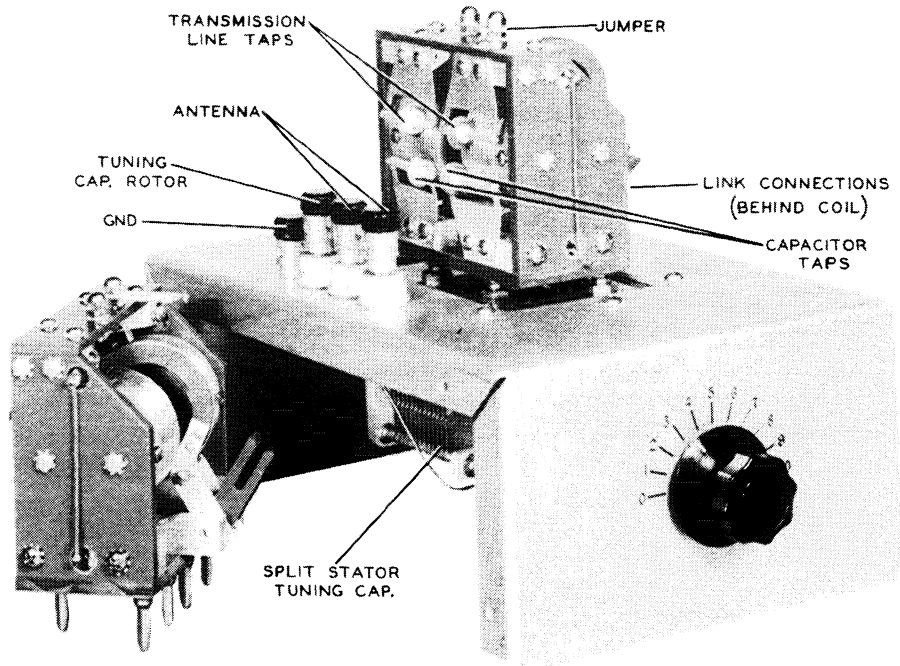


FIGURE 2-2 TYPICAL ANTENNA TUNER  
(NOT SUPPLIED)

**NOTE**

This company does not manufacture the above tuner. The photo and data on tuners are offered merely as a guide for constructing a tuner.



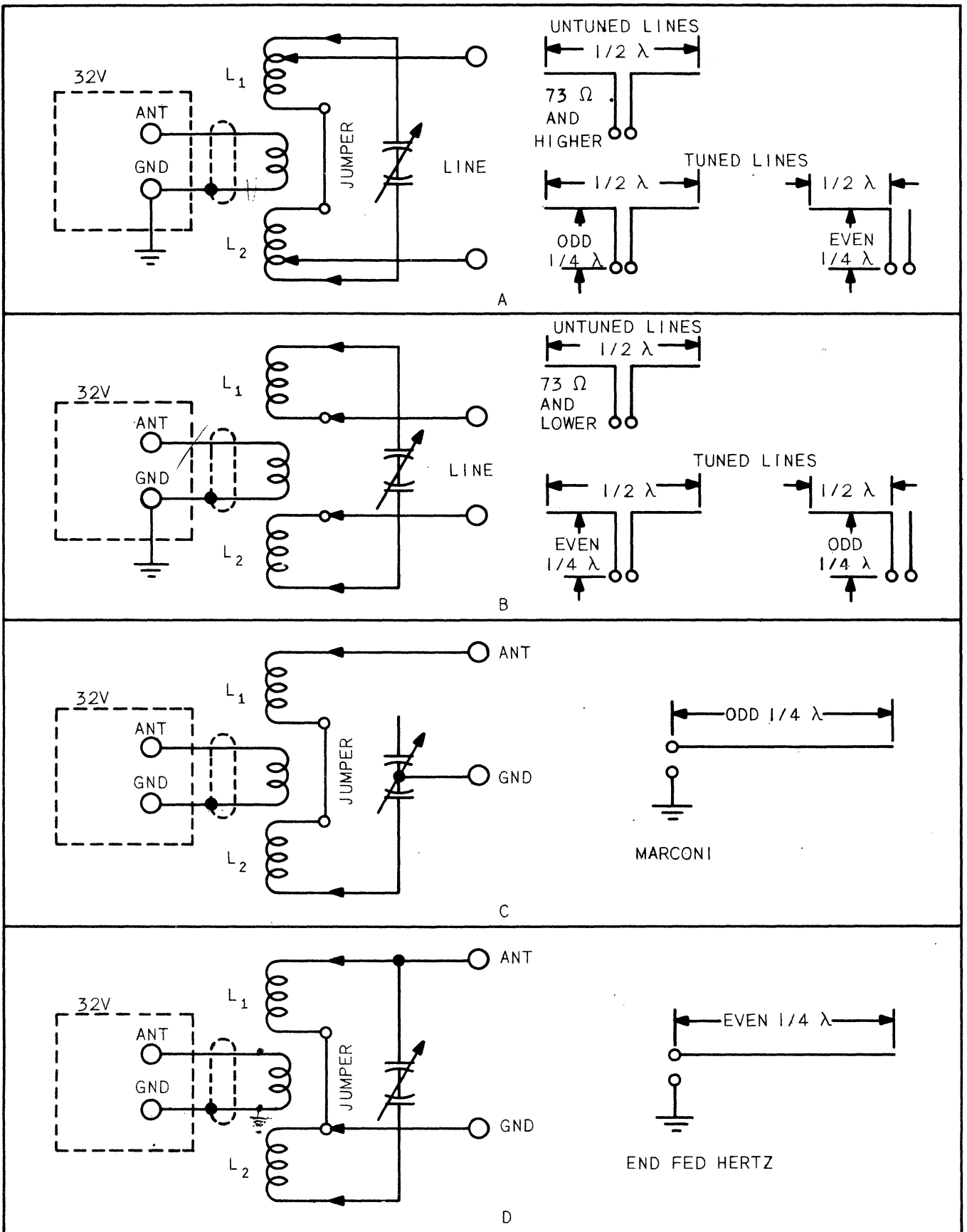
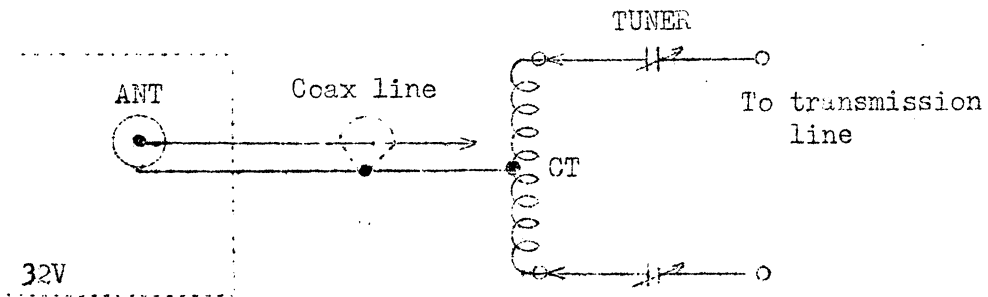
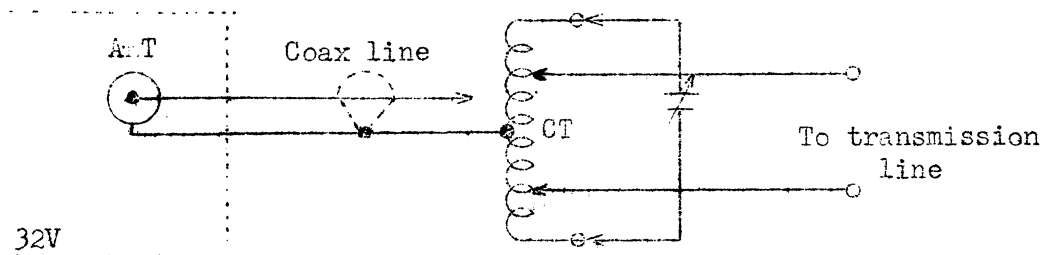


Figure 2-3 Typical Antenna Tuner Circuits



SERIES TUNING



PARALLEL TUNING

AN ALTERNATE ANTENNA TUNER CIRCUIT

impedance of the transmission line is matched by choosing proper taps on the inductances L1 and L2. The coupling link is coupled as tightly as possible and all loading adjustments are done with the LOADING control on the 32V-2.

a. **UNTUNED HIGH IMPEDANCE TRANSMISSION LINE.** - If the line has a characteristic impedance of 73 ohms or more, parallel tuning of the antenna coils L1 and L2 should be employed. For parallel tuning, the little jumper seen above the antenna coils should be closed. The transmission line taps should be set on the same turns as the capacitor taps to start with, then varied towards the center of the coils until proper loading is obtained. The transmission line taps are those at the top of the coils while the capacitor taps are those nearer the bottom. In this type of operation, low values of capacitance and high values of inductance for the operating frequency generally are best. See illustration A., figure 2-3.

b. **UNTUNED LOW IMPEDANCE TRANSMISSION LINES.** - Transmission lines having a characteristic impedance of less than 50 ohms require series tuning of the antenna coils. This is done by opening the small jumper above the coils and moving the transmission line tap arms to the inside coil turns. The capacitor taps should be set at the outside turns and varied towards the inside turns until proper loading is obtained. Higher values of tuning capacity usually work out best in this type of operation. See illustration B., figure 2-3.

c. **VOLTAGE FED TUNED LINES.** - Transmission lines which have a high voltage point at the transmitter should be connected and tuned identically with instructions given in a. above. It is recommended that tuned lines be cut to multiples of a quarter wave in length.

d. **CURRENT FED TUNED LINES.** - Transmission lines having high current at the transmitter end should be connected and tuned identically with instructions given in b. above. These lines should also be cut to exact multiples of a quarter wave in length.

e. **QUARTER WAVE MARCONI.** - Series tuning is indicated for quarter wave Marconi antennas. In this type of operation, the antenna tuning circuit should be connected so that the two sections of the antenna coil and one half of the antenna tuning capacitor are in series. To do this, place a grounding jumper to the rotor of the antenna tuning capacitor, connect the antenna to one end of the antenna coil, connect one stator of the tuning capacitor to the other end of the antenna coil and disconnect the other stator completely. (Place a piece of insulation material between the tap rotor and the coil turns.) See illustration C., figure 2-3. In event r-f voltage appears on the cabinet, it can be minimized by extending the ground wire to  $1/2$  wave length and series tuning it until resonance is obtained.

f. **END FED HALF WAVE.** - This tuner can be used to tune this type of antenna also. Parallel tuning should be employed for this type operation. The antenna should be connected to one end of the antenna coil, a ground connection should be made to the inside turn of one of the antenna coils and the little jumper on top of the coils should be closed. The tuning capacitor taps should be equally spaced from each end of the antenna coils for proper tuning at the operating frequency. See illustration D., figure 2-3.