

COMMANDER TRANSMITTER INSTRUCTIONS

Your Ace Commander is a high performance transmitter. Its power is equal to many commercial jobs, and it exceeds several of them. The simple circuit is also extremely stable in operation. Input is 20 ma., at 135 volts which means you have 2.7 watts of power. Due to the direct coupling the 3 foot antenna radiates this very effectively when checked with a Field Strength Meter.

Study the schematic and other drawings carefully. The RF unit has been punched, so parts may readily be mounted. The drawing of the chassis is looking at it from the top. The tube and crystal socket mount so that the tube and crystal are below the chassis. The terminal strip and antenna bolt mount above the chassis. A study of the drawings will help you determine each location.

Begin by mounting the tube and crystal socket using the 2/56 bolts and nuts. Under one of the tube sockets mount a solder lug. This will be used for ground connections.

With the 4/40 mount the terminal strip. Use the fibre washers provided, since this MUST be insulated entirely from the chassis. Remove the threaded 1/8" ID brass tube from the 6/32 antenna screw. With fibre washers, this is mounted. Use a solder lug to provide easy connection later. Lay brass tube aside for time being. This is used with the 1/8" music wire you will need to get from your hobby dealer. The 3 foot length of music wire is used as an antenna and is not supplied since it would cost a great deal to pack. It, along with batteries, are the only extras you will need to buy to get into operation.

After a study of the schematic you are ready to begin wiring the RF unit. The trimmer condenser fits into the two outside slots of the terminal strip. The coil fits into the two outside holes of the strip. Spread coil to the width required by these two holes. As supplied, the coil is wound to 11 turns. Bend half a turn from each side at right angles to the coil. This will give you 10 turns which is correct. Scrape both ends carefully as well as the center turn for the center tap. Insert ends in the holes and solder both.

Bring the piece of red hook up wire to the center lug and wrap scraped portion around it. Do not solder. Take the .01 bypass condenser and place one end in the same lug. The other end goes to pins 1 and 7 of the tube socket. Insert but do not solder. Pins are numbered in a clockwise order when viewed from underneath. Bring black wire end up to pin 7 and solder pin 7.

Use short bit of jumper wire from center tap to the center lug of strip and solder both. From pin 4 of the tube socket run a jumper wire to the crystal socket lug on the side away from the coil. Solder pin 4. Insert 22K resistor in the same crystal socket lug, and the other end to pin 1 of the tube socket. Run short jumper from pin 1 to the solder lug mounted underneath tube socket. Solder both.

Run wire from remaining crystal socket lug to the left side of the terminal lug. Insert the 4-30 trimmer and solder left side. Run wire from right side of terminal lug to pins 2 and 3 and solder pins 2 and 3. Insert 10 mmf in the terminal lug and solder. Other side of the 10 mmf goes to the antenna mount solder lug. Solder. Solder both crystal socket lugs.

Solder piece of brown hook up wire to pin 5. Double check all wiring against schematic. This completes the RF unit.

Now drill the cabinet using full size templates provided. Layout is only a suggestion. If you want to change position of either the push button or the switch, you may do so without affecting operation materially. The RF unit mounts with the 4 self tap screw provided.

Mount the switch and push button, and place front cover on cabinet. Mount the RF unit. Complete by wiring in the switch and push button. Black wire from Chassis is run to one end of the switch and is screwed on. Screw remainder of black wire to the other side of the switch and solder the brown and black wire to the A battery plug. Black is minus, brown is plus. Small pin is minus, large pin is plus.

Solder female snap connector to red wire from RF unit. Run green wire from push button to a male connector and solder. From opposite side of push button, run wire to ground lug on RF chassis and solder. Make a series connector by soldering one male and one female at each end of a 2 inch piece of wire. This is used to connect the batteries in series.

Insert the #48 pilot bulb grommet and the bulb in the 1/2" hole at the top of the cabinet. L2 is 1/2 turn of #20 plastic insulated wire, which is formed by winding on 1" dowel. This coil fits on the outside of L1, and is used for the tuning indicator. Bend the wire so that the half turn is about 1/8" away from L1 near the side of the coil that is connected to the plate. This coil may need to be adjusted after first tuning.

Insert 2 Burgess XX45 batteries and 1 Burgess 4F battery, or equivalents in the bottom of the case. Use cardboard wedges to prevent shift. Hook up the batteries.

You are now ready to test your xmitter. Turn on filament switch. No smoke? Good. Insert antenna of 1/8" diameter music wire into threaded brass tube and mount. (NOTE: You may wish to solder the music wire to the brass tube permanently. This will make the antenna mount quite sturdy and prevent accidental slip out. This will make it necessary to thread on and off. Use of plastic fuel line at the other end of the antenna makes a protector against pinching.) Key push button, and with insulated screw driver slowly rotate trimmer. At one point the bulb will begin to light. Adjust until it is at its brightest. That's all there is to it. If bulb burns quite bright it would be best to move L2 slightly away from L1 to reduce it. Caution--be sure key is open and switch off when fooling with the coils--135 volts can tickle annoyingly.

If desired, meter may be inserted in B plus lead for tuning. This should be 0-50 milliammeter. Depending on tube and battery condition, resonance reading will be found to be between 18 and 22 ma. When tuning with a meter in the circuit always tune for the greatest dip. When current is lowest, output is best.

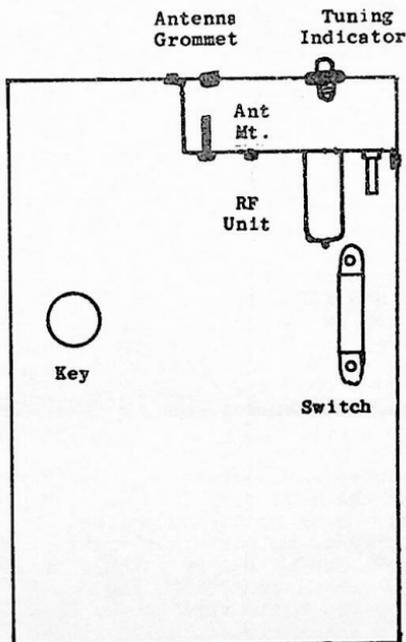
If your transmitter fails to oscillate check your wiring. If wired correctly, circuit is sure fire. Check tube to see if filament is OK. This may be done with an ohmmeter testing for continuity. Any Radio Serviceman can also test on his tube tester.

Things to look for when servicing are faulty solder joints, components hooked up incorrectly, wrong use of component. Double check until you find your error.

Your Commander will provide you with hours of trouble free R/C fun. Check battery voltages under load. These will need to be discarded when A voltage goes below 1.2, and B voltage below 100. Under these, operation tends to become erratic.

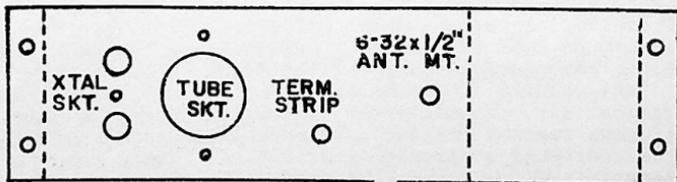
Be sure to fill in form 505. Have it notarized and file with FCC office nearest you. While the Citizens spot is examination free, it is not license free, and it is ILLEGAL to operate Commander without it.

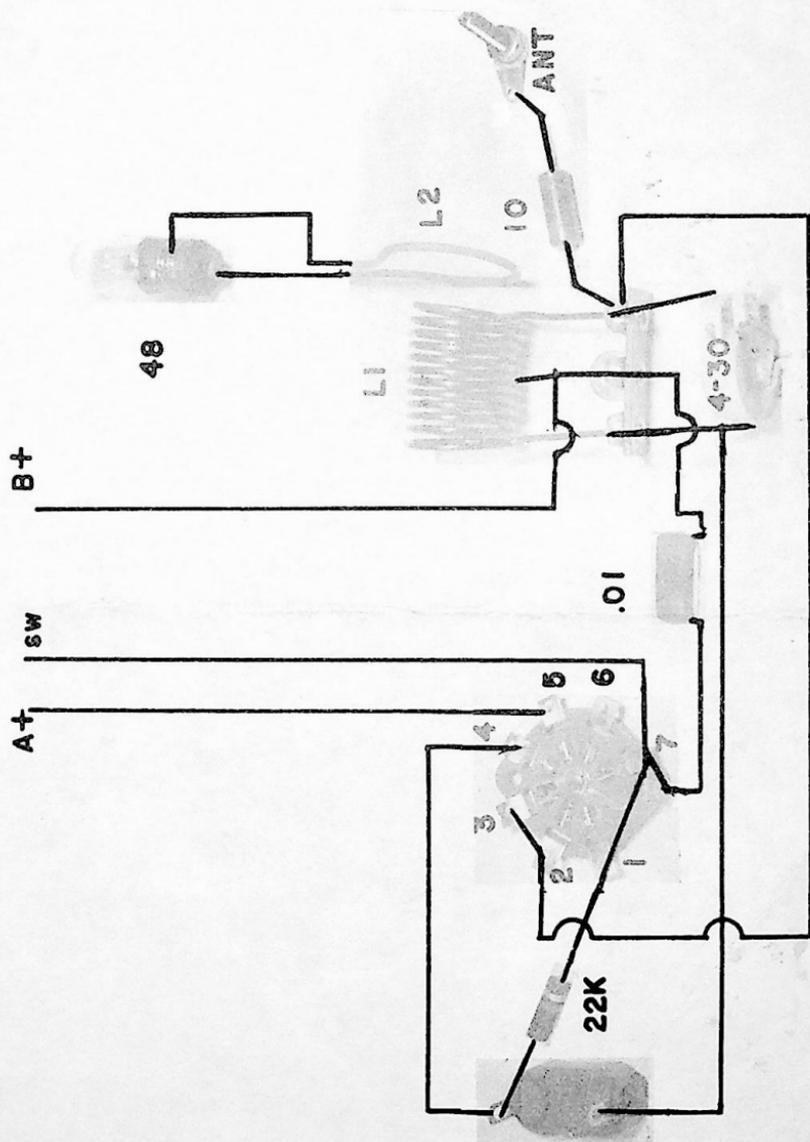
Happy Landings!



Rear view of Commander Transmitter shown with cover removed. Coil and condenser not shown for clarity.

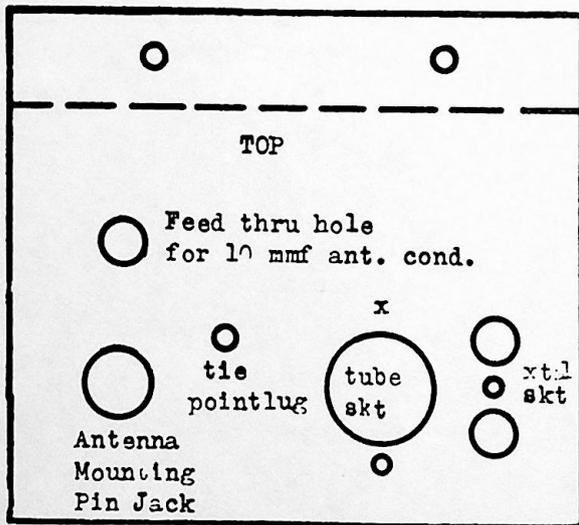
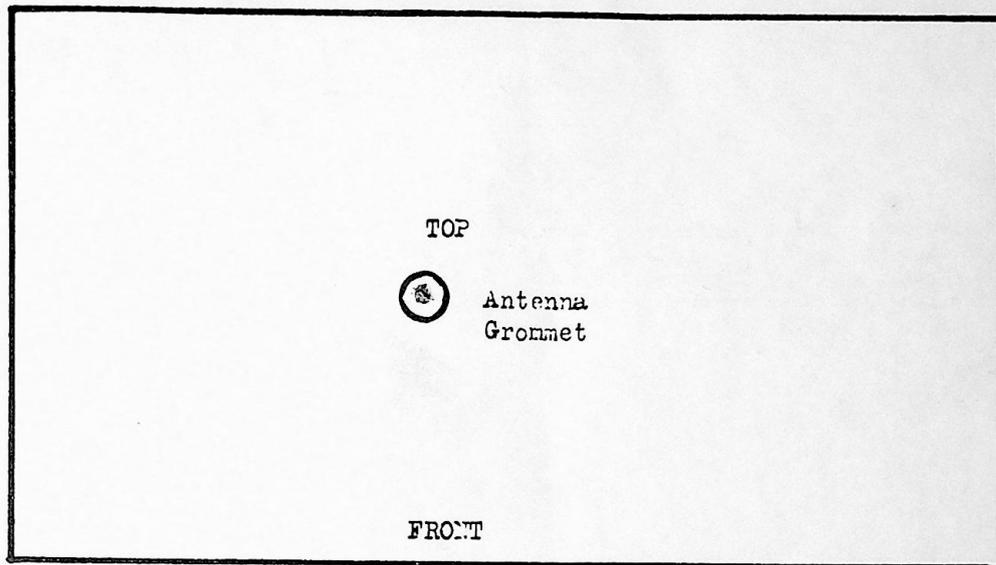
Top View of RF Bracket





IMPROVED COMMANDER TRANSMITTER LAYOUT FULL SIZE

PLEASE NOTE: With the Improved Commander, a Pin Jack is used for the antenna mount instead of the screw formerly supplied. Your pictorial may still show the screw. The 10 mmf antenna coupling condenser extends through the chassis from the top from the coil thru to the bottom to the pin jack connection.



Mount tube and xtal socket so tube and xtal will plug in other side. Use 2/56 hardware. Mount tube skt so pins 1 and 7 are at X

