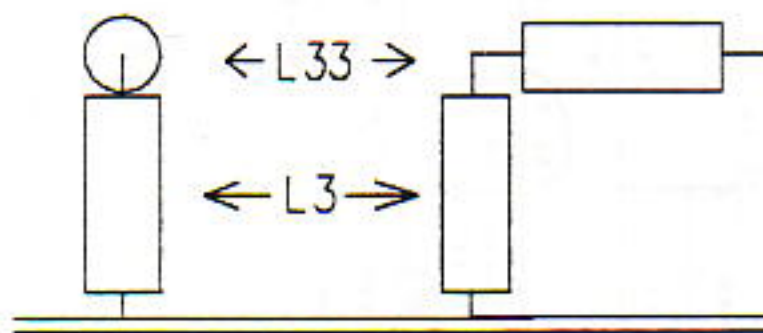


End View

Side View



adjustment slot. Bend C26, C23 leads carefully to fit wider PCB spacing. Also, make sure that you leave about .025" spacing between Y1 and the surface of the board. Be sure to check the capacitor marking and identifying section before you install caps. It will save you headaches later.

L3 and L33 must be mounted in an unusual way. They need to be mounted at a 90 degree angle to each other. Take the 2 coils and twist their leads together and solder so that they look like the view in the drawing. See drawing on how to mount L3 and L33. Mount L33 in the hole for L33 that is closest to the band module. Mount the other end of L3 to the hole that is closest to the front of the board for L3.

Check J2 input current, verify the BFO output voltage level at the junction of R22 and R58 is 600mV peak to peak. One can measure the BFO frequency by zero beating with the station receiver or use a frequency counter attached to R22.

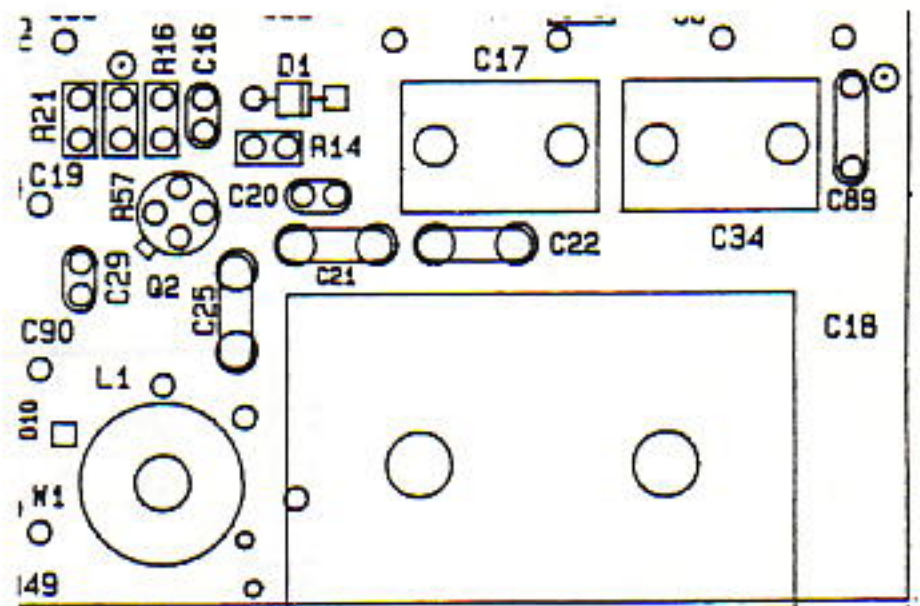
Initial BFO Alignment:

1. Adjust C19 to set 75M BFO frequency at 9.001MHz.
2. Plug-in blank 20M band module PCB into J4
3. Now Adjust the 20M BFO frequency to 8.998MHz
4. Remove 20M band module PCB

SECTION 3:

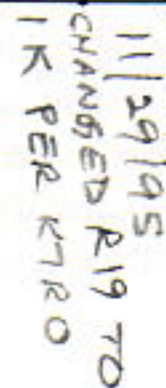
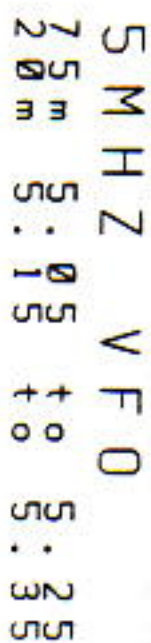
VFO

Install VFO components: Q2, C16, C17, C18, C20, C21, C22, C25, C29, C34. C89 is not used, short out with wire jumper. Next install R14, 16, 21, and 57. D1



Note: when installing C18, use the 4-40 screws with the pan heads and the self contained washers. Make sure that the capacitor sits flat on the board and is flush with the edge of the board. If

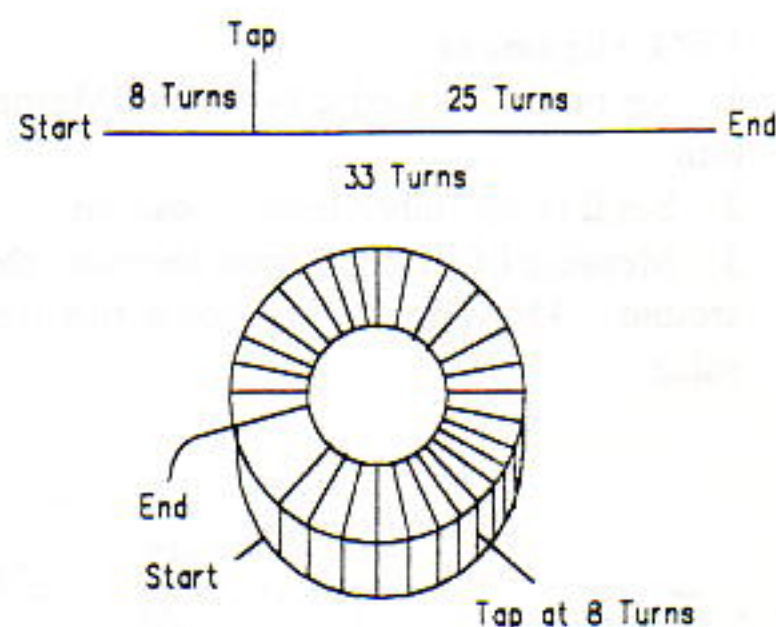
VFO, BFO



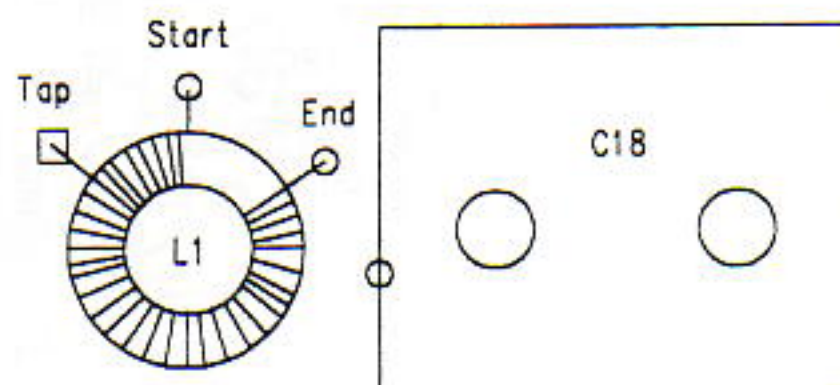
the cap does not sit flat on the board, take a file and run it over the bottom of the cap until the cap sits flat. Also, note that C20, C21, C22 and C25 are all NPO caps. They are disc caps and they have a small black dot on the upper edge.

Now we are ready to wind our first coil, L1. Don't worry, despite what you have heard, it is simple to wind coils. When you finish this kit you will be an expert. Here is how to start. You will find 3 coils of wire in your kit. One is green and two of them are brown. There are 2 different sizes of the brown wire, #26, and #28. The #28 wire is the one that we want to use for this coil. It is the smaller diameter of the two. Cut off a piece of the #28 wire that is 36" long. Prepare one end of it by taking a match or cigarette lighter and burning off the insulation for about 1". Then, take some fine-grit sand paper and run the end of the wire through the sand paper until it is nice and shiny. You should take about 1" of the insulation off this way. Now, pass the wire through the toroid from the bottom and towards you. Then, hold the wire so that the start of the insulation is flush with the edge of the toroid and you have the 1" non-insulated bright piece hanging off the toroid. I like to hold this in my left hand. With the right hand, grasp the other end of the wire and start winding the toroid, being careful to not wind it too tight, but firm. Each time the wire passes through the center of the "donut" counts as one turn. So, the first time you put it through was 1 turn, and now you have just put it through again for the second one. Do this until you have passed the wire through the toroid 8 times. Next make a loop with the wire about 1" long. Give the loop 2 twists right against the outside edge of the toroid. This will become the tap. Continue winding until you have wound 33 total turns of wire through the toroid. Look at the diagram. Count the number of turns that go through the toroid, and remember that the first one counts! You should have a total of 33 "wires" going through the hole. Leave a lead of about 1", and cut off the excess wire. Now, unwrap one turn. Get the cigarette lighter out again and burn off another 1" of insulation and clean with sandpaper as you did before. Don't forget to put the turn back on after you finish with

cleaning it. The last thing is to clean the insulation off the tap. To do this, hold it over the flame from the cigarette lighter but be careful not to burn the windings of the coil. You just want to clean the insulation from the tap. Use the sand paper to make the wire nice and shiny. The next operation will seem silly to your wife, but it makes for a stable VFO. Take the coil assembly and anneal it by placing in boiling water for 5 or 10 minutes. Take it out of the water and let it cool naturally. Coat the entire coil with Q-dope and let it dry overnight. Now tin all 3 leads with solder, and you are ready to install it.



To install the toroid, you will use the nylon hardware. Take the nylon 6-32 screw, place it through the black shoulder washer, then through the toroid, then through the black insulating washer, and finally through the pcboard. The start of the winding that is closest to the tap goes into the middle pad, the tap goes into the square pad on the left and the other end goes into the pad nearest C18.



When all wires have been placed correctly,

place the nylon 6-32 nut on the back of the board and tighten. It doesn't need to be too tight, but it does have to be firm. Make sure that the wires are pulled through the pc board, and solder.

L1 measures 5.1uH between the start and end. If you have an inductance meter verify the inductance value.

Check J2 input current, **verify the VFO output voltage level at R57 is 600mV peak to peak.** One can measure the VFO frequency by zero beating with the station receiver or using a frequency counter attached to junction of R21 and R57 at Pad 12.

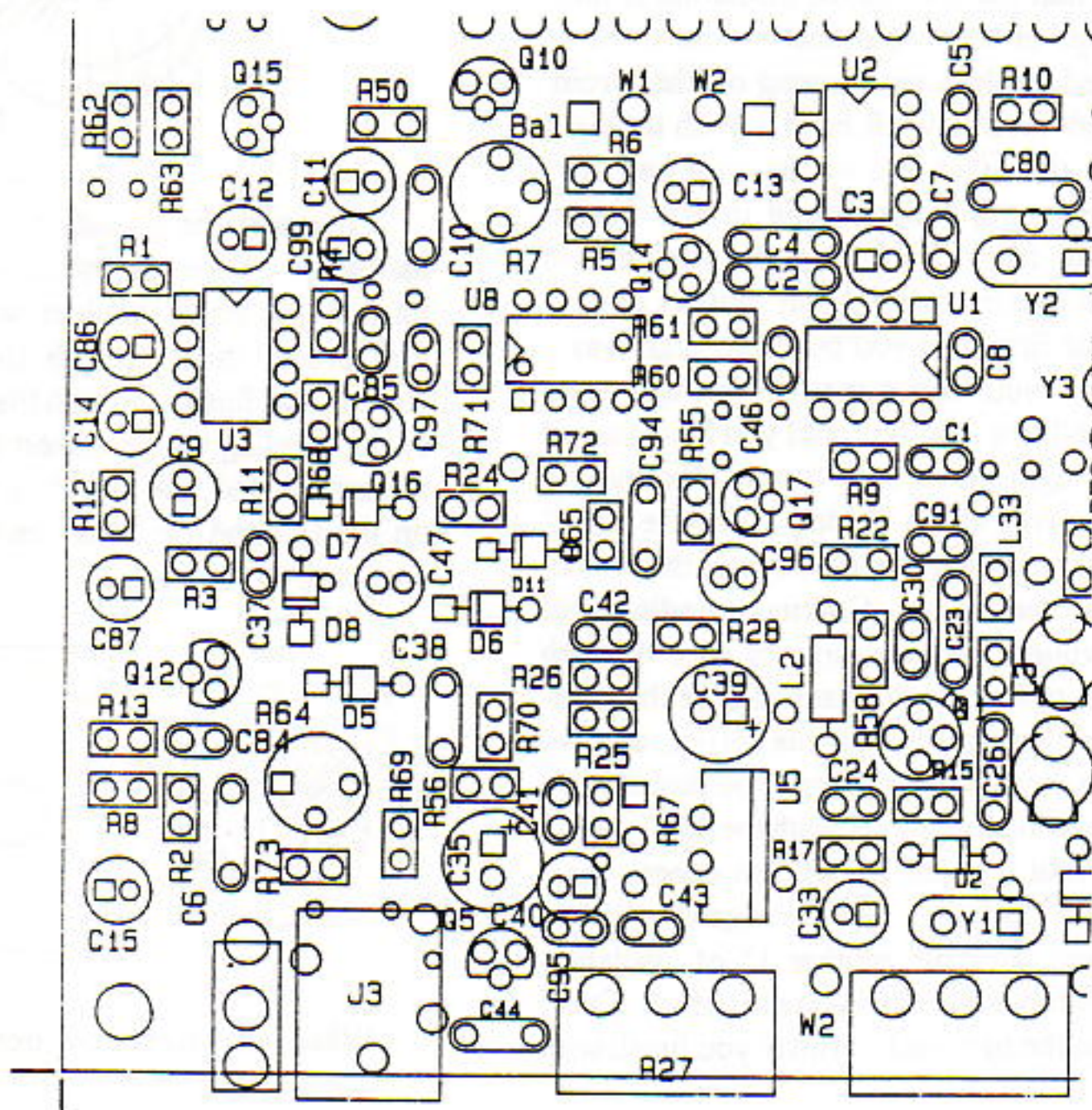
VFO Alignment

1. Set both C17, and C34 to Half Meshed position
2. Set C18 to Fully Meshed position
3. Measure LO using station receiver, should be around 5.150MHz. Write down this frequency value.

4. Install blank 75M band module PCB into J4
5. Subtract 100kHz from frequency in step 3 above. Now adjust C34 so the VFO now oscillates at this new lower frequency. This shifts the VFO when changing bands.
6. Remove 75M band module in J4
7. Adjust C17 for 5.150MHz..... This is the tough part. You'll need to squeeze turns on L1 if C17 doesn't have enough range

VFO Alignment Tips....

1. Removing one turn on L1 shifts the VFO UP 180KHz
 2. C34 needs to be about half meshed when finished.
 3. L1 inductance should be 5.1uH
- After leaving the VFO on for a few minutes, confirm the frequency drift is less than 100Hz shift in 3 minutes.



AUDIO AMPLIFIER

