**TJ Direct conversion Receiver**

**Building the PTO**

1. Review the schematic.
2. Collect the parts.
3. Screw the board down, leave room for the PTO form on the left.
4. Layout the board
   1. Circle the “nodes” on the schematic (all of the connection points)
   2. Decide where the pads are going to go
5. Cut pads and glue them down as you go
6. PTO Form
   1. 19 Turns of wire
   2. Make sure to scrape / melt insulation from the ends
   3. Insert nuts into openings
   4. Press fit a 2-3” piece of solder braid into the front opening with the nut – this will ground the PTO elements
   5. Don’t solder the PTO coil in until after the Smoke Test
7. Construction hints
   1. Measure components – confirm the values.
   2. Cut the leads short – just long enough to make the connections
   3. Tin the leads and the pads
   4. Work quickly – heat the junction of the part and the board, apply solder to the opposite side
8. Use your multimeter – check for shorts
9. Smoke test - Apply power last, check voltage
   1. Power rail / 2N3904 collector: ~ 8-8.1V
   2. Base : ~4.0V
   3. Emitter: ~3.6V
10. Connect the PTO, near end to ground, far end to input node, don’t put the tuning screw in yet
11. Check for a trace on the oscilloscope.
12. Compress the coil until the frequency counter reads between 6.8MHz and 6.9MHz, super glue the coil turns
13. Put in the tuning screw and you should be able to tune from 7.0MHz to 7.3MHz with no problem
14. Listen for the oscillator on the receiver!
15. Congratulations! Board 1 is done

