SP-1/LPF Instructions

Leave the parts for the LPF in the bag (parts in larger bag), as we will start by making the SP-1 transmit section 9parts in smaller bag).

SP-1 Instructions

- Open and separate parts in small bag
- Find the two small pins & 7030 kHz crystal
- Cut the crystal leads to 3/16 inch and install a pin on each lead
- Install & solder pins with crystal at X1 on SP-1 board (keep crystal vertical)
- Remove crystal for now
- Install & Solder R1
- L1 – Using one of the binocular cores, wind 6 turns of the #30 (green) wire
- Strip enamel to 1/16 inch from core, tin and install L1
- L2 – Using the other binocular core, wind 5 turns of the #28 (red) wire
- Strip enamel to 1/16 inch from core, tin and install L2
- Install & Solder T2 (2N3906)
- Install & Solder C4 (100n)
- Install & Solder T1 (2N3904)
- Install & Solder C1 (1 uf)
- Install & Solder T3 (2N3906)
- Install & Solder C2 (100n)
- Install & Solder C3 (100n)
- Install & Solder C5 (70pf trimmer)
- This completes the SP-1 board – you may now test for output at center “out SP-1”

LPF Instructions

- Wind L1 & L3 – 18 turns #26 on T50-6 Core. Use 14 inches #26 wire each.
- Strip enamel from L1 and L3 leads to 1/16 inch from core and tin– install and solder each
- Wind L2 – 20 turns #26 on T50-6 Core. Use 16 inches #26 wire
- Strip enamel from L2 leads to 1/16 inch from core and tin– install and solder
- Install C2 and C3 (680 pf)
- Install C1 and C4 (270pf)
- Cut and strip two 1 ¼ in. pieces of wire – twist together into a pair
- Install one color from “out” pin SP-1 to center pin J1 on LPF
- Install other color from “out” ground SP-1 (right of center) to J1 ground (right of center) LPF
- This completes the LPF – Test for output at the LPF at center J1

SP-1/LPF Instructions - continued

Use connectors of your choosing for an antenna, key and power. A simple transmit/receive arrangement is shown on the schematic. **If you find you're not getting power out, or hearing the SP-1 in a receiver, try adjusting C5. At some of the high and low settings of C5, T1 will stop oscillating.**

It is recommended that you use no more that 6 volts of power with the SP-1, especially when tuning up. This is due to the variability of the 2N3906. Due to this variability, power output on 40 meters will vary from 300 mw to 600 mw when using a 6 volt source. The transistor supplied with the kit will yield 300 mw with 6 volts, and up to 500 mw with 9 volts. Other manufacturers 2N3906s will give varying results.

In the SP-1, T2 may tend to run hot at 9 volts and could have a power output of up to 1 watt. If you want the additional power available at voltages up to 9 volts, it is recommended that you have a good 50 ohm load (SWR < 1.5:1) as an antenna. If you are using an antenna tuner, tune for minimum SWR at 6 volts, then switch to a higher voltage (maximum 9 volts). Check for heat at T2.

The SP-1 can be used on160, 80 and 30 meters, although you will find a reduction in power out on 30 meters. To change bands, you will need a crystal for 160, 80 or 30 meters. You will also need to change the Low Pass Filter (LPF) to the appropriate band. LPF boards for other bands are available from Kits & Parts (http://kitsandparts.com/). You need to build the LPF, and connect the "out" from the SP-1 transmitter to the "J1 – In" of the new LPF board.

The SP-1 has a 40 meter LPF board attached to it. If desired, this board can be separated from the SP-1 transmitter. There is a line of holes between the SP-1 transmitter and the LPF. To remove the LPF, use a heavy duty wire cutter and cut the board through the first hole and the right and left side of the board. The LPF may then be "snapped" off and separated from the SP-1.