

R-390A MODIFICATIONS FOR USE WITH SB-390

The mods to be described augment the installation of the Treetops SB-390 SSB adaptor. I felt that one can have the best of both worlds with everything in or on the one box by incorporating a BFO using two crystals for selecting either USB or LSB, but still retaining the ability to use the internal BFO in the R-390A, all to be selected from the front panel without drilling holes yet maintaining the original intention of an R-390A. The accompanying wiring diagrams and these notes cover the procedure.

Having the ability to select either the internal BFO or each SSB mode, required an hour or two of thinking; the upshot was to provide a 4 position 3 pole rotary wafer switch that replaced the BFO on/off switch: BFO off; BFO on; LSB; and USB. The front panel was labelled accordingly on a thin disc held on by the switch nut.



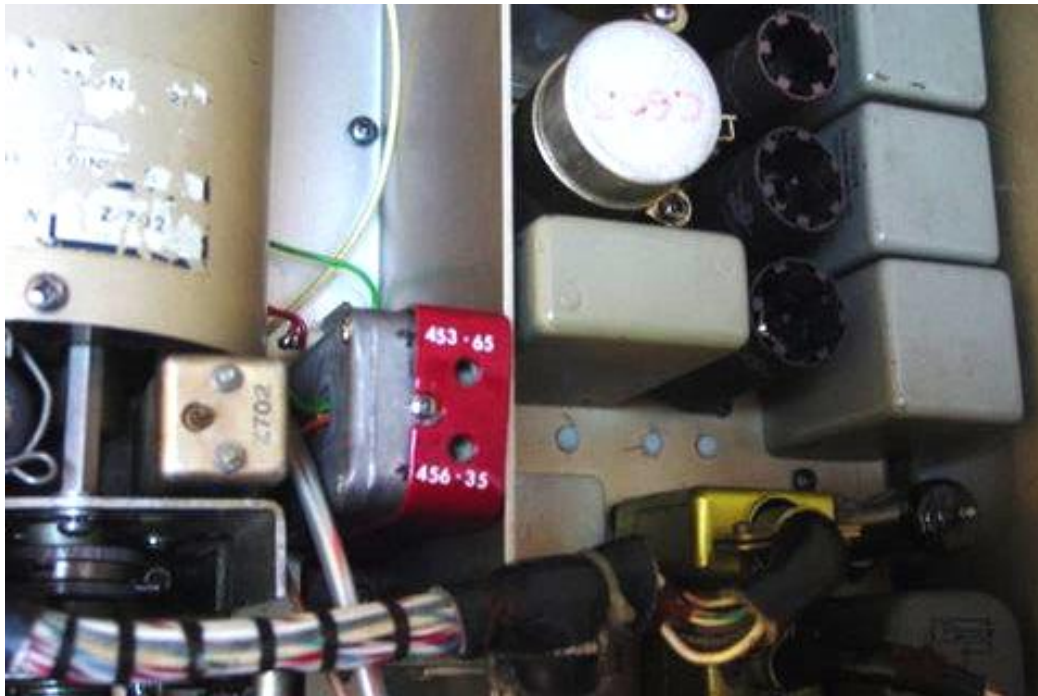


CHANGES - The Treetops adaptor was installed on the rear per the notes, the IF module in the R-390A providing the 25.2 VAC was installed as described in the notes.

Since the BFO output from V505 had to be routed to the front panel switch, a length of coax was substituted.

The BFO input (the black coax) which connects to C14 on the SB-390 also had to go to the front panel , so it was disconnected from the small plug and was still long enough to reach the front panel switch.

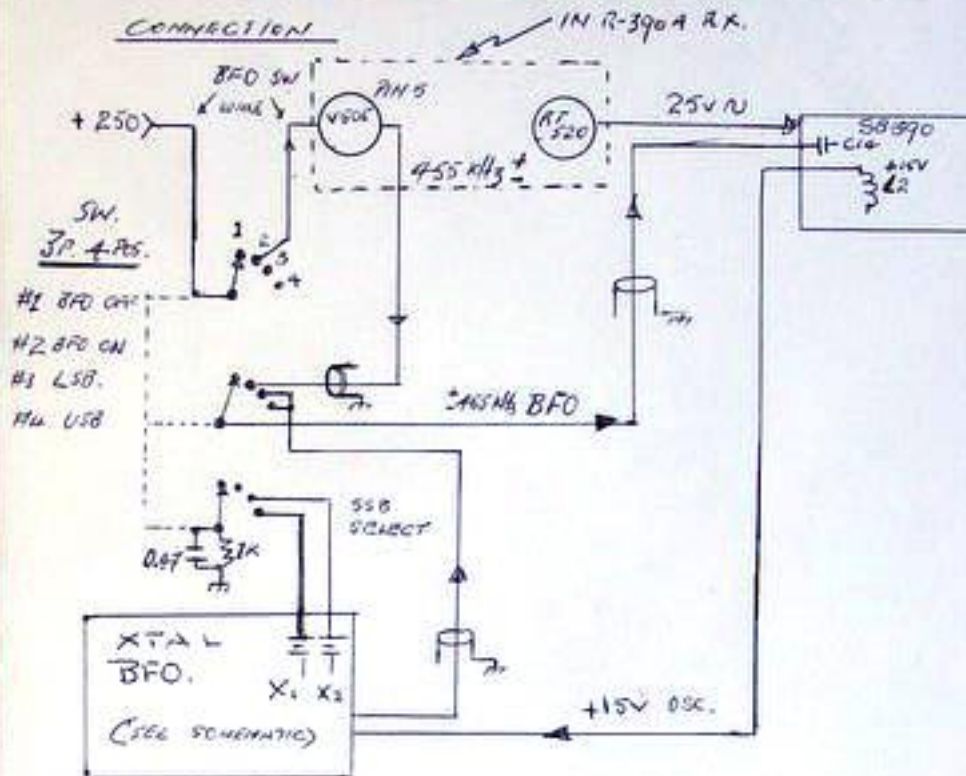
The 2 wires that originally switched the R-390A were long enough to be reconnected to the new switch.



The only other addition that had to be 'stolen' from the Treetops adaptor was 15V to power the Xtal oscillator - it only took about 6 mA and a wire carefully soldered to the input of choke L2.

LSB/USB Mod. FOR SB-390.

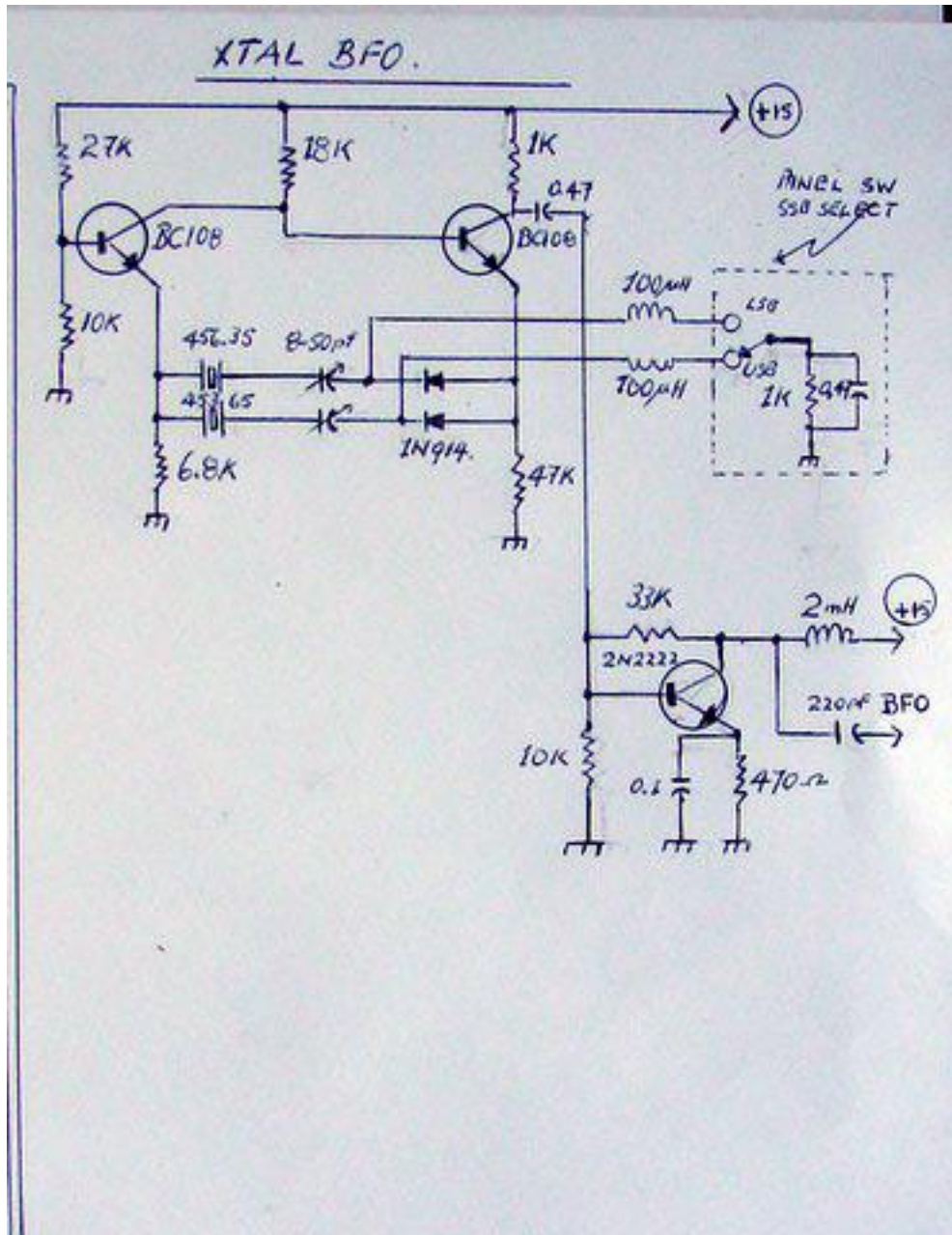
CONNECTION



- #1 BFO ON
- #2 BFO ON
- #3 LSB
- #4 USB

X1 458.35 kHz
X2 453.65 kHz

XTAL BFO



Having two crystals of 453.65 and 456.35 kHz meant finding a solid state circuit that would reliably oscillate with these low frequency crystals. A Butler type circuit was used from information in Ulrich L. Rohde's book, "Communication Receivers", in which he acknowledges the circuit developed by a German company. Since it was desired to switch either crystal, diode switching was employed, as shown on the schematic.

The complete oscillator with the xtals was built on a piece of perforated board and mounted in the diecast box slipped down beside the PTO as shown in the photo.

The two series connection frequency trimmers are accessible from the top of the box as shown .

In operation, there appears to be no observable difference between selecting B FO injection from the receiver B FO, or the xtal version.

Finally, it isn't a job for the fainthearted---- probably simpler xtal oscillator circuits giving enough output can be found, but it gave me pleasure in doing it and purporting to do what Collins might have done.

Thanks to Bob Thomas at Treetop Circuits for his words of encouragement.

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