

# Installing X-Lock on my Sommerkamp FT277E (Yaesu FT101E)

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My X-Lock installation on the famous FT101E has not been the simplest one but, after all, I obtained a rock stable, drift free, vintage HF transceiver.

FT101E VFO output signal is rather low (240mVpp) but it proved to be enough for the X-Lock requirement; even if the board is specified for a minimum signal of 500 mVpp, my unit worked until 130 mVpp.

The first time I installed the unit it seemed to work very well, until I started transmitting; while in transmission mode the X-Lock lost lock and status LED turned from green to red.

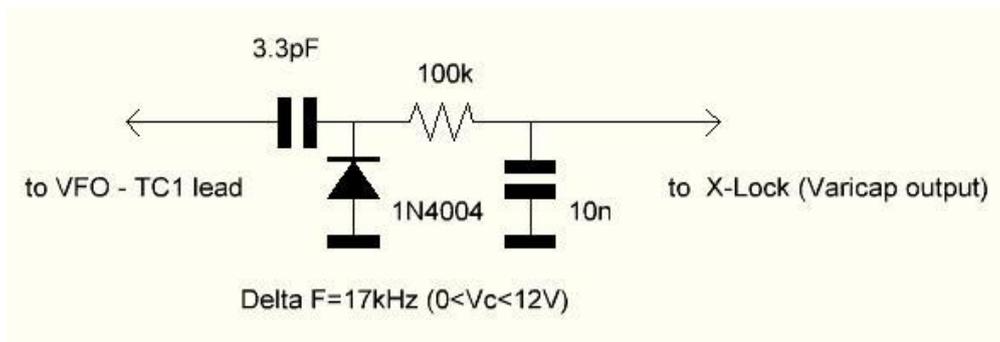
The reason of that behaviour is caused the degradation of the weak VFO signal occurring during transmit mode, probably due to the stages VFO feeds.

I tried to make some attempts with a buffer stage stage to isolate the VFO from the three coax cables departing from it but they have been unsuccessful.

The right solution was to pick the VFO's signal directly from its buffer stage and amplify it to a proper level for the X-Lock RF input.

Let's go ahead with the complete description of my installation and the self-explanatory pictures.

The varicap I used is that provided with X-Lock, the capacitor ensuring the proper  $\Delta f = 17\text{kHz}$  is a 3.3pF ceramic, parallel connected to TC1 trimmer.

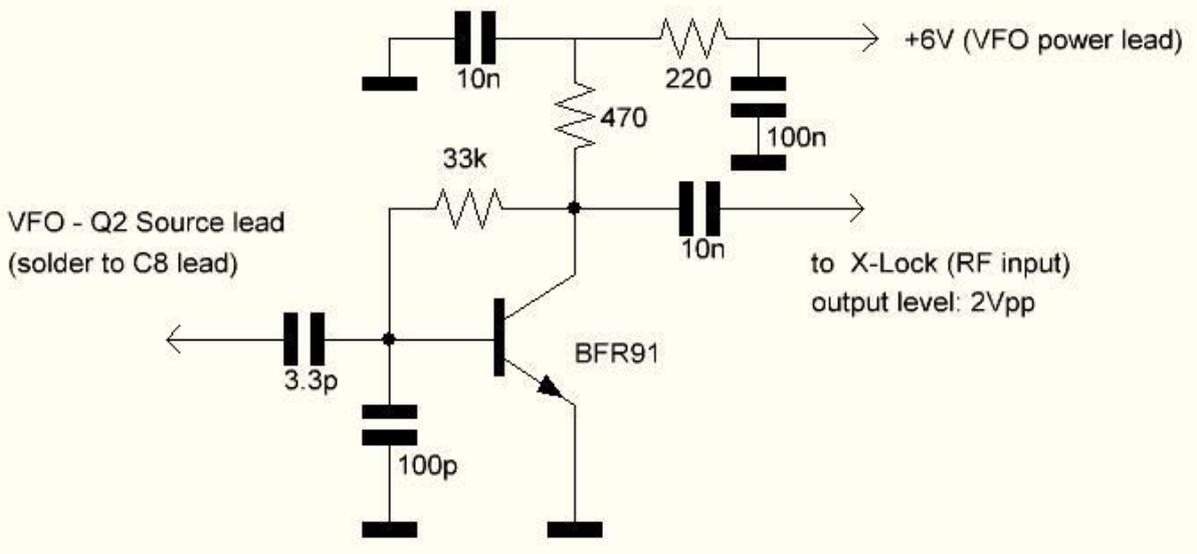


*Varicap schematic*

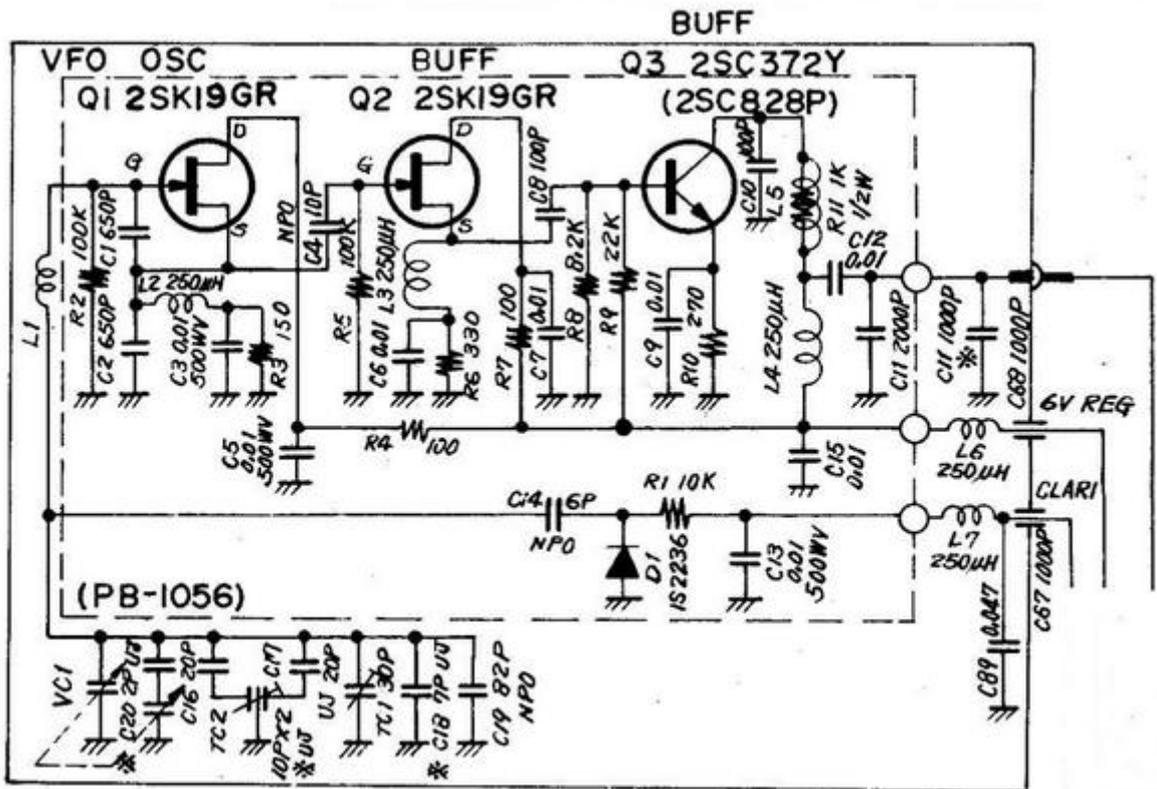
Once installed the varicap circuit a little calibration is needed: feed the varicap line with a voltage of 4.0V, set to 0 the tuning dial and adjust TC1 in order to read a VFO frequency of 9.200 MHz.

The amplifier is built on a small PCB laminate with the “dead bug” technique and hosted in the VFO box; I used the BFR91 only for convenience but many other small signal NPN transistors will do the job. Its input is connected to the VFO buffer's output (Q2 source) by means of a 3.3pF capacitor soldered, for convenience, to the better reachable C8 lead. Powering is taken from the 6V VFO power supply.

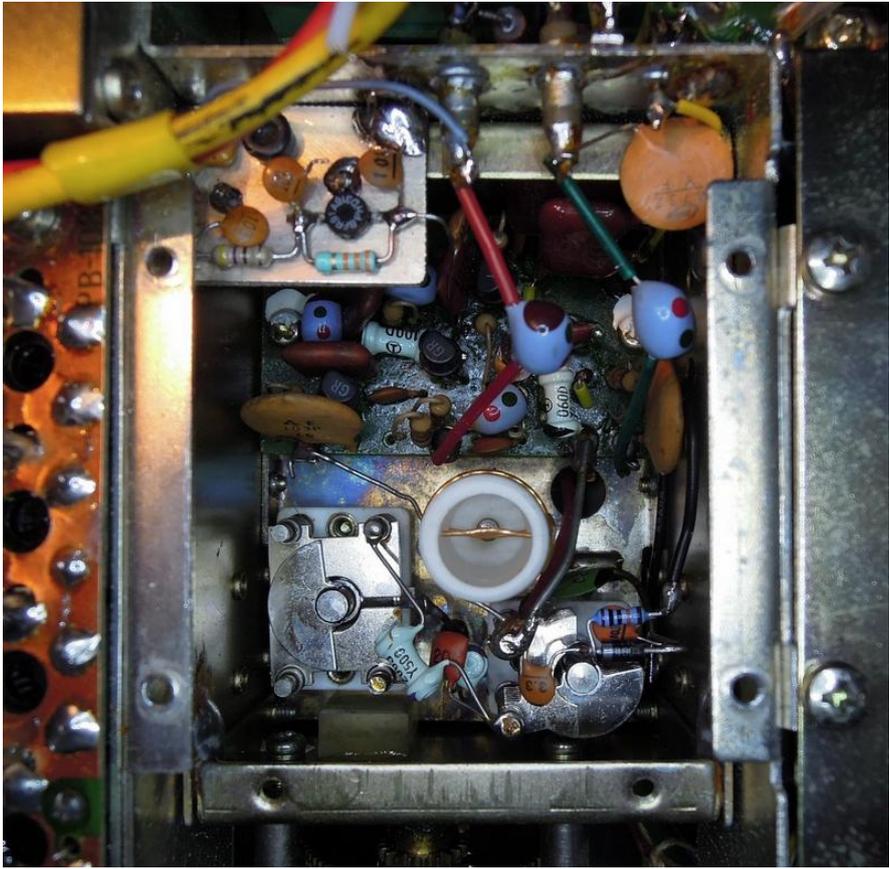
X-Lock module is screwed to a little unetched PCB stand which is then bond to the Mix Unit case by means of the 3M VHB tape; powering is taken from pin 12 of the PB1547 card (+13.5V regulated).



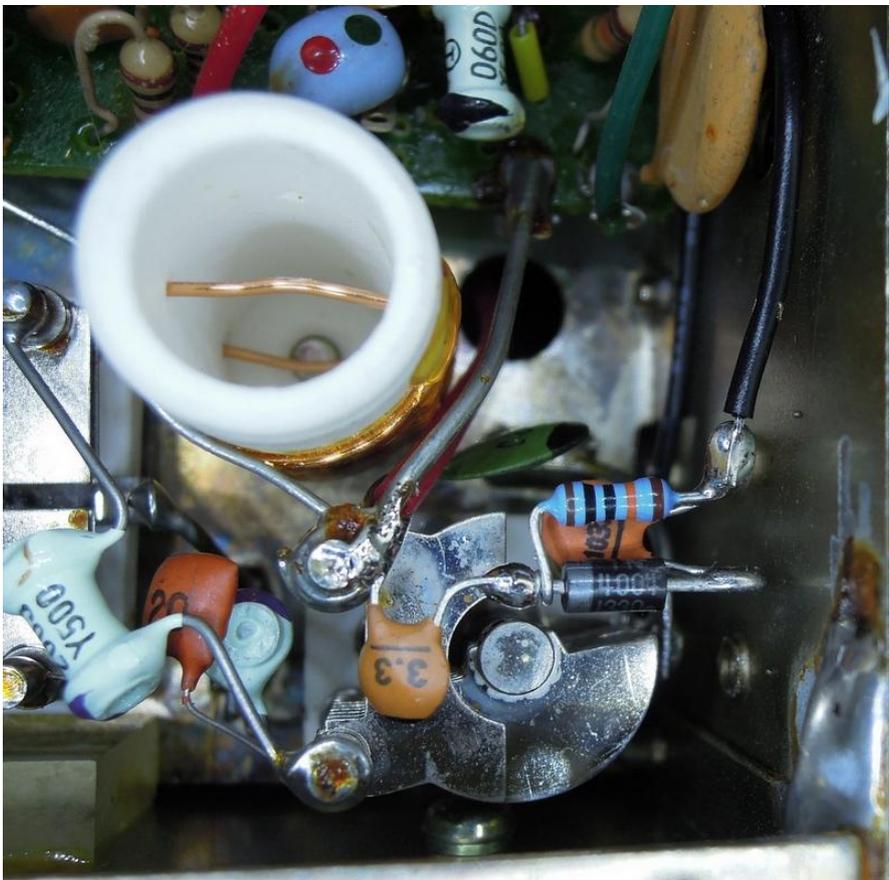
Amplifier schematic



FT101E VFO schematic



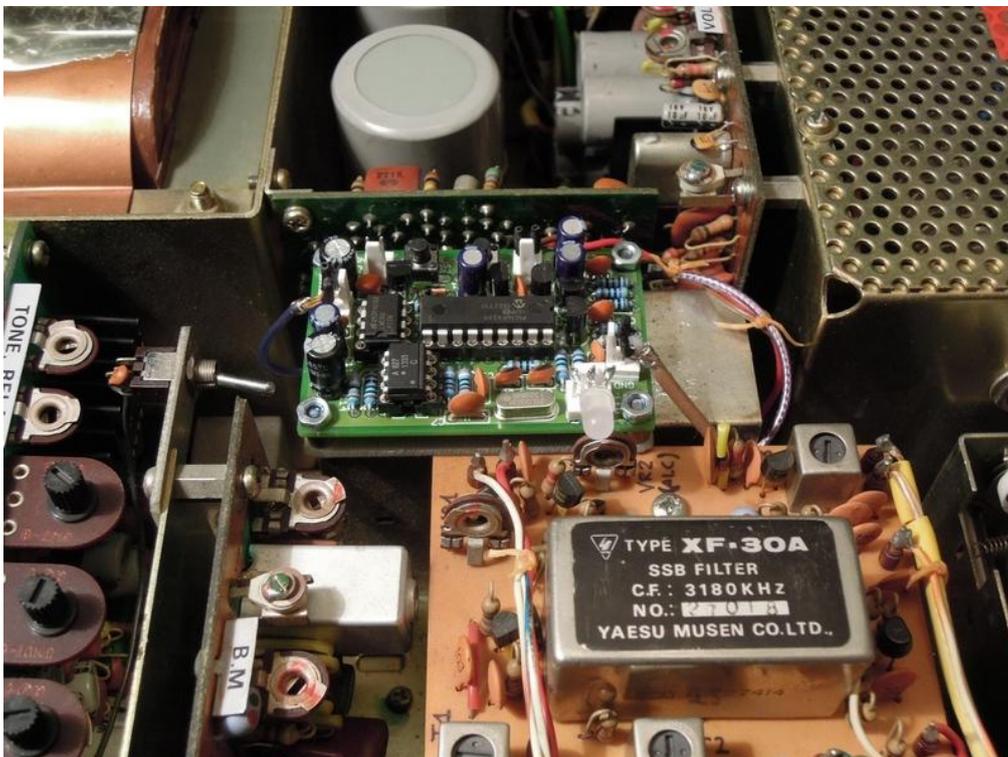
*VFO equipped with varicap and amplifier*



*Varicap detail*



*Amplifier detail*



*X-Lock placement detail*

