

## DC40 with Simple VXO Modification

Chuck Carpenter, W5USJ 26 Feb '06

My DC40 is now fitted with a simple VXO consisting of a trimmer in series with the crystal. The trimmer is about 8 to 50 pF (Mouser 24AA084). With a 7030 crystal, the total tuning range is 7028.9 to 7033.9 kHz. However the output power, observed on my FS meter, drops off at the lower capacitance range. Power out stayed constant to about 7031 kHz, about 3/4 of the tuning range. Tuning is not linear and changes at a faster rate as you tune toward minimum capacitance. Figure 1 shows An L-shaped support fashioned from a piece of PCB. Any good 1/16 thick insulator would do. Manhattan pads are used to mount the VXO parts.

I used a 6/32 screw to thread-form the corner holes and mounted the L support with a 3/8 spacer and a 1 in 6/32 screw. Don't use thread cutting screws. They will remove the copper from the plated through hole. Three 3/16 Manhattan pads can be super-glued to the support spaced center to center about the same as the crystal and trimmer lead spacing (.2 in). One near the outside board edge will be the common side. That side is also the crystal common side on the board - Figures 2 and 3.

DIP pins are soldered to the two inside pads for a crystal socket. You could leave 3 pins in the plastic and cut off the middle one. Leads from the board DIP pins are soldered to the two outside pads. I used clipped-off component leads. The capacitor is soldered from the middle pad to the outside ground pad. The rotor on the capacitor should be soldered to the ground side to minimize tool effects.

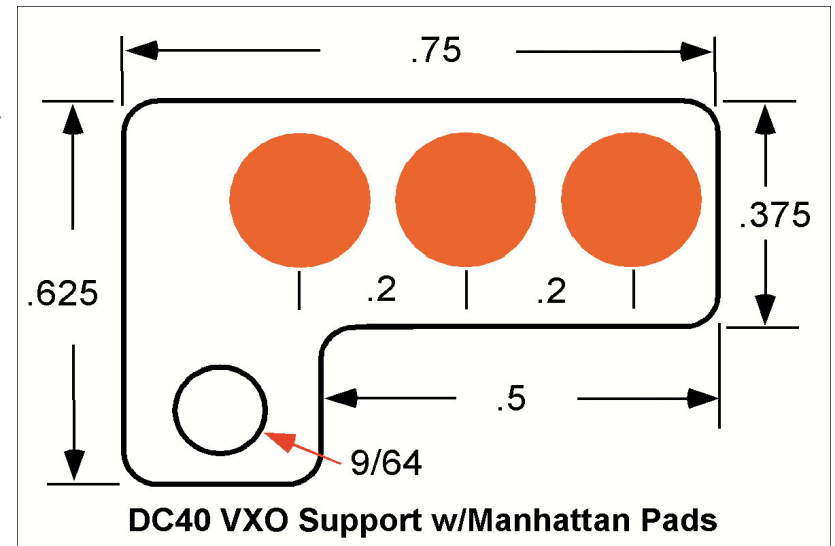


Figure 1. Suggested VXO support using PCB or other insulator



Figure 2. Note use of DIP pins at X1 used as a crystal socket. Also the 3-pin section of DIP pins used on the VXO Support.

Keeping within the range where the power output stays constant, the offset, as close as I can measure, is 547 to 686 Hz.

That's with the offset trimmer set to maximum. Less trimmer capacitance puts the offset too far off the filter CF.

That difference in offset and filter CF shouldn't be much of a problem. The audio filter is not too sharp.

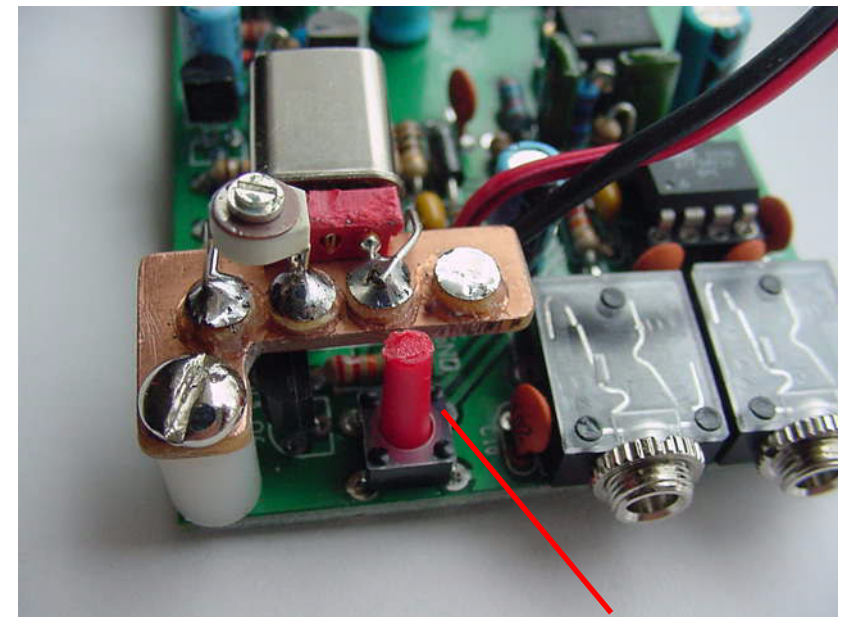


Figure 3. Mounting View. (Singed button not supplied in kit -- results of hooking up power leads after all parts were installed.)