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CB to 10

—part XXVI: the Cobra 132

The latest changes in the FCC rules which prohibited the sale of new 23-channel CB sets has made quite a few of these sets available at very low prices. This was because the manufacturers had to unload their surplus and also because CBers wanted to move up to the new 40-channel models.

I have been reading with interest all of the articles in *73 Magazine* on conversion of CB sets to 10 meters. I had a Cobra 132 on the shelf which was built by a Japanese manufacturer for B & K. (The same manufacturer built very similar radios for other companies; they were the Tram Diamond-60 and the Browning LTD.)

With the 10-meter band being so open in recent months, and the number of QRP stations I have heard with great signals, many well over S-9, I decided that I would modify the Cobra and get in on the action from the mobile myself.

Before you attempt this mod, I highly recommend that you get a Sams Photofact.® This will give you all the needed information such as part locations and alignment test points and procedures. The one needed for this conversion is CB-54, June, 1974.

There were several objectives in my conversion. Number one was good 10-meter SSB coverage, and I chose 28.5 to 29.1 MHz. Next was to have continuous coverage with the vco, with enough overlap to cover the spacing caused by the former radio control channels which were located between several of the original 23 channels.

This conversion is set up for the Cobra 132 mobile or the Cobra 135 base station radio, each of which uses the late-version synthesizer, PAC-4231. With the very close similarities of the Tram Diamond-60 and the Browning LTD, I am sure one can use the basics of this conversion to modify these sets up to 10 meters, also.

The parts that have to be changed are listed in Table 1.

To install the new local oscillator crystals that replace the X311, 12.8 MHz crystal, a miniature SPDT toggle switch and a 3-30 pF trimmer capacitor must be added. I will leave it up to you as to where you want to mount the switch. Once that is decided, install as per the switch diagram.

The next step is to enable the blank channel between 22 and 23. With the case off, place the set upside down with the channel selector set on this blank channel. If you look at the back wafer of the channel selector switch, you will see the notched-out portion of the switch. On my set there is a purple wire from the synthesizer board connected to the switch terminal that is supposed to enable this channel. Take a short piece of no. 18 wire and solder one end to the switch terminal. With the other end of this wire, form a contact on the center, bottom portion of the channel selector

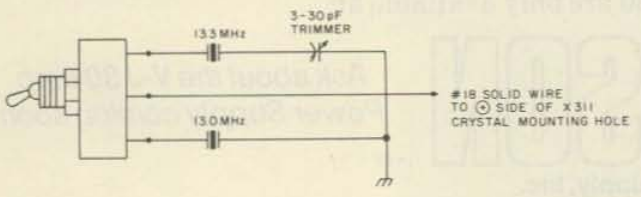

Fig. 1. Switch diagram.

Crystals	Remove	Install
X301	15.965 MHz	17.300 MHz
X302	16.015 MHz	17.350 MHz
X303	16.065 MHz	17.400 MHz
X304	16.115 MHz	17.450 MHz
X305	16.165 MHz	17.500 MHz
X306	16.215 MHz	17.550 MHz
X311*	12.8 MHz	13.0 MHz = 28.5-28.8 MHz range 13.3 MHz = 28.8-29.1 MHz range

Table 1. Parts to be changed. (— See text.)*

Channel	Adjust	Frequency
1	C311	17.300 MHz
5	C309	17.350 MHz
9	C307	17.400 MHz
13	C305	17.450 MHz
17	C303	17.500 MHz
21	C302	17.550 MHz

Table 2.

switch. Glue this in place with a hot glue gun. Be careful not to get any glue on the contact portion of the switch. This may seem a bit crude, but it enabled me to get an extra 10 kHz of coverage that would have been lost unless I changed the whole channel switch.

On the synthesizer board, connect a short between TP302 and TP303, mode switch set to USB. Connect a frequency counter between TP303 and TP304. Adjust per Table 2.

Remove the frequency counter from between TP304 and TP303 and connect to TP309 and TP305. Set the Voice Lock for center frequency. Select the 13.0 MHz oscillator crystal and adjust L301 cw for the proper frequency. Select the 13.3 MHz crystal and adjust the 3-30 pF trimmer for the proper frequency.

Remove the short and the frequency counter. Connect up a dummy load wattmeter. Select channel 23, also select the lower oscillator crystal, AM mode, and adjust T301 through T305 for maximum out on transmit. Next, adjust T14, T15, L3, and C116 for maximum rf out.

Select USB mode, inject 10-mV 2-tone test signal to the audio input; and adjust L2, L5, T1, T2, T3, T4, T5, T6, T16, and L8 for maximum rf output. Adjust R136 for maximum power out, but observe proper linearity to prevent distortion. This is the ALC adjustment; you should have about 8- to 15-Watts PEP out. This completes the transmitter adjustment.

Next, tune in a weak signal source, NB off, and adjust T7, T8, T9, T10, and T11 for maximum sensitivity. The last adjustment is for the Voice Lock range. Adjust R331 and R326 almost maximum clockwise. Adjust R329 almost maximum counterclockwise. Don't go too far or some instability will occur. This wil give you about a 15-to-20-kHz range, which allows total overlap between channels.

Well, that's about it for the conversion. I am sure there are several other ways as far as crystal selection goes, but this one worked for me. The antenna I use is a base-loaded trunk-mount CB antenna that is retuned for 28.6. Good luck with your conversion; hope to work you QRP mobile on 10. 73. ■