

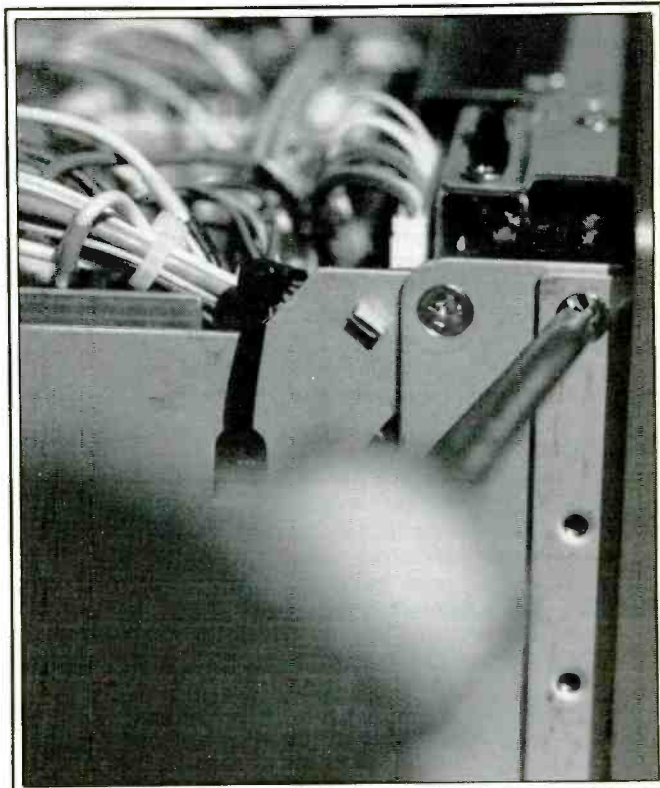
Kenwood 440 Modifications

For high frequency operation, Yaesu, Ten-Tec, ICOM, and Trio-Kenwood offer the latest in all-band, worldwide transceivers. Kenwood, Yaesu, and ICOM sets are all made in Japan. Ten-Tec is a U.S. made transceiver.

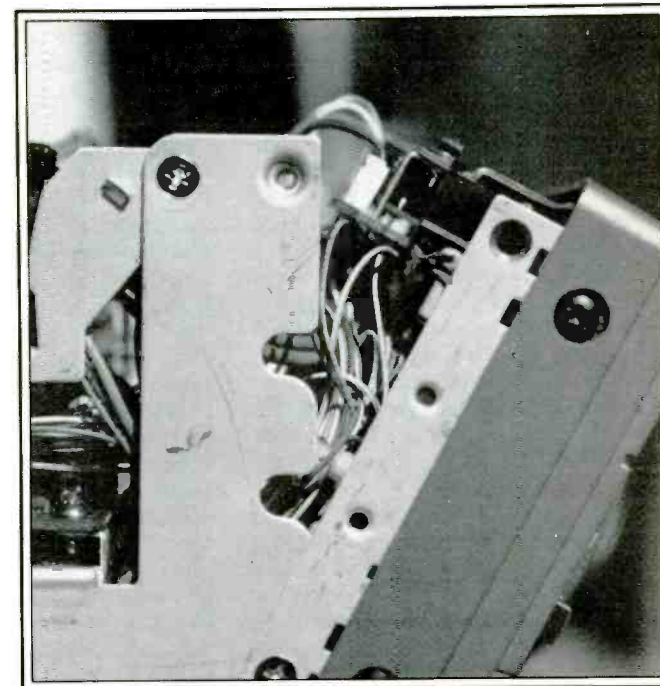
All of these Amateur Radio transceivers are equipped for general coverage receive. The addition of shortwave capabilities into a worldwide Ham set is nothing new. ICOM did it first with their IC-720 almost ten years ago. Now, *everyone* is including shortwave in their worldwide Ham sets.

The general coverage receiver usually begins at 500 kHz and extends up to 29.999 MHz. I have compared the receiver section of these Ham transceivers to dedicated shortwave sets, and the receivers are identical. The shortwave sets simply don't include the Ham transmitter circuitry.

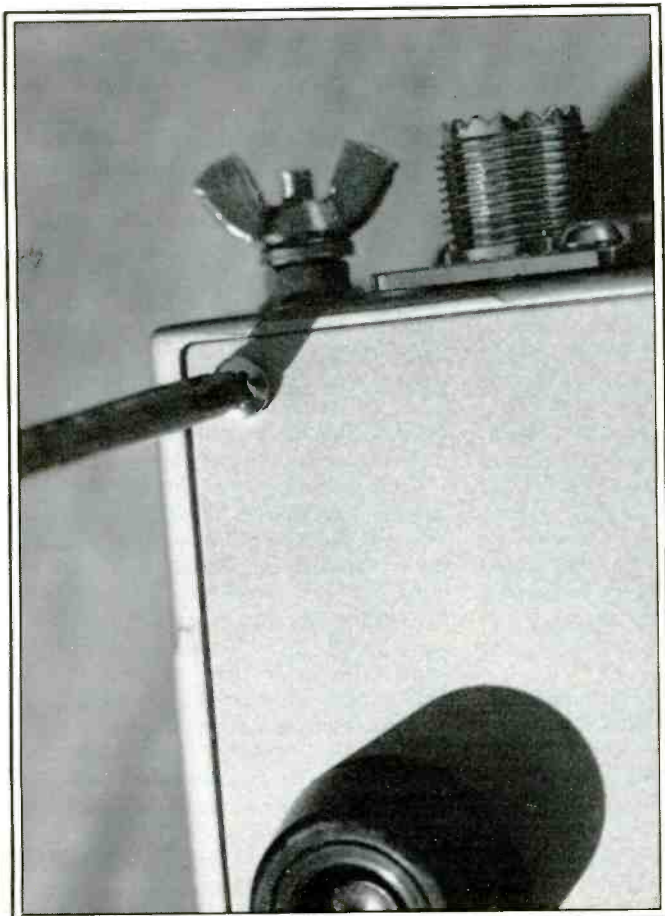
When you compare pricing of a shortwave-only receiver and pricing of a Ham transceiver with general coverage reception capabilities, it's obvious which way to go—spend an extra \$50 to \$100 and get a set that also doubles as an Amateur Radio transceiver with 100 watts output.



2. Gain access to the front of the unit by removing two top side screws and loosening two bottom side screws.

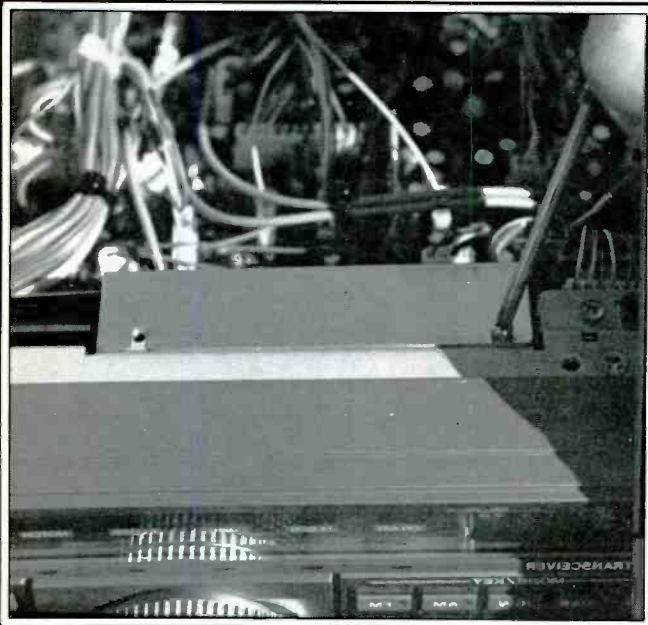


3. This allows the front assembly to swing open.

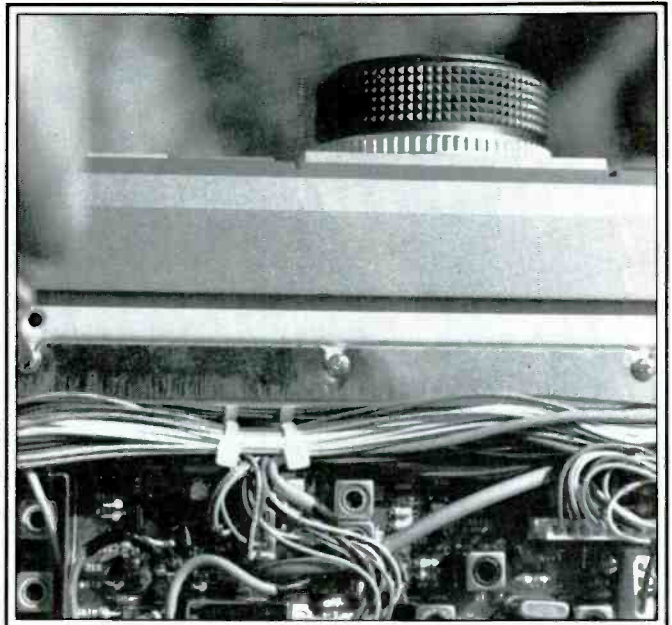


1. Remove 17 screws holding on the bottom and top covers. The bottom cover comes off, and the top cover is carefully removed and put next to the radio. It is still connected via the speaker wire.

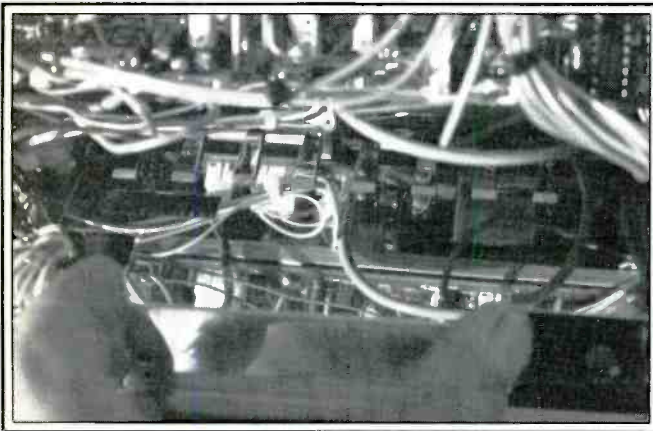
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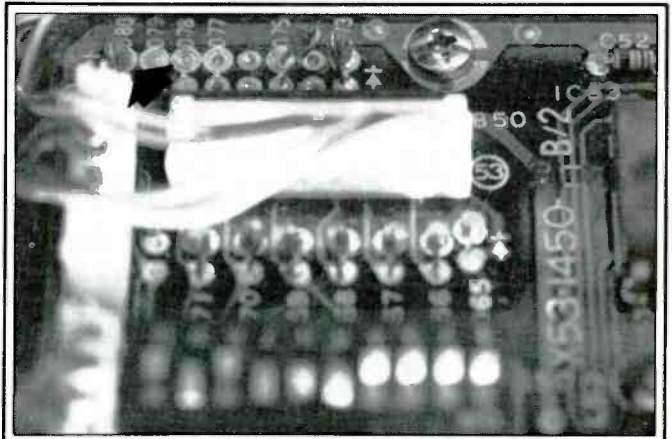
4. Remove the shiny silver control board protection plate. This requires removing two screws on the top . . .



and three screws on the bottom.



5. Lift the plate out carefully.



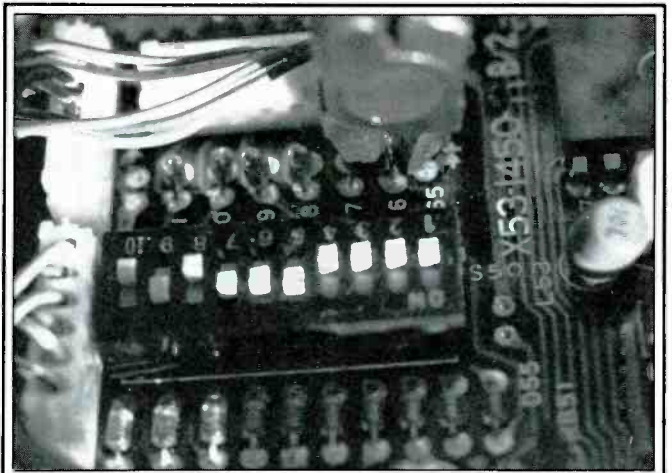
6. Locate diode D-80 in the bottom left-hand corner. Snip it for all-band transmit.

These worldwide Ham sets with general coverage receive may also be modified for all-band transmit for emergency purposes. The broad-banded Ham transmitter goes anywhere the receiver goes (except below 1.6 MHz), so why not have the capability in case disaster strikes? Remember, in an emergency, you can use any frequency to signal for help.

Kenwood TS-440

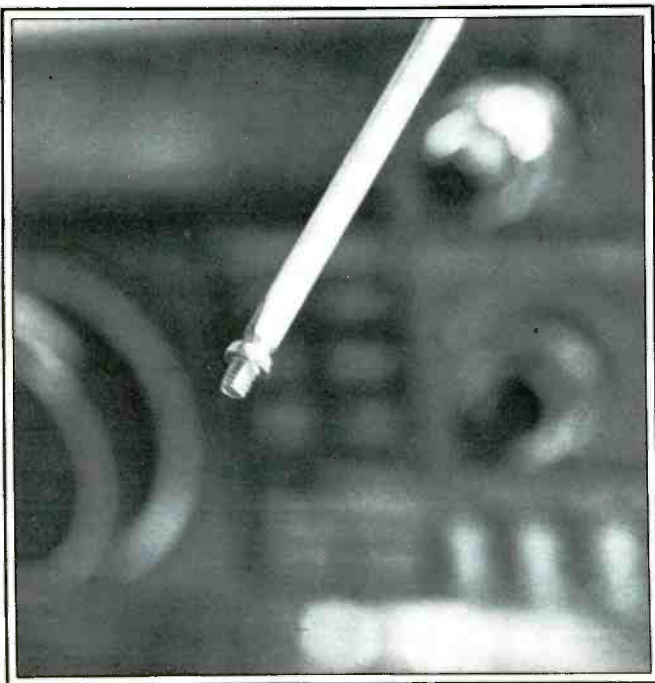
The Kenwood TS-440 is best suited for emergency communicators because of its all-band circuitry and 100 memory channel bank. No other worldwide set has as many memory channels as the 440. The 440 also dedicates ten of those 100 memory channels for duplex split-channel operation. This would allow the emergency communicator to transmit on one frequency, and receive on another—both of which are stored into one memory channel. The United States Coast Guard and the high seas worldwide telephone service all operate duplex, so communicating with these services in an emergency with the 440 is easy once the ten memory channels have been programmed.

Follow the photo caption steps for all-band transmit modification



7. Now locate D-66 and snip it. It adds 10 Hertz readout to your frequency digital display.

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8. Carefully reassemble the control plate using a magnetized tiny screwdriver to hold the five tiny screws in place. Don't pinch any wires. Also, close up the front and replace the top and bottom covers with 17 screws.



9. Plug in the power cord and add 12 volts DC. Depress A=B switch and turn on the power simultaneously. This resets the micro-processor for all-band transmit and 10 Hertz frequency display.

to the 440. Also included are two additional modifications for more precise tuning and increased power output.

This completes the all-band transmit modification. **Warning:** licensed Hams could easily lose their license if found operating on frequencies not assigned to the Amateur Radio service. Non-licensed operators using this equipment on frequencies not authorized become liable for stiff fines or imprisonment. Use the transmitter on any frequency outside of normal limits *only* as a last resort where life or property is at stake. (Modifications will probably negate factory warranties on the equipment.)

CAUTION. If you operate RTTY, CW, Amtor, or packet, you must be very careful not to exceed the recommended 100 watts

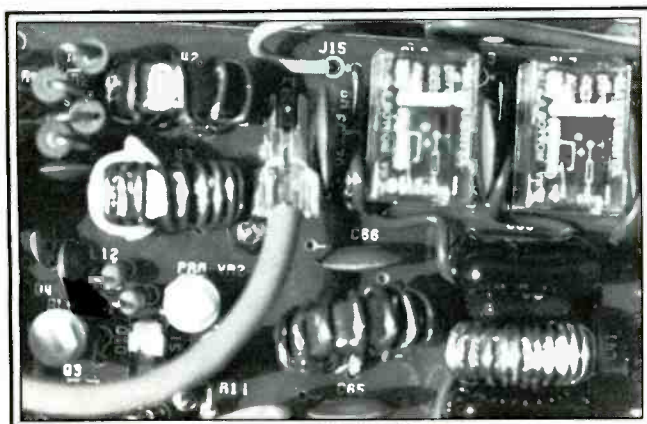
output. Too little ALC action could result in overheating of the finals and premature shutdown.

However, if you normally only use voice, this ALC trick dramatically improves voice-power output, yet still provides protection for your finals. Just make sure you see that ALC meter wiggle on your front panel on voice transmit.

Button up the set, and enjoy your new capabilities with caution. Remember, transmitting outside of your authorized band limits could result in the loss of your license. Use this all-band transmit modification only in an emergency to call out for help. As emergency communicators reading this column, it's nice to know you have this capability at your fingertips.

Power Output Modification

You will need at least a 20 amp, 12 volt, power supply to check for proper power output. You will also need a watt meter and preferably a dummy load for our next modification. The same trick I'm going to give you also works with other high frequency transceivers to obtain better voice-power output.



On the Kenwood 440, remove three screws that hold on the bottom plate next to the rear heat sink. This allows you access to the P.A. section and the low-pass filter network. On other sets, it's usually on the bottom and near the back.

Locate the control pot that allows you to vary your voice ALC (automatic limiting control) line. On the 440, it is VR-1. You can turn it gently with your fingers, but I recommend using a jeweler's screwdriver. (See photo.)

Transmit into the dummy load using normal voice, and watch the swing of your watt meter. Also note the action on the ALC meter on your front control panel. Chances are the ALC action looks "heavy," and typical voice modulation is around the 40 watt level of an average reading meter. Yes, you can whistle it up to 100 watts, but average voice still only hovers around 40 watts.

Adjust the ALC pot slightly to the right for a dramatic increase in average voice power output. Make sure you don't adjust it too far where the front panel ALC meter shows no action. You must have some sort of meter action in order to protect the finals from overdrive. A 3-degree clockwise turn usually does the trick nicely. Now your voice power is around the 60 watt level, with peaks to 80 watts. This is where you want it.

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