Hints and Kinks

Conducted By Larry D. Wolfgang,* WA3VIL

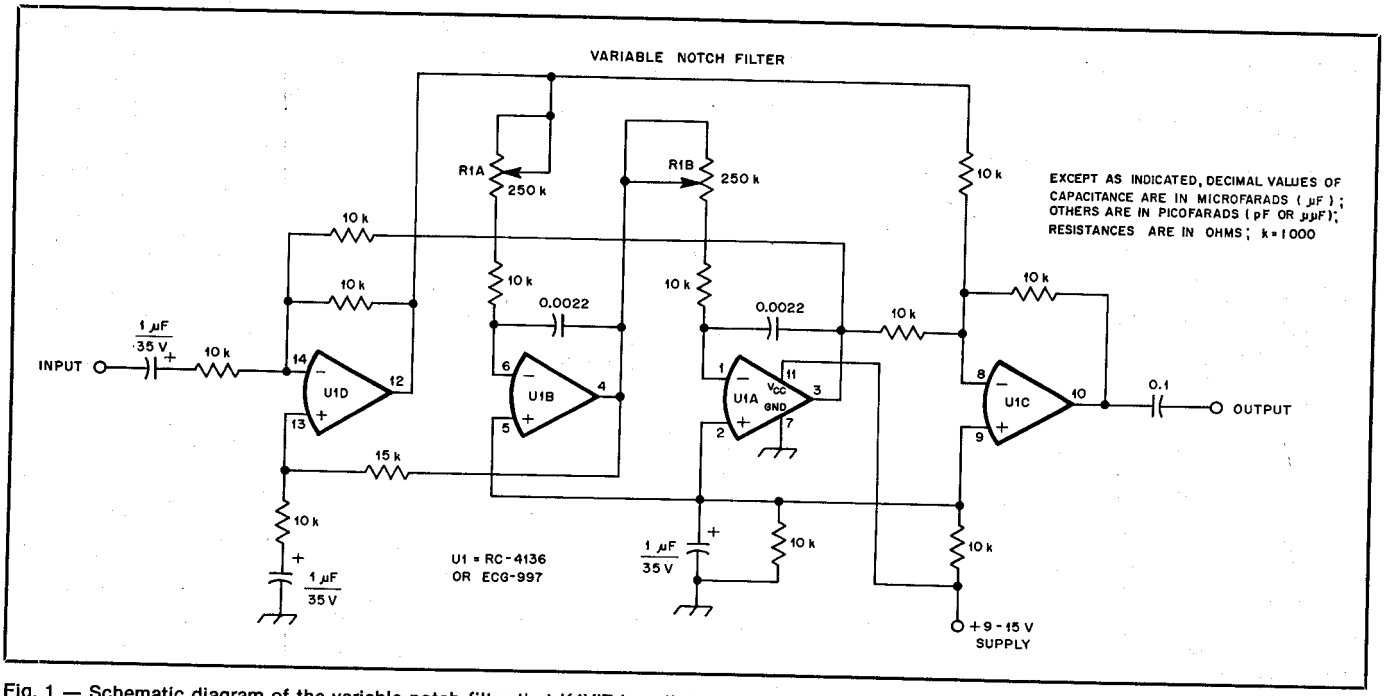

Fig. 1 — Schematic diagram of the variable notch filter that K4VIZ installed in his Kenwood TS-530. This same circuit should prove useful for other receivers. R1 is a dual, 250-kΩ, linear-taper potentiometer, such as a Clarostat D53C1-250K-S. U1 is an RC-4136, ECG-997 or equiv. quad op amp.

VARIABLE-NOTCH FILTER FOR RECEIVERS

☐ One night before CW net time, I was tuning around the specified frequency using my Kenwood TS-530. I came across some lid giving his finals a "life test." This prompted me to think about how nice it would be to have a notch filter in the '530 similar to the one in my Ten-Tec Argosy. A variable-notch filter can be quite effective for listening to a signal that is very close to a strong, interfering station.

I checked the manual for my Argosy, and found that Ten-Tec uses a simple circuit that employs a quad op amp IC and a few resistors and capacitors. A dual-section, 250-kΩ, linear-taper potentiometer serves as the tuning control. Based on my study of the Ten-Tec circuit, I decided to use it as a basis for my modification. See Fig. 1. A circuit-board etching pattern is given in Fig. 2, and Fig. 3 is a parts-placement diagram. Notice that all resistors are mounted on end to save space and to allow for a smaller

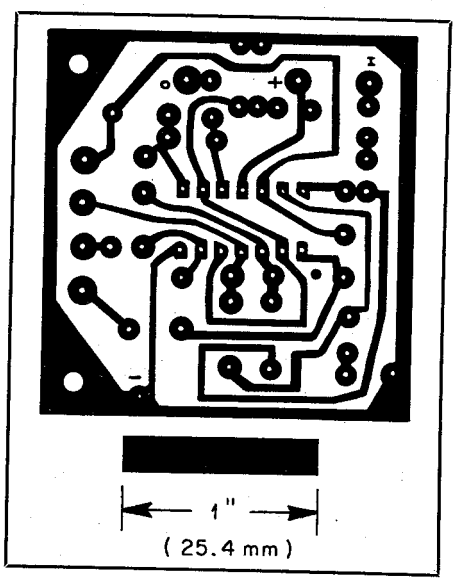

Fig. 2 — Full-size circuit-board etching pattern for the notch filter, shown from the foil side. Black areas represent unetched copper.

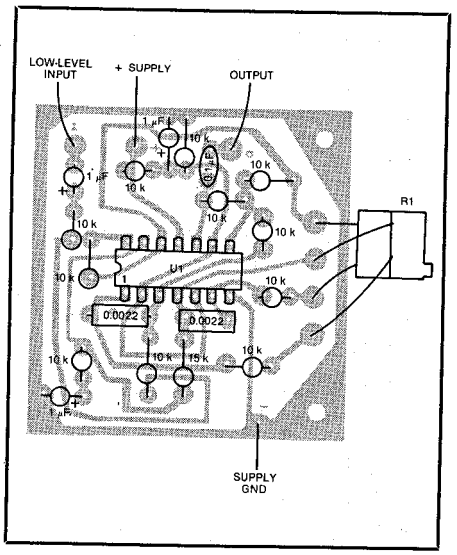

Fig. 3 — A parts-placement diagram, shown from the component side of the board. Gray areas show an X-ray view of the copper pattern.

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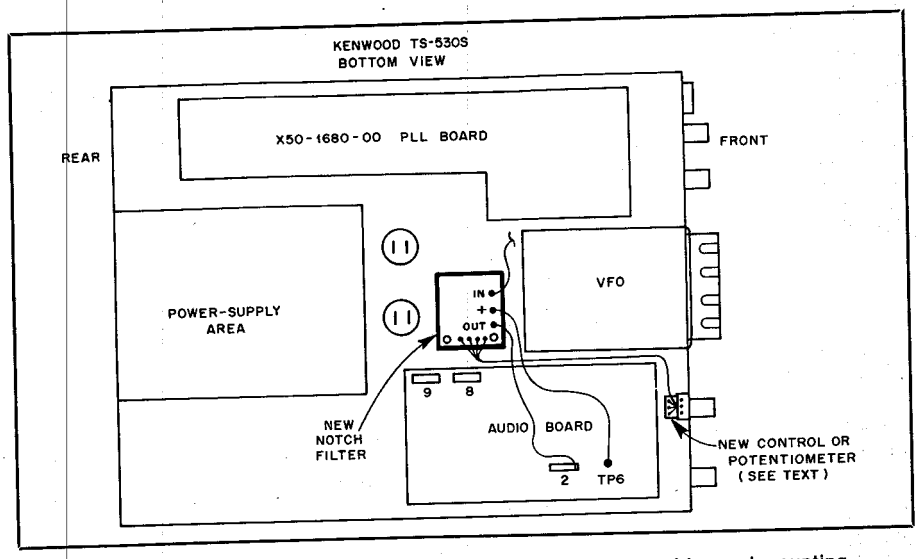

Fig. 4 — Inside view of the Kenwood TS-530 showing the notch-filter wiring and mounting.

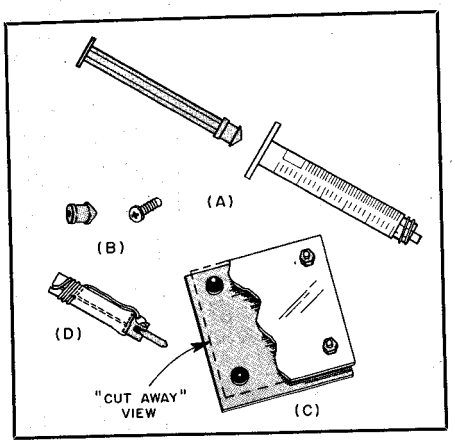

Fig. 5 — A disposable plastic syringe is shown at A. B shows the neoprene insert from the end of the plunger and how a no. 6 machine screw can be used to make rubber equipment feet. These inserts can also be used to mount a circuit board, transformer or other devices to a chassis, as illustrated at C. The syringe barrel makes a nice coil form, and D shows how W5MY fashioned a plug-in coil for a GDO using a piece of the tubing and a phono plug.

board layout. I mounted my circuit inside the TS-530 and connected it as shown in Fig. 4.

Since I never used the RF gain control on my rig, I replaced it with the notch-filter potentiometer. The Clarostat D53C1-250K-S potentiometer I used is a tight fit in the chassis hole; I had to enlarge the hole slightly to fit the bushing on the new control. The RF gain potentiometer is a 10-kΩ unit that I replaced with a fixed resistor.

I filed a flat on the shaft of the new control so the original Kenwood knob would fit and make the new control look like it belongs. I did not try to relabel the front panel to indicate the function of the new control. That way, I can return the rig to original form, should I ever wish to.

To mount the filter board in my Kenwood TS-530, I replaced a screw found near the edge of the audio board, between plugs 8 and 9, with a longer one. A few washers help space the filter board from the chassis. I obtained power for the filter at test point 6 on the audio board. There is a small, red coaxial cable coming from the top side of the rig and going behind the VFO. This cable carries the audio from the detector to the audio amplifier. Cut this cable and connect it to the input and output pads on the filter board, as shown in Fig. 4.

Four small wires connect the filter to the dual potentiometer on the front panel. You will have to remove the screws holding the audio board so you can lift it out of the way while replacing the RF gain control. The front panel will have to be removed to get at the nut that holds this potentiometer in place; that involves removing four screws.

With the control turned fully clockwise, the notch frequency is about 2800 Hz; it is about 300 Hz when fully counterclockwise. Both these frequencies are nearly out of the Kenwood audio-system passband. When you don't need the filter, just set it to one end or the other.

I have found this to be a worthwhile project and a handy addition to my rig, especially for CW operation. You should be able to complete the modification in an evening or two. Actually, the task sounds worse than it is! It took more time to type it up than to perform the operation. One word of caution: Wire the new control so that maximum resistance on both potentiometer sections occurs when the shaft is rotated counterclockwise. — *Tom Desaulniers, K4VIZ, Leeds, Alabama*

APPLICATIONS FOR DISPOSABLE SYRINGES

☐ I have found several applications in my Amateur Radio station for pieces of disposable syringes used by doctors and dentists and in hospitals. See Fig. 5A. The neoprene inserts on the end of the plunger can be used as grommets to protect wires going through a hole in a metal chassis if you cut a hole in the tip. They also make excellent rubber feet for equipment or shock mounts for circuit boards, transformers, relays, blowers or other sources of hum and vibration.

Fig. 5B shows one of these inserts. The head of a no. 6 screw is just the right size for a snug fit into the insert. These can be fastened to the bottom of a project case to serve as feet. Secure the screw with a lock washer and nut. To use the insert as an insulated shock mount, drill a ¼-inch hole in the chassis.[1] Then insert the grommet into that hole, add a no. 6 machine screw and attach the circuit board or other device. Fig. 5C illustrates this technique. You may want to use a nut and lock washer above and below the board for extra security.

I have also found that the barrel of the syringe makes a nice coil form. If you use a sharp knife to cut off a section of the tube, it will fit nicely over the outside of a phono plug. I have made plug-in coils for my GDO using this method. Fig. 5D shows an example of how that is done.

Probably the nicest thing about these syringes is that they are free for the asking. [I found my family doctor reluctant to give me syringes that he uses to give my wife her allergy shots because he thought the allergen extract would be too hard to clean out. You will have to explain what you want the syringes for and, perhaps, ask him or her to save some that you can clean up with soap and water. Some doctors may be more willing to save just the neoprene inserts for you. — Ed.] — *George B. Bean, D. O., W5MY, Little Rock, Arkansas*

[1]mm = in × 25.4; m = ft × 0.3048.

A Simple Method of Oiling Cooling Fans

☐ Cooling fans can be oiled very easily without removing them from the chassis or even removing the covers if they are in an accessible position. I use a 3-cc plastic syringe and a long metal needle.[2]

Needles that fit on the hub of a syringe are available in many bore sizes and in lengths from 1 to 6 inches in increments of ½ or ¾ inch. The necessary size depends on the physical structure of the equipment. Measure from the area of the motor to a convenient height that allows freedom of operation. These needles are flexible enough to bend slightly for various working angles.

Filled with a few milliliters of very light machine oil, the needle can be placed right on the motor shaft, keeping the bevel toward the motor and applying gentle pressure on the plunger until an adequate amount of oil has been "injected." You should be able to obtain used syringes and needles from your local hospital or medical practitioner. In some areas you can buy them at a pharmacy without a prescription. [Herbach & Rademan, 401 E. Erie Ave., Philadelphia, PA 19134 has syringes (but not needles) for this purpose. A pack of six costs $2.10 plus shipping, with a $10 minimum order amount. — Ed.] — *Maurice Sasson, M.D., W2JAJ, Bronx, New York*

OLD-TIMER'S NOTEBOOK

Grid-Dipping Toroidal-Wound Inductors

☐ Because of the self-shielding properties of toroid coils, it is either difficult or impossible to check for resonant frequencies with a "dipper." In some instances it may be possible to obtain a reading on the dipper by virtue of stray capacitive coupling, but the dip will be rather broad and difficult to discern. Fig. 6 shows a simple way to check tuned-circuit resonance

[2]cc means cm^3, which is the same as 1 ml; oz = ml ÷ 29.57.