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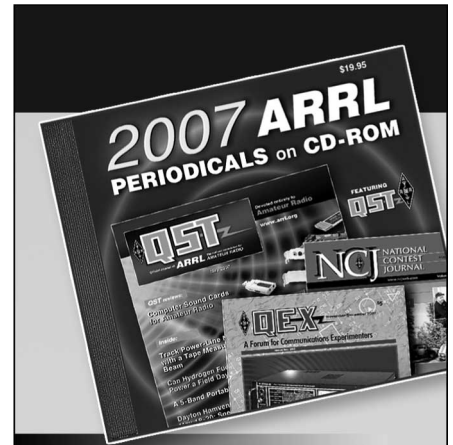
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Author: James Hicks, W5EZY

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Hints and Kinks

Conducted By Stuart Leland,* W1JEC

A DUST COVER FOR THE BENCHER PADDLE

□ A dust cover provides a lot of protection for a Bencher iambic paddle, especially for the average amateur who is likely to pile things and work on the radio operating bench as I do. I fabricated a cover from clear 1/8-inch (1.5 mm) Plexiglas in the manner shown in the accompanying diagram. The cover and sides are cemented together. Dimensions are shown in the drawing. The 1/64-inch (0.39 mm) dimension for the cut sizes is the tolerance needed to provide clearance for the base of the Bencher paddle. Be careful to hold to this measurement to obtain a proper fit. Item D in the drawing is the stop that allows you to position the cover 3/16 inch (4.8 mm) from the top of the Bencher. You may take some liberty with this measurement, but be sure that all four corners are made alike. — C. L. (Chet) McClellan, K7HNM, Phoenix, Arizona

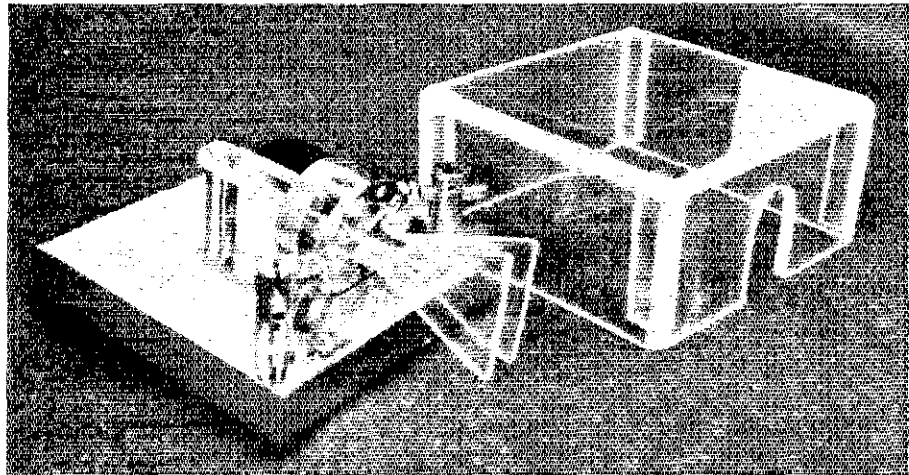


Fig. 1 — A practical, attractive dustcover for a Bencher paddle can be made with Plexiglas in the manner illustrated above. Chet McClellan, K7HNM, provided this idea for QST.

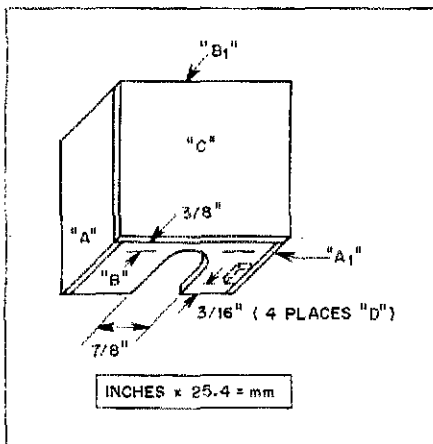


Fig. 2 — Details of the K7HNM Bencher paddle dust cover.

LOGIC PROBE MODIFICATION

□ The Vest Pocket TTL Logic Probe (Rogers and Bartels, July 1979 QST) works fine, but reads zero on high-speed pulses. This can be overcome by adding a 1000-ohm resistor between pin 10 of U1 and the unused decimal point of the 7-segment readout. Actually, any value of resistor could be used as long as the decimal point is not dimmed to any great extent. A higher value does limit the current and thus the load on U1.

With this resistor in place, the decimal point will then light at all times *except* during a logic low (zero). If the decimal point is lit with a zero, then the circuit being tested is pulsed.

For packaging, a clear plastic tube (21/32-inch or 16.7 mm ID) can be used. I use a rain gauge. Plastic dust caps from SO-239 uhf

connectors fit very snugly as end plugs. The probe tip can then be mounted directly on one of the caps rather than soldered to the board. For better visibility, the circuit board can be placed in the tube so that the readout is at the same end as the probe tip. A short wire is then used to connect the tip to the board. — Dallas Williams, WA0MRG, Brush, Colorado

MOSQUITO-LIKE WHINE IN OMNI-D

□ An Omni-D (Series B) I was testing had a low-level but annoying mosquito-type whine in the receiver audio. I noted that not only could the whine be altered with the volume control but also with the digital display. I concluded that the source was probably the logic board, the result of the digital display enable-pulse scan frequency. In a telephone call to Ten Tec I was advised that the condition is not normal, but may occur in some units.

Ten Tec's Larry Worth and John McCoy suggested that perhaps the +12-V supply line to the logic board was radiating a signal that was being picked up by the i-f board. Before attempting anything else, I was advised to reroute the supply line if it was passing under the i-f board. This is a red wire connected to a feed-through insulator on the right side of the aluminum enclosure of the logic board.

To remove the supply line from a position under the i-f board, I first dismantled the i-f board and gently levered it upward with hemostats to release it from the socket. The supply line had been harnessed with tie-wraps which I cut to permit its extraction from the harness bundle. After removing it all the way to the shield at the rear of the i-f board, the harness was resecured with three new tie-wraps. The supply line was placed aside for remounting the i-f board. Once the board was secured, I rerouted the supply line above the board and against the shield. A single tie-wrap fed through a convenient hole in the shield keeps the line in place. After reconnecting the supply line to the logic-box feedthrough, the unit was tested and the annoying whine was

completely gone. — Bob Wheaton, W5XW, VPIXW/XE2XW, San Antonio, Texas

MODIFYING THE HEATHKIT HW-101 FOR ZERO BEATING

□ Being able to zero beat an incoming signal is as dear to the heart of a cw operator as full break-in and is sometimes more important. The lack of this ability is an inconvenience, to say the least. And it's a downright nuisance to operators on the other end, especially those who are trying to operate on a net frequency. I overcame this in my Heathkit HW-101.

The HW-101 has a separate crystal to accomplish offset tuning (to enable you to copy an incoming signal by the audio tone or beat frequency) 1 kHz away from the actual transmitting frequency. The audio oscillator, which supplies the sidetone and keys the transmitter circuits, is also 1 kHz in frequency and is supposed to provide on-frequency operation by comparing the pitch of the sidetone with the pitch of the incoming signal.

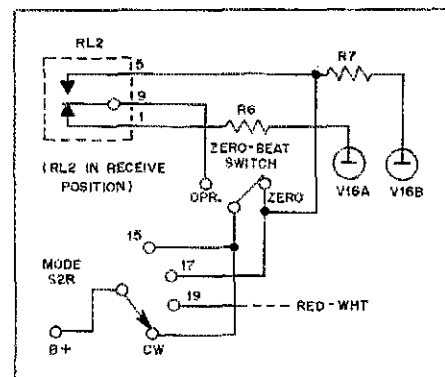


Fig. 3 — Installing an spdt switch is all that is necessary for this modification to allow zero beating of an incoming signal with the HW-101. This change is furnished by James Hicks, W5EZY, of Llano, Texas

*Assistant Technical Editor

Unfortunately, it doesn't work that way in practice. In the first place, the ear may not be that accurate. Second, the frequency separation of the receive and transmit crystals is not always exactly equal to the sidetone pitch because of the circuit variables involved.

Referring to the schematic diagram, we find that the receiving crystal (Y1) is 1 kHz higher in frequency than the cw transmit crystal (Y2). These crystals oscillate in the grid circuits of V16A and V16B respectively when voltage is appropriately applied. Voltage is applied to V16A when receiving and is switched via relay K1.2 to V16B only when transmitting.

By installing an spdt toggle switch, the voltage can be manually switched to V16B while still in the receiving mode. This places the VFO dial on or very close to the zero beat of the incoming signal. A slight adjustment will put it right on frequency. Switching the voltage back to V16A restores the beat-frequency oscillator without disturbing the VFO setting and, presto, the transceiver is exactly on the frequency of the incoming signal.

I mounted my switch on the front panel midway between the dial escutcheon plate and the meter, placing it on a level with the other controls. This seemed to be the only location available, although I would have preferred having it elsewhere. Circuit changes are minor. Simply remove the blue-blue-white lead from lug 15 on the rear wafer of the mode switch (the wafer nearest the panel). I used three lengths of differently colored hookup wire, which I twisted together to make a neat installation. The blue-blue-white lead is soldered to either of the wires that connects to an outside terminal of the toggle switch. Connect the center wire from the toggle switch to lug 15 where the blue-blue-white lead has been removed. The lead from the remaining outside terminal of the toggle switch is wired to lug 17 of the rear wafer of the mode switch (it is right next to lug 15 and is identified by a yellow lead from terminal 5 of RL2).

No operating compromises result from this modification. One position of the toggle switch restores the circuit to normal. It has no effect on sideband operation or on transmitting. Because this modification requires drilling a hole in the panel of your HW-101 to install the toggle switch, consider first whether operating pleasure and efficiency mean more to you than the warranty on your rig or its trade-in value. Some companies will not accept trade-ins with irreversible modifications. If you eventually sell the rig yourself, however, the new owner will probably appreciate the improvement. As for myself, I plan to keep mine and enjoy it for a long time! — *James M. Hicks, W5EZY, Llano, Texas*

TRANSCIVER CAUSES UNEXPECTED CAR BATTERY DRAIN

When I found the battery in my Chevy Monte Carlo completely dead one cold morning, I checked all electrical switches including that on my Kenwood TS-120S to be sure none had been left on. Finding each one turned off eliminated "cockpit trouble" as the cause. I proceeded then to charge the battery and be on my way.

The next morning brought on a repeat performance. The battery once more was dead. That meant off to the Chevrolet dealer for a further examination. They found no mechanical or electrical reason for the difficul-

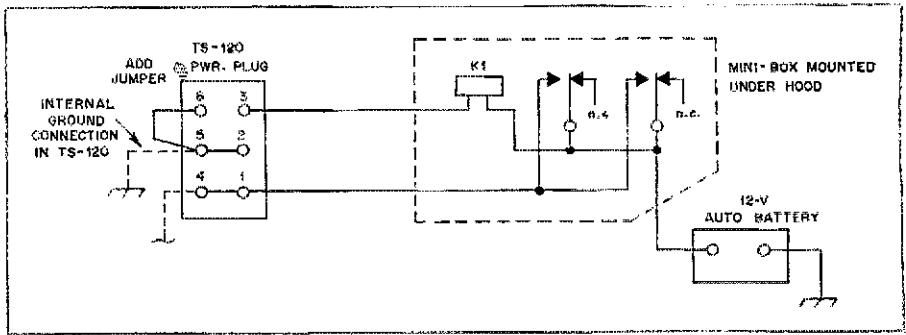


Fig. 4 — This relay circuit in the 12-V power supply line to the W3BX mobile transceiver ended a series of battery failures resulting from a leaking semiconductor in the TS-120 even though the power switch on the transceiver was off. The text explains. K1 should have a contact rating of 10 A for each section. A suitable relay is Radio Shack no. 275-208 or no. 275-218.

ty but they were suspicious of the battery. It was placed on their charger, brought up to full voltage and I returned home. The next morning, once again I was back at square one. . . . the battery was dead. What to do?

Checking the electrical circuitry more carefully led me to the source of the problem. I found that there was a 1.25 A current drain on the +12 V line to the TS-120S even though the ON-OFF switch on the equipment was in the OFF position. A bench test of the transceiver established that Q4 was leaking. Furthermore, a check of the diagram disclosed that the voltage feed for the collectors of the two final transistors does not go through the ON-OFF switch, but in fact is taken from the battery line prior to the switch. What to do?

My solution to the problem was to use a relay circuit as shown in the accompanying diagram. This will allow the +12 V line to the transceiver to be disconnected except when the ignition key is on. I elected to use this method rather than make internal circuit changes that would affect the resale value of the TS-120S. Since then there has been no recurrence of battery failure. Other TS-120 owners who operate mobile may benefit from this information. — *Cary L. Townsend, W3BX, Bartlesville, Oklahoma*

WEATHERPROOFING COMPOUNDS

In November 1978 *QST* "Hints and Kinks," a method of installing PL-259 connectors on hardline coaxial cable was explained. As an added measure to prevent oxidation between the aluminum-to-copper braid contact area, coat the aluminum hardline jacket with one of the commercial anti-oxidation compounds made for aluminum-to-aluminum and aluminum-to-copper electrical connections. Such products are available at most electrical supply houses under the name of No-Alox or Oxiban. Compounds like these are very useful when assembling antennas that have aluminum-to-aluminum contact areas. Beam and vertical antennas are in this category.

Another compound that is useful when assembling any fitting that must stand up to the weather is called Gaco Liquid Rubber. This is a brush-on liquid neoprene coating that will stick to most metals and plastics. It will not shrink or crack. Gaco is manufactured by Gaco Western, Inc., Seattle, Washington. — *Roger Linton, W2ZY, Vineland, New Jersey*

CB ANTENNA TO PC TOOL CONVERSION

Recently I acquired a 10-meter fm rig for the car. I purchased a CB stainless-steel whip (Radio Shack 21-903), which was installed on a bumper mount that I already owned. To tune the antenna for 10 meters, I removed about 1 foot from its length. (The easiest way to cut a stainless-steel whip is with a bench grinder.)

Because the whip is welded to the threaded ferrule, I cut the excess length from the top of the antenna. Being a bit on the cheap side, I used a bench grinder to turn the wasted top of the whip into a useful tool. First, I cut the rod about 5 inches from the static ball; with a heavy heart, I threw away the short piece that I had just removed. The newly cut end of the whip was turned down to a sharp point. This tool is quite useful for circuit-board work and general shop use. If I need to apply heavy pressure, the static ball saves a lot of wear and tear on my hands. If you aren't cutting a CB whip down for 10 meters, you might try stopping by your local two-way repair shop and asking if they have any defunct whips around that you can have. — *Pete O'Dell, AE8Q/1*

OLD TIMER'S NOTEBOOK: MAKE THOSE JUMPER WIRES LAST LONGER

Do you buy those inexpensive alligator-clip jumper wires that break off at the clip? To make them last longer, put strain relief on the wire. Push the insulator away from the clip. Unsolder the wire from the clip. Push the bare wire through the hole in the clip and resolder. Bend the tabs of the clip over the wire insulation to provide strain relief. Then replace the insulator over the wire end of the clip, as shown in the accompanying sketch. — *Rich Summers, W5ZYG, Garland, Texas.* [QST]

