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Author: Stanley P. Sears, W2PQG

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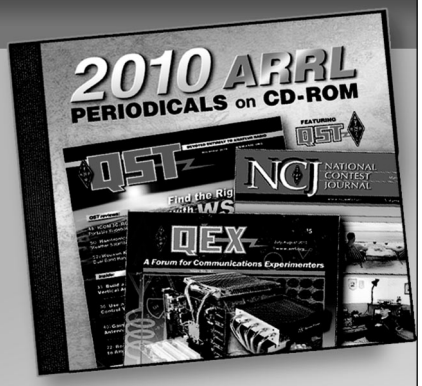

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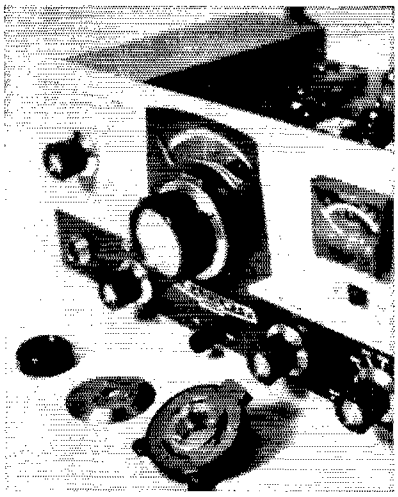
Dial Modification for Heath Monoband Transceivers



New dial mechanism installed on an HW-32A. Only the vernier mechanism is used, after removing the knob and calibration scale as shown in the foreground.

Easier Tuning in Mobile Operation

BY STANLEY P. SEARS,* W2PQG

THE Heath monoband transceivers HW-12A, HW-22A and HW-32A are in worldwide use, and have been affectionately termed the "Hot Water" series. These units are well designed and perform equally well in a fixed station or a mobile installation.

Early this past summer the writer installed an HW-32A as a mobile rig. With the exception of ignition noise (reference October, 1967 *QST*, page 46), the transceiver performed exceptionally well. When in motion, however, it was found to be very difficult to tune in stations because of the effect that the movement of the car had on the stability of my hand on the tuning knob. As designed, there is a single friction washer on the capacitor shaft. This serves adequately for fixed-station applications, but the amount of friction is insufficient for mobile use. Discussions with other mobile users of the HW-series monobands have revealed this to be a common problem.

Several methods of introducing additional friction were tried, such as using a heavier spring washer, and placing a felt washer under the knob. Although there was some improvement, these measures were not adequate. The modification described in this article finally corrected the problem, and in response to requests for details from other operators, the following description of the alteration is provided.

The shaft of the v.f.o. tuning capacitor in these transceivers has a built-in vernier which provides a ratio of about 4:1. The modification doubles this ratio to 8:1 and at the same time adds the required friction. The combination of an 8:1 tuning ratio and increased friction completely eliminates the original problem, and actually makes tuning easier because of the ratio change.

The photographs show that a vernier tuning mechanism has been added behind the original tuning knob (a second vernier dial is shown in the picture to illustrate the disassembly described later in the procedure). This mechanism is connected through a flexible coupling to the shaft of the v.f.o. tuning capacitor. The tuning capacitor has been moved back over the printed circuit (p.c.) board to allow room for the coupling. This coupling was selected for its flexibility primarily to provide *mechanical* isolation between the new dial mechanism mounted on the front panel and the v.f.o. tuning capacitor. This modification was initially made without the flexible coupling, and it was found that vibration of the front panel carried back to the tuning capacitor, causing frequency modulation. The flexible coupling isolates the capacitor from these vibration effects. (In the original arrangement the tuning knob is isolated from the panel.)

Only three principal parts are required for the alteration:

A) A 2-inch vernier dial, 8:1 ratio (Lafayette Radio P/N 99H6030 or Argonne AR-405, price $0.99).

B) A flexible shaft coupling selected for mechanical isolation. This cannot be a rigid coupling, but must be extremely flexible to

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absorb any fore and-aft-panel motion. The writer employed a coupling removed from an old SCR-522. The holes had to be bushed to ¼-inch shaft size. The common bakelite-wafer type of flexible coupling should be usable, provided that it can be easily compressed by pinching.

C) One piece of ¼-inch shaft, approximately ⅜ inch long.

For those desiring to perform this modification, the following sequential procedure is suggested:

1) Remove the original Heath tuning knob.

2) Locate capacitor C_{138} (0.02-μf. ceramic) directly behind the v.f.o. tuning capacitor. Remove this part, and resolder it to the same points on the under side of the printed circuit board. Solder directly to the foil and do *not* insert the leads through the original holes.

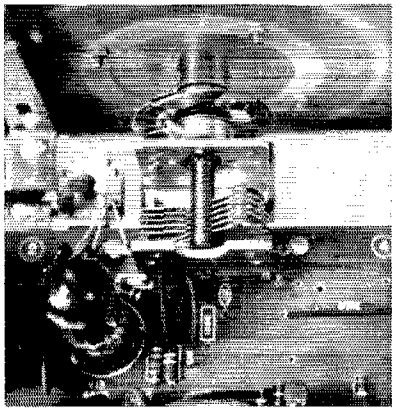
3) Unsolder connections, remove four mounting screws, and lift out the v.f.o. tuning capacitor. Loosen the setscrew and slip the plastic dial off the shaft.

4) Using a hacksaw, carefully cut the shaft of this capacitor, leaving only 5/16 inch of length. (Dress the cut end with a file to remove burrs, and to permit the inner shaft of the original reduction mechanism to turn freely.)

5) Drill two new holes in the chassis for remounting the v.f.o. capacitor ⅝ inch to the rear of the original *front* holes. Only two screws will be used to secure the capacitor in its new rearward location. (Do not drill any holes in the p.c. board, as the rear screws will not be used.)

6) Since the capacitor is to be placed on top of the p.c. board, two spacing washers are needed with the two mounting screws to keep the capacitor level. The washers should be the same thickness as the p.c. board.

7) Mount the v.f.o. capacitor in its new location, using two new screws ⅛ inch longer than the original ones. Insert the screws through the new holes with the spacing washers installed between the chassis and the capacitor frame.



The v.f.o. tuning capacitor is moved toward the rear of the transceiver to make room for the flexible coupling. The original 4:1 planetary vernier drive in the capacitor shaft is bypassed by coupling the dial shaft to the direct-drive part of the capacitor shaft.

8) Resolder the wiring to the v.f.o. capacitor as originally connected.

9) Install the flexible coupling on the v.f.o. capacitor shaft, and tighten the setscrews.

10) Slide the plastic dial on the new section of ¼-inch shaft, and insert the shaft into the forward end of the flexible coupling; lightly tighten the screws. (The length of this new piece of shaft will be around ¾ to ⅞ inch, depending upon the size of the coupling selected.)

11) Slide the new vernier dial on the end of the ¼-inch shaft until it rests against the front panel. Center and level the dial, and then mark the two mounting-screw locations on the panel.

12) Two small sheet-metal screws will be used to secure the vernier dial to the panel. These screws must be carefully selected for length so that they do not extend through the panel and touch the plastic dial behind.

13) Carefully drill clearance holes for the two sheet-metal screws. (It would be well to remove the plastic dial during this operation to prevent damage by the drill.)

14) Mount the vernier dial to the front panel, using the two sheet-metal screws.

15) Fully close the v.f.o. capacitor, and turn the vernier dial to its counterclockwise stop.

16) Loosen the screws on the forward end of the flexible coupling, and push the ¼-inch shaft forward until it bottoms in the vernier dial. Tighten the setscrews on the dial and flexible coupling.

17) Relocate the plastic dial in its proper position in accordance with instructions in the Heath manual. Tighten the setscrew.

18) On the new vernier dial, remove the knob and the logging scale, as indicated in the picture. (These parts are not used.)

19) Install the original Heath knob on the shaft of the vernier dial. As shown in the photo, the Heath knob almost completely hides the new vernier mechanism behind it.

This completes the modification. QST

Strays

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