

SERVICE BULLETIN AMATEUR RADIO

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SUBJECT TS-440S INTERMITTENT OPERATION	DATE 01/24/89
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When intermittent problems such as erratic display, loss of front panel control, or frequency lock-up are encountered, the PLL and Control circuits must be checked to determine which circuit is malfunctioning. While any number of components may cause such problems, if the Control circuit is suspect, there is a possibility that the ROM socket is at fault. The socket should be tested to determine if it is making good electrical contact with each pin on the ROM. If it is found to be defective, remove the socket and solder the ROM directly to the board. The ROM is IC52 on Control Unit (B/2). It should be noted that units with a serial number of 909XXXX and above do not incorporate a socket.

CAUTION

Removing the socket from the board requires good soldering skills. The board, being double sided, has solder connections on both component and foil sides. When the socket is removed, it is very important to insure that each pin is completely solder free. Having to pry up on the socket means that it is not completely desoldered and will cause the circuit foils to tear.

When performing any work on the Control boards, CMOS handling techniques must be observed. Such techniques include using a grounded or isolated soldering tip, avoid touching the pins of IC chips with your fingers, and ground yourself with a wrist ground strap.

To remove the socket:

1. Disconnect the power supply and antenna.
2. Remove both the top and bottom covers from the transceiver. Disconnect the speaker cable from the transceiver.
3. Remove 2 countersunk screws from each side of the front panel chassis and gently pull the front panel forward.
4. Loosen the 5 round head screws (2 on top and 3 on the bottom) that secure the shield plate inside the front panel and then remove the plate.
5. Set the transceiver on its left side and fold the front panel back to expose Control board (B/2). Do not stress the cables.

6. While avoiding contact with the pins, remove the ROM (IC52) and set it aside on anti-static foam.
7. Unplug connectors 56 - 58 from Control board (B/2).
8. Remove 3 brass screws from Control board (B/2). Do not remove the fourth screw that connects to the angle bracket. Instead, remove the brass screw from Control board (A/2) so the angle bracket stays with the top board.
9. Fold the top board towards the body of the transceiver. Be very careful not to stress the flat ribbon cables that are soldered between the two boards.

NOTE

If the foil side of the board is not sufficiently exposed for desoldering purposes, remove the 3 hex bosses from the bottom Control board. Pull both boards forward and open them like a book to allow the best access to the foil side of Control board (B/2).

10. Carefully desolder the socket and remove it from the board. Do not pry up on the socket. If it does not easily pull off the board, the top foils are still soldered to the socket.
11. Install the ROM in the board and solder it in place.
12. Assemble the transceiver by reversing steps 1 - 9. If the bottom board was removed, do not pinch the wire harness under the board during installation. If the harness produces excessive stress on the board, solder connections may become intermittent.

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**This modification may be covered under warranty during the warranty period.
Time required for this modification is 1.5 hrs or less. (C) 011089TKC**