



**signal/one**

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INSTRUCTION FOR THE REPLACEMENT  
OF THE  
CX7/CX7-A POWER SUPPLY BOARD

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Gathering data from firsthand experience, more than 75 percent of the failures both in the factory and in field use have been associated with the Power Supply Board.

This replacement board will provide short circuit and thermo overload protection on all low voltage power supplies in the CX-7.

1. Remove the outside dust cover from the radio.
2. Place the radio so that power supply board will be at your upper right (on left end).
3. Remove the four mounting screws holding the board to the standoffs.
4. With care so as not to damage the leads and the push-on "Amp solderless terminals" move the board as required to gain access for the following steps.
5. Locate and remove the +34 volt Filter Capacitor C-2 mounted on the main chassis. This is a 2,000 microfarad/75 volt electrolytic. In the event the outside case is not insulated, wrap with tape prior to reinstallation. Remove and discard the non-insulated mounting washer. Mount the provided insulated washer and reinstall the capacitor on the main chassis.
6. Connect a 9-inch long lead to an outside can terminal. (The other end to be connected later.)
7. Reconnect the leads to the positive terminal of C-2.
8. Solder the provided 5K 2-watt resistor between the plus terminal and an outside can terminal (now above chassis grd.) (Verify all leads on C-2 are now soldered.)
9. Located on the radio rear panel, remove Q4 (the tip 29 with the orange lead) and replace the leads pin for pin with the

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2N6101 provided. Insulate the mounting tab (collector) with existing hardware and install at lower rear of back chassis panel.

- ✓ 10. As in Step 9, remove Q1 (the tip 29 with the red lead) and replace wire for wire with the provided MC7815. Do not insulate the mounting tab.
- ✓ 11. As in Step 9, remove Q3 (the tip 29 with the brown lead) and replace pin for pin with the MC7805. Do not insulate the mounting tab.
- ✓ 12. Remove Q2 (the tip 30 with the blue lead.) Do not replace, clip and cover the three leads with sleeving or tape.
13. Wire jumpers on the new board as desired for either 117 or 230 volts. Pins 163, 164, 165 and 166.
14. Un-solder the transformer primary leads, (preferably one at a time) from the old board and connect and solder to the new board (same pins as in Step 13.)
15. Carefully disconnect all amp connectors and remaining solder connections and remove old board.
- ✓ 16. Identify the 34V supply transformer secondary center-tap soldered to a ground lug on the main chassis. This lead is of various color-coding depending on the power transformer installed in the radio. This lead can be traced by checking continuity to the leads normally connected to Pins 128 and 129 on the power supply board. Solder an 8-inch lead extension to the center-tap wire and place sleeving over splice. This extension and the 9-inch can lead from C-2 are to be soldered to the new pin called out as transformer center-tap. 17/28
17. Place the new power supply board in position and connect the amp connectors on the new board as shown. USE CAUTION -- The direct interchangeability of the board generates gap pins not used along the rear panel. Do not inadvertently fail to skip unused amp connectors. Carefully solder the high-voltage wiring to Pin 162 and the low voltage transformer secondary to Pins 146 and 153.



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18. Screw down the new power supply board to the 4 mounting stand-offs, carefully dressing leads and relieving any tension in the vicinity of the antenna change-over relay/high voltage rectifiers.
19. With an Ohmmeter check continuity between the mounting screw of the 2N6101 to the rear panel -- should be more than 200 ohms.
20. Very carefully re-check all wiring and ascertain that all amp connectors are firmly seated.
21. Test for continuity between mounting screws on MC7805 and MC7815. Resistance should be less than 1 ohm.
22. Check for any solder splashes and loose hardware. Connect speaker and dummy load or antenna.
23. Apply power to the radio and perform the following voltage measurements in the receive mode.

Pins 101 - 105	=	Approx. 0 volts
Pins 106 - 110	=	-15 volts
Pins 111 - 115	=	+15 volts
Pins 118 - 122	=	-15 volts
Pin 127	=	+38 to +40 volts
Pin 136	=	+5 volts
*Pin 152	=	+300 volts
Pin 117	=	- 60 volts
*Pin 162	=	+1600 volts

\* EXTREME CAUTION

24. The radio should now be in an operational condition. Check for normal receive and transmit functions and replace unit in CX-7 dust cover.



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#### ADDITIONAL DATA

The regulated +5, +15 and -15 are now thermally and electrically protected. Momentary short circuits and excessive temperature will not damage the components. The +34 volt supply is electrically protected by a silicon controlled rectifier crowbar circuit. In the event of a short or excessive current from this supply, the SCR will fire and reduce the voltage to approximately 3-4 volts. To reset the crowbar, remove power from the radio for 10 seconds or more, then re-apply. The crowbar will reset as soon as the charge on C-2 has dissipated. This Supply has been designed to handle 10 amps, but less than 1 amp is normally drawn. Although the equipment will not be damaged by extended operation in the crowbarred mode, it should be reset as soon as noticed.

Activation of the SCR crowbar system is easily detected by lack of receive audio and no RF output since the +34 volts is required for the product detector and Q3 and Q4 on the RF driver board.

This modification will materially improve the reliability and maintainability of your CX-7/CX-7A.