



INSTRUCTION FOR THE REPLACEMENT
OF THE
CX-7B POWER SUPPLY BOARD

Gathering data from firsthand experience, more than 75% 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. Located on the radio rear panel, remove Q1 (the tip 29 with the red lead) and replace wire for wire with the provided MC7815. Do not insulate the mounting tab, but use thermal compound provided.
6. As in Step 5, remove Q2 (the tip 30 with the blue lead) and replace pin for pin with the MC7915. Insulate the mounting tab with existing hardware and install in the rear back panel of the chassis with thermal compound provided.
7. As in Step 5, remove Q3 (the tip 29 with the brown lead) and replace pin for pin with the MC7805. Do not insulate the mounting tab, but use thermal compound provided.
8. As in Step 5, remove Q4 (the tip 29 with the orange lead) and replace the leads in the following order:
 - Orange Wire No. 62 to Pin 1 (Base)
 - Wire No. 374 to Pin 2 (Collector)
 - Wire No. 63 to Pin 3 (Emitter)with the MJE1103 provided. Insulate the mounting tab (collector) with existing hardware and install at lower rear of back chassis panel with thermal compound provided.
9. Wire jumpers on the new board as desired for either 117 or 230 volts. Pins 163, 164, 165 and 166. Circuit boards are furnished wired for 117.

INSTRUCTIONS - CX-7B POWER SUPPLY BOARD (cont'd)

10. 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 9).
11. Carefully disconnect all amp connectors and remaining solder connections and remove old board.
12. 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 gapping 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.
13. Screw down the new power supply board to the 4 mounting standoffs, carefully dressing leads and relieving any tension in the vicinity of the antenna change-over relay/high voltage rectifiers.
14. With an Ohmmeter check continuity between the mounting screw of the MJE1103 to the rear panel -- should be infinity ohms.
15. With an Ohmmeter check continuity between the mounting screw of the MC7915 to the rear panel -- should be more than 1000 ohms.
16. Test for continuity between mounting screws on MC7805 and MC7815. Resistance should be less than 1 ohm.
17. Very carefully re-check all wiring and ascertain that all amp connectors are firmly seated.
18. Check for any solder splashes and loose hardware. Connect speaker and dummy load or antenna.
19. 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

INSTRUCTIONS - CX-7B POWER SUPPLY BOARD (cont'd)

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

ADDITIONAL DATA

The regulated +5, +15 and -15 are now thermally and electrically protected. Momentary short circuits causing excessive temperature will not damage the power supply. The +5, +15 and -15 supplies are now current limited to 1 Amp. The +34 volt supply is electrically protected by a current fold back circuit. In the event of excessive current draw (approximately 1 Amp), the +34 volt supply will fold back to a safe level.

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

NOTE: All transistors and diodes are now in Berg gold-plated plug-in sockets and no attempt should be made to unsolder a device. A gentle upward pull will remove it should replacement ever be necessary.

ADDITIONAL CIRCUIT CHANGES TO BE MADE IN AUDIO BOARD A-6:

Install jumper wire in place of R65 and R66 12 Ω 1/2 Watt resistors and remove Q16 and Q17 and in its place install MPS U05 carefully observing emitter base collector marked on U05 package in place of 2N5183.

NOTE: Careful lead orientation location of these transistors is very important as the devices will be destroyed if they are installed in the wrong order. The purpose of this modification is to increase the reliability of the Schmitt trigger circuit and to reinstate the RTTR key line at a true ground and -15 volt potential eliminating various PTO frequency shift problems displayed on the counter readout as experienced in the past.

OPTIONAL CIRCUIT CHANGES CAN BE MADE TO INCREASE AUDIO OUTPUT AS FOLLOWS:

Break wire 193 to J1 phone to Pin 1 J1 phone jack.
Connect wire from Pin 1 J1 to power supply board Pin 130.
Route new wire along existing wiring harness.