CMOS-4 Service Bulletin #2

Dear CMOS-4 owner,

Since we started offering this keyer, we have encountered three problems in the field. The first one, the addition of a blocking diode to protect the batteries, is covered by the earlier service bulletin, and all keyers sold after May 31, 2002 should have this change implemented.

The second problem we have run into is with the battery pack causing intermittent operation.

We have had a bulletin out on that for some time but it is now included in this Service Bulletin. Please note that more recently supplied kits and assembled units already incorporate this fix – if you don't know if your keyer has the fix, read the fix below and then examine the battery holder to see if the jumper wire is already in place. If so you can ignore that section, and skip to the following section.

Repairing CMOS4 Battery Holder intermittent problem

Occasionally a CMOS4 keyer while operating using the built in batteries will cease operating or will crash. Opening the case and removing and replacing a battery usually though not always cures the problem. Also, a complete reset may be necessary to unscramble the CPU.

This problem is generally caused by a possible intermittent connection in the battery holder. The tape used to mount the battery holder on top of the speaker is very aggressive and can pull the sides of the battery holder down. This slight deformation of the case in turn causes the wire connecting two cells to lose connection. Unfortunately, the holders supplied come with staked terminals rather than soldered terminals. We have thus far been unable to find a better battery holder for this application.

Should you suffer this problem, here is how to cure it:

Remove the batteries from the holder, then pull the holder from the tape. It may also be easier to unsolder the battery holder wires from the PC board.

Examine the battery holder. On the bottom, you will see a black wire running across the diagonal, in a small tunnel. Looking carefully, you will see that the wire has terminals riveted to a spring on one end, and a rivet stud on the other end. You are going to replace this wire.

Using the blade of a knife, or a small scrap of fine sandpaper, scrape the two rivet holes on the outside of the case that the existing black wire goes, to remove any corrosion. Now, using your soldering iron, quickly tin the two holes where you scraped them clean. The plastic of the battery holder case melts at fairly low temperatures so you want to do this quickly and without any pressure.

Cut a piece of black (or other color) wire 2 3/4" long. (70 mm) Strip the insulation on each end 1/8" or 3mm. Tin each end.

Now, reheat one of the tinned rivets on the outside, and quickly slip one end of the wire into the solder. Allow to cool, then test your connection visually and by tugging it.

Draw the wire over the outside of the case and the bottom and press it into the tunnel where the existing connection wire is running. It might be helpful now if convenient to temporarily put a piece of masking tape or the like across the tunnel.

Now, dress the wire up and over the outside of the other end of the holder. Again, melt the solder

in the other rivet terminal and insert the other end of the new wire. Let cool. Test the connection.

If you wish, you can cut away the original wire, then test the new connections for continuity. This would assure you the solder connections are OK. However, you can also leave the two wires hooked in parallel.

Now, put the battery holder back in place, reattach the battery holder wires if previously removed, and reinsert the batteries. All should now be well. If the keyer send the usual "OK" when the last cell is properly reinserted you can put the cover back on and resume normal operation.

Should you need new tape for the top of the speaker, send a stamped self addressed envelope and note to us and we will be happy to send you a new piece.

Keyer Crashing or Going Crazy

We have had a few reports of properly assembled keyers not functioning properly. Typically, the keyer would operate properly for minutes, hours or even days, then suddenly things go wrong – in one way or another the keyer begins to act in unexpected ways.

This problem has been a real puzzler but we have finally figured out the problem – bad 15K resistors! Most of the 15K resistors used in the circuit act as “pull-up” resistors, forcing the pins on the CPU to stay “high” except when grounded by either a keyer paddle closure or a push button closure, which grounds the pin and changes it from “high” to “low” which sends a command to the CPU. If the resistor is not in circuit, the pin “floats” and the CPU will start writing its own code with unhappy results. This usually requires a complete reset to restore the keyer to normal operation, but the problem can and will recur.

Some of these problems have been cured by reheating the 15K resistor solder connections. We have discovered it is not a question of the connection of solder lead to circuit board – rather the heat forces the lead to bond properly to the resistor internally! And unfortunately the reheating does not always work.

The whole problem relates to a small percentage of defective resistors from one manufacturing batch, (A reputable brand purchased from a reputable supplier!) and indeed only a small percentage were bad. But when they do go bad they can drive you nuts.

If you have the problem, do reheat all the connections for the 15K resistors. If the problem recurs, please contact us and we will be glad to send you a new set of 15 K resistors. Use these resistors to replace all existing 15 K resistors in the keyer and the problem should be solved.