PB-2000C repair, upgrade and maintenance log

This narrative sometimes borrows from the American "Show and Tell" Career Day style—a staple of US elementary schools where adults present their professions to children. The goal is to treat young minds as natural thinkers. In this particular case, to drive active discovery in STEM (Science, Technology, Engineering, and Math).

The main character is this story is a CASIO PB-2000C vintage pocket computer[1], a remarkable device first released in 1989, Heisei Gannen 平成元年.

The primary issue with this unit was its inability to recognize ROM language cards; while normal operation was unaffected, functionality was strictly limited to the built-in C interpreter.

We long suspected that the root cause of this issue was an old ROM language card replica that suffered from a fabrication defect. She was also our primary candidate for testing a 32 KB mainboard RAM expansion—a modification that transforms a standard PB-2000C into a 96 KB machine for DL-Pascal 1.2 users, or frees up a valuable RP-33 32 KB RAM memory pack for other uses.

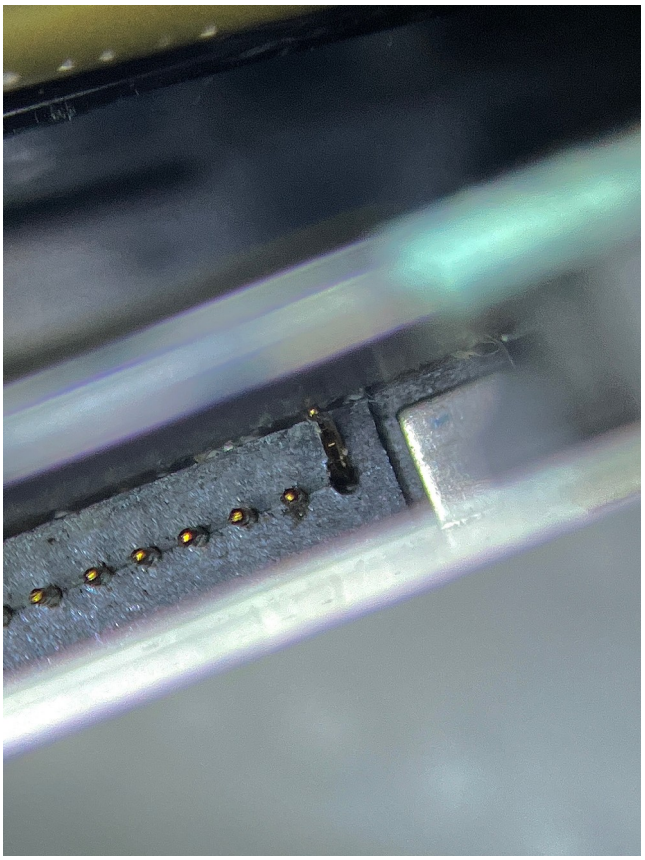
So we lovingly packed her and so she went to Valencia, Spain—to meet her doctor, Daniel Falcón.

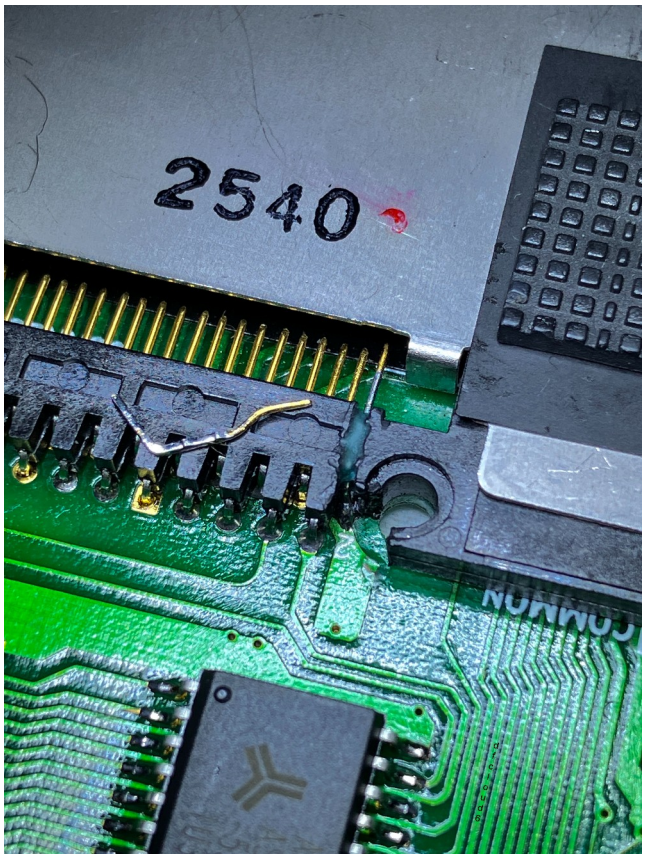
This story has a happy ending, thanks to The Doctor, who documented this entire journey.

1 By the name of Sora (空宙)

Tech Log Entry

ROM Slot Repair: The primary issue was a failure to recognize language cards due to a bent pin contact in the 45-pin male connector. The left photo shows the open contact cavity after extracting the damaged pin, while the right photo shows the removed pin alongside the completed repair. The repair used a donor contact from a decommissioned PB-2000C[2].





2 Special thanks to Javier Awwad Meri who kindly donated this much needed contact.

The card side uses a JAE JC20-C45S-F1-A1 connector. A delicate 1mm pitch connector with low tolerances.

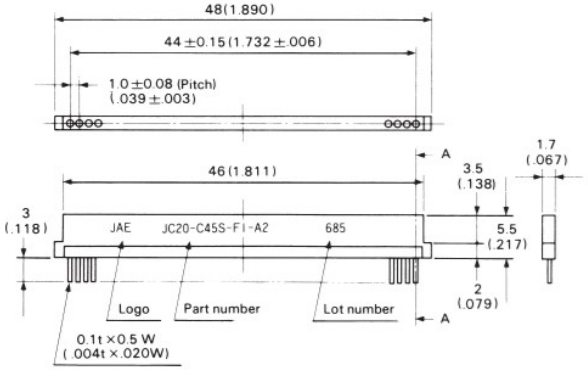
■ JC20 SERIES C TYPE CONNECTORS • SOCKET CONNECTOR FOR CARD SIDE

45 CONTACTS/1.0 (.039) PITCH

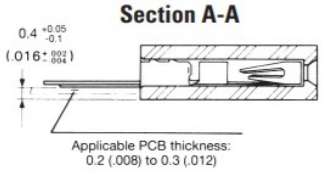
Part Number:

JC20-C45S-F1-A1

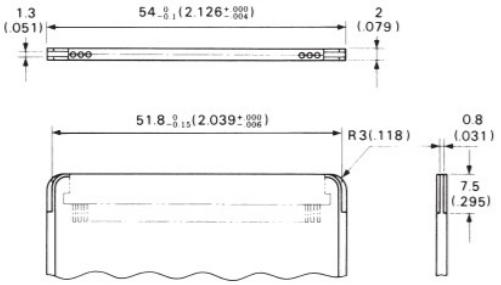
(Note) Contact finish: Gold plating 0.1μm (.000004") min. on connecting area.



Section A-A



Memory Card Outline Dimensions

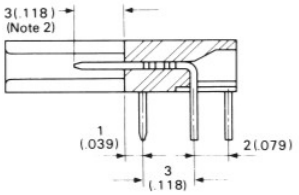


■ JC20 SERIES C TYPE CONNECTORS • PIN CONNECTOR FOR SYSTEM SIDE

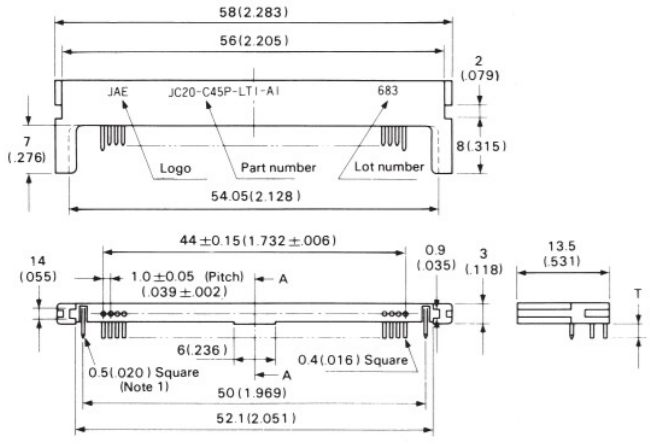
Part Number	T
JC20-C45P-LT1-A1	2 (.079)
JC20-C45P-LT2-A1	2.8 (.110)

(Note) Contact finish: Gold plating 0.1μm (.000004") min. on connecting area.

Section A-A

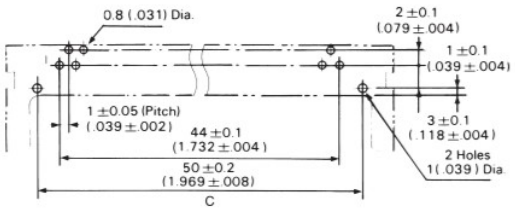


Note 2: 3.8 (.150) for contact No. 1 & 45 only.
3 (.118) for others.



PCB Through Hole Pattern (Ref. only)

Applicable PCB thickness: 1.6 (.063)



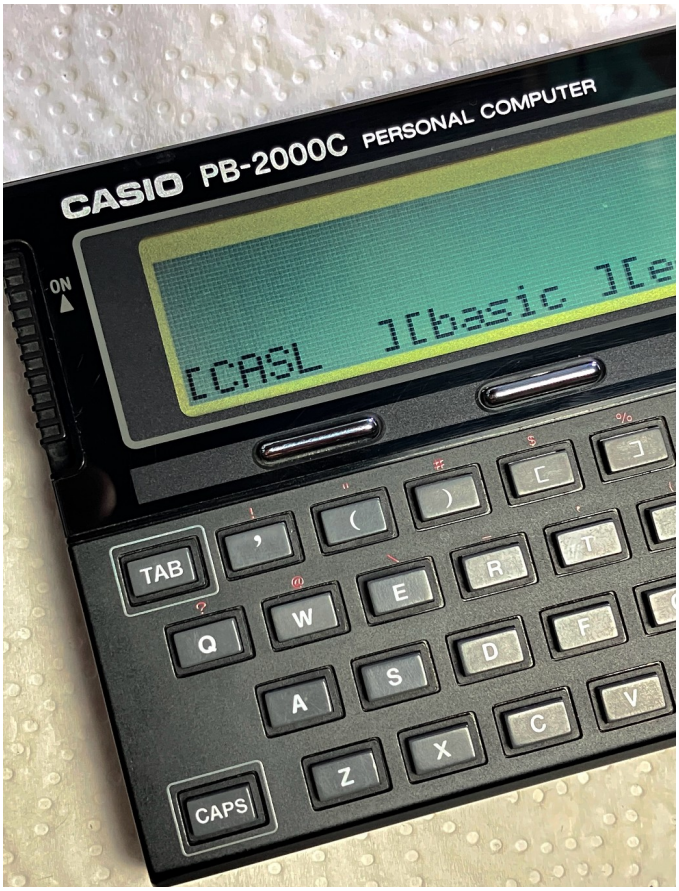
Note the similarity between the extracted contact and Section A-A above.

On the actual PB-2000C side, the story is a bit more complex. The card connector is a Casio-specific assembly that integrates a customized JAE JC20-C45P, the locking mechanism, the ejection system, and the structural frame into a single unified part.

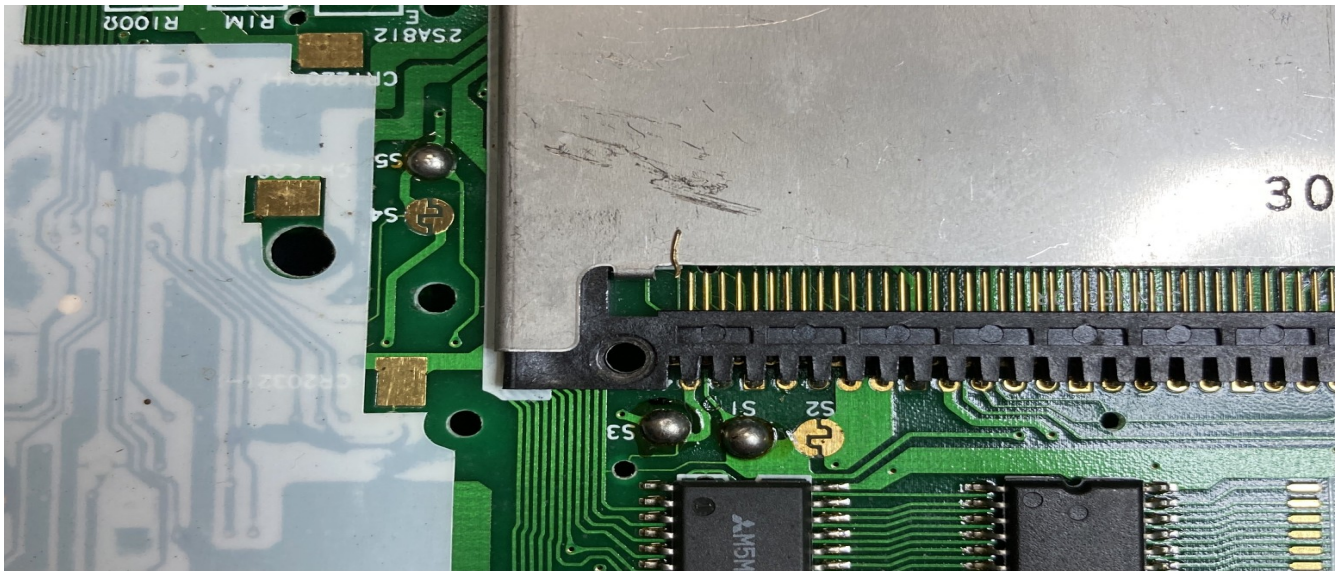


The picture shows the donor connector with the missing pin reinserted to temporarily complete the assembly.

After the repair was completed, the PB-2000C was tested with an ~~OM-64R ROM card~~ loaded with the CASL-Basic image. ROM image download available in Piotr Piątek's site here.

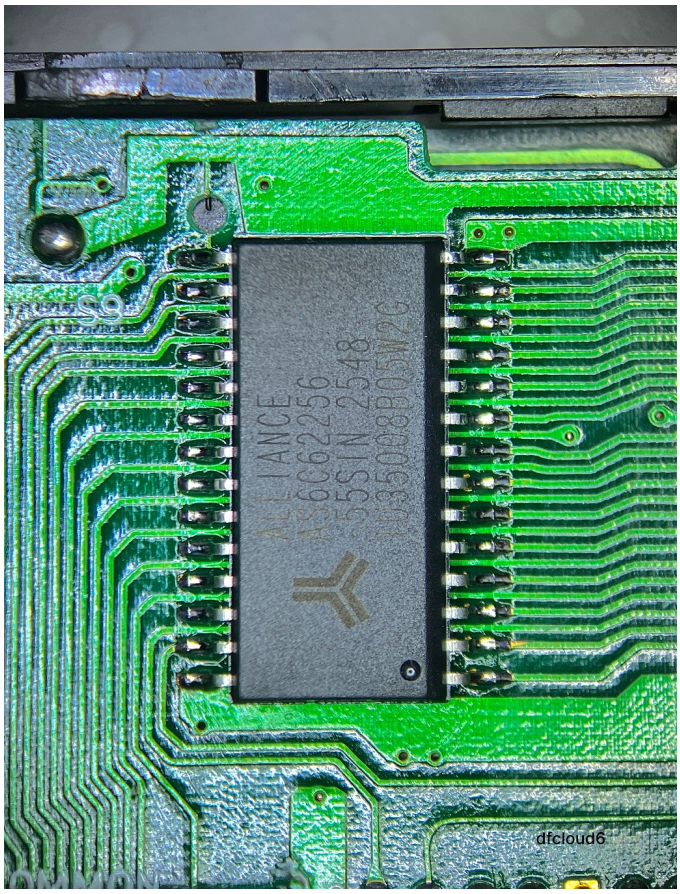


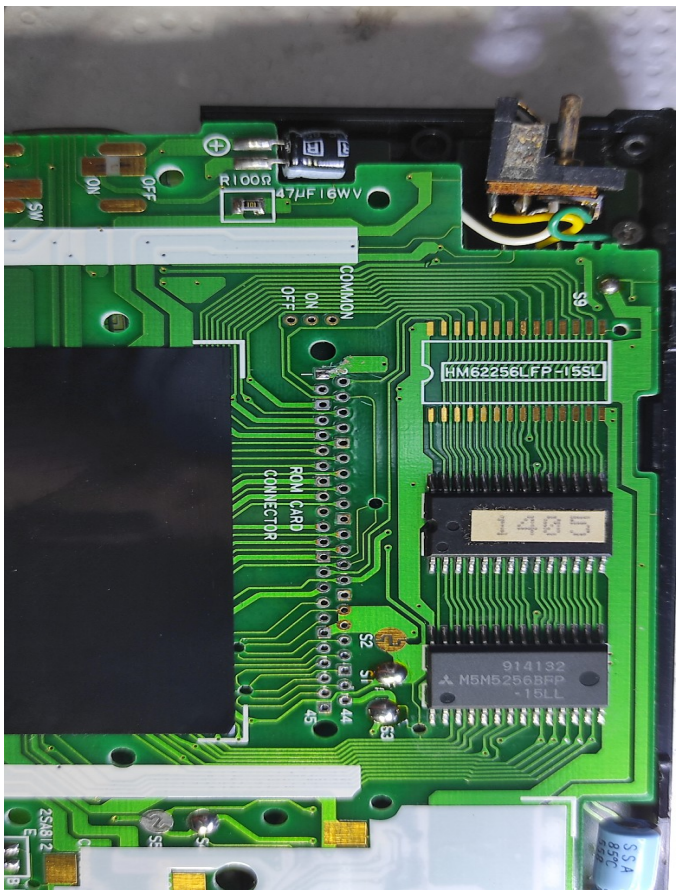
Pin damage like this isn't unheard of; Poyokoma Danna once reported a similar issue after one of his own cards damaged a pin.



32KB RAM Upgrade: 32 KB mainboard RAM expansion is documented [here](#).

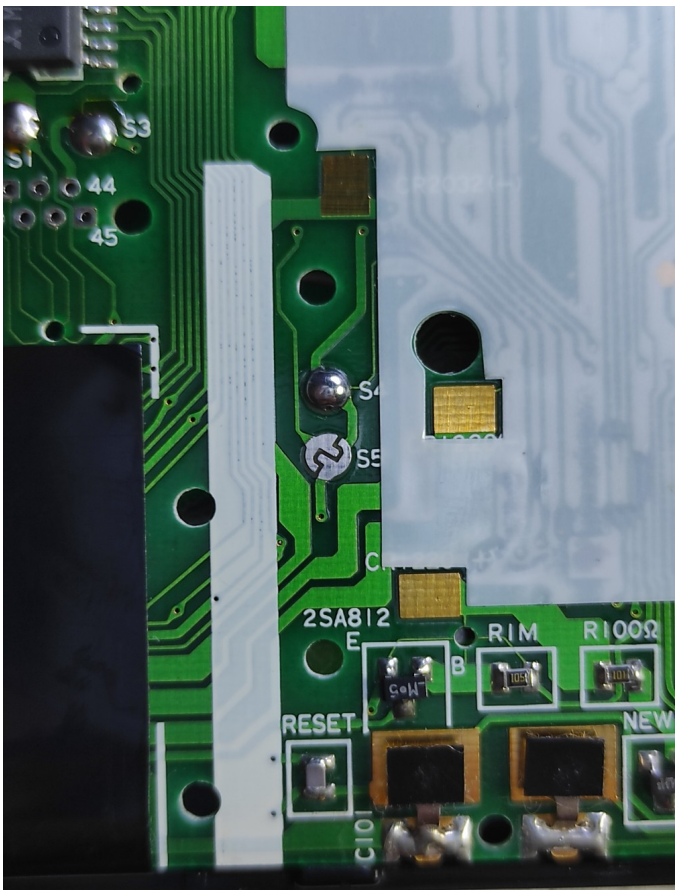
We sourced a AS6C62256-55SIN memory IC from DigiKey. Following the instructions, it was installed at the HM62256LFP-15SL silk label location (right).





IC already installed on the motherboard (left).

Next, per the instructions, the operation of jumpers S4 and S5 was reversed (right).



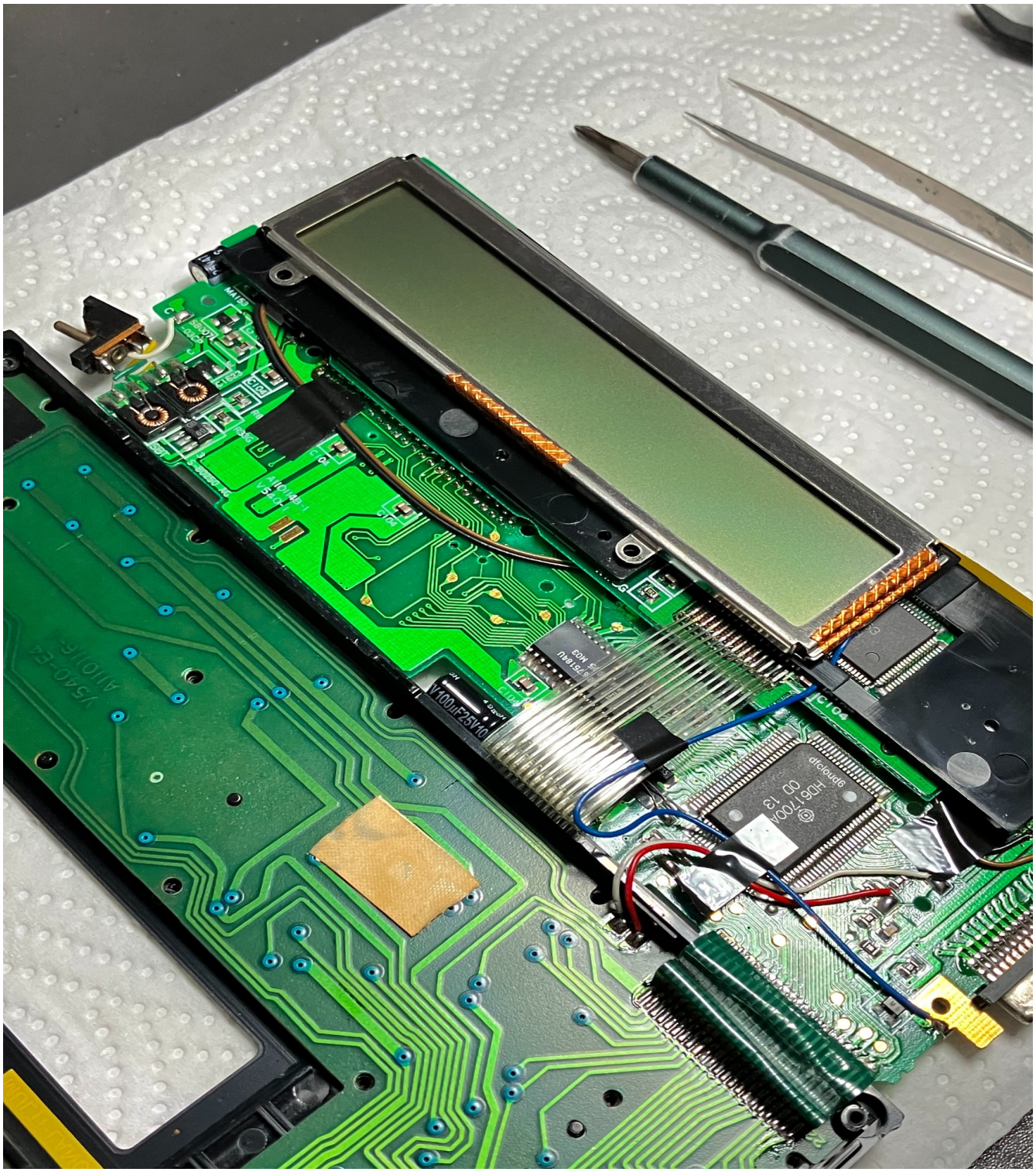
Finally, CLEAR MON confirmed that the memory location was accessible.



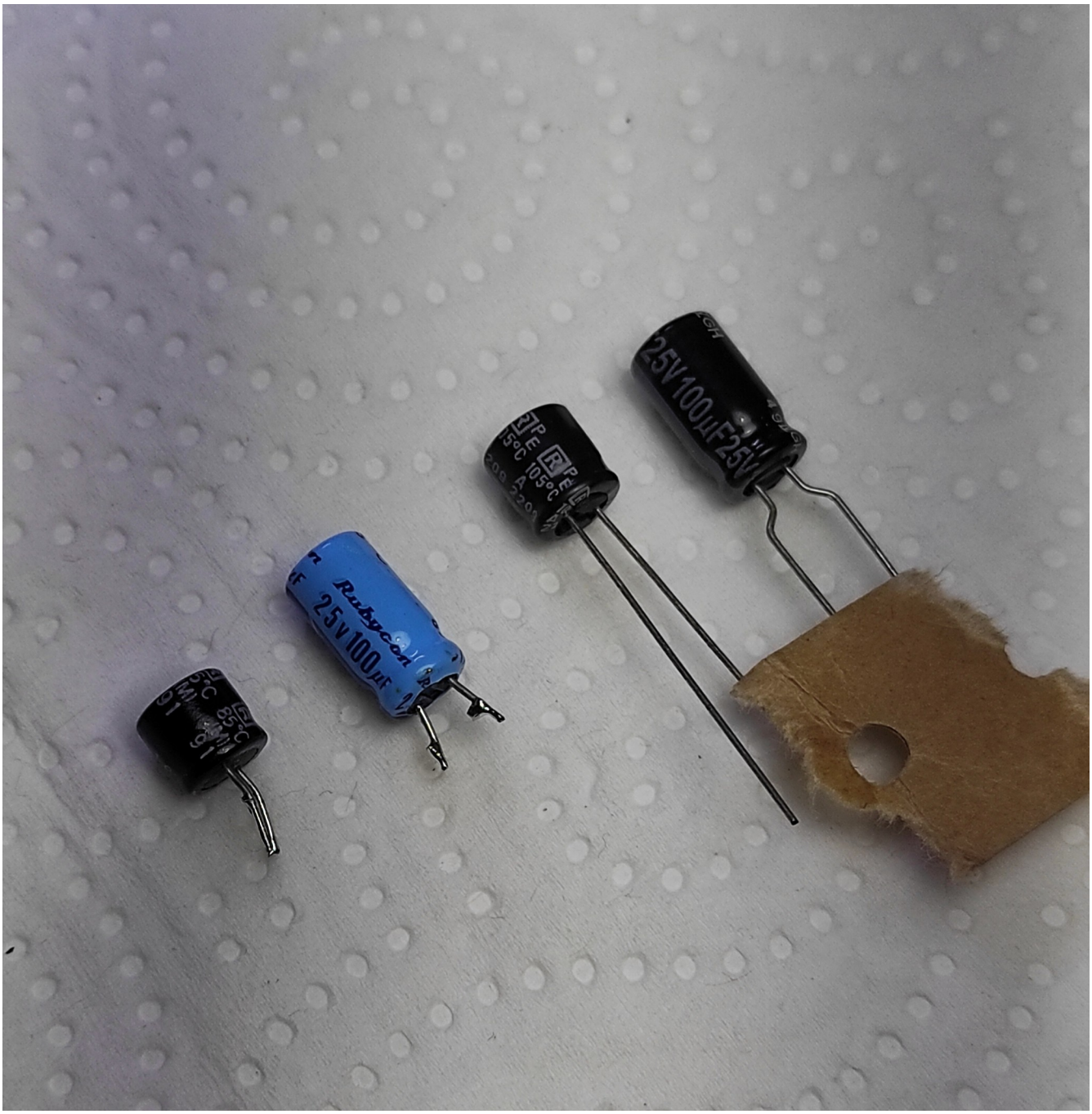
We are now confident that the upgrade instructions are precise and can be safely followed by other community members.

Routine Maintenance & Recapping:

Daniel cleaned the dust from behind the display lens and gently applied isopropyl 99% to give her a fresh, almost “out of the box 1989” look.



Next, the two main electrolytic capacitors were recapped. While some service manuals suggest tantalum replacements, high-grade Japanese electrolytic were chosen to preserve the board's original ESR (Equivalent Series Resistance) design specifications.



A family of aluminum electrolytic capacitors. Old ones on the left of the picture.

Acknowledgments

This document was produced by Xandrian Labs. 付喪神.

Special thanks to Daniel, Javier, and Piotr. Their dedication to preserving vintage electronics made this possible.

Portions of this document were refined in collaboration with Gemini. All errors are human. This is revision 1.

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