

Sega CD RAM Cart Memory Battery Replacement Guide

Thank you for your purchase of a Sega CD RAM cart memory (CMOS) battery from Nintendo Repair Hut. We appreciate your business and look forward to serving you again in the future. This guide is intended to take you through the steps involved in the installation of your replacement battery and if needed to replace the 47uf 16V capacitor as well. If you have any questions please let us know at Starwander@Comcast.net.

Thing you will need

- Sega CD RAM cart memory battery (CR2450)
- 47uf 16V capacitor
- 4.5mm Nutsetter security bit or driver
- Soldering iron
- Solder
- Soldering braid
- A clean area where small screws or parts will not get lost
- About fifteen minutes of spare time

Getting started:

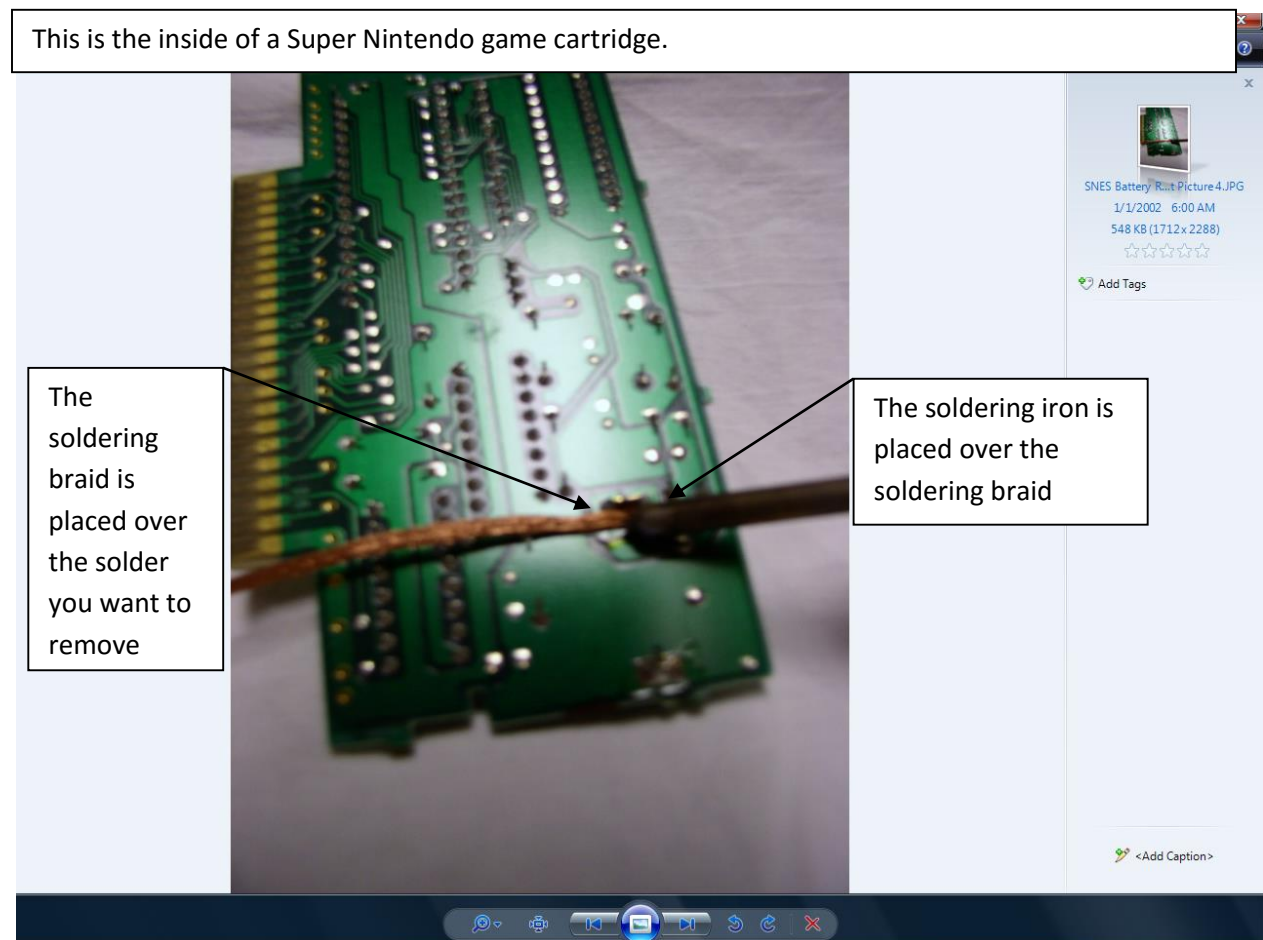
If you have a fair amount of soldering knowledge it is safe to skip ahead to step one, otherwise it is recommended that you read the following how to solder guide, which will discuss the soldering techniques you will need to successfully install your repair kit.

Soldering Techniques:

In order to solder and unsolder correctly you will need a soldering iron, solder and soldering braid. Once you have these items it is safe to proceed forward. For the duration of this project it is not recommended that you use a cold heat or any other instantaneous heating soldering gun, since these devices use an electrical current to melt the solder. Passing a strong electrical current through your games is not recommended and as such should be avoided. We recommend that you use a typical soldering gun, the type that you have to plug in and wait to heat up. In addition it is recommended that you set your soldering iron to 30watts for the duration of this project.

Unsoldering-

Correctly unsoldering a joint is rather easy once you get the hang of it. In order to unsolder a joint place soldering braid over the solder you wish to remove and then place the soldering iron over the soldering braid. The soldering iron will heat the braid and in turn the solder will liquefy, which will be sucked up by the braid. Please see picture one



Picture Introduction: Soldering braid usage

Although it might take a little while to completely remove all of the solder, patience and persistence will pay off in this case. Every 10-15 seconds remove the soldering braid and check to see if the solder has been fully removed. Take note to notice the accumulation of solder on the soldering braid. As it is sucked up you should periodically keep cutting off the used portion of the soldering braid and use fresh braid as needed. Once you have successfully removed the solder you will want to clean the area off with a little rubbing alcohol to ensure the area is clean.

Soldering-

Now that the solder has been removed you can now remove the object that the solder was holding in place and you are now ready to solder something new into place. The two most important things to keep in mind are:

- 1) Never allow patches of solder to overlap or touch, doing so creates a short, thereby rendering the circuit inoperable.
- 2) Make sure to use enough solder to securely attach whatever it is you are soldering, do not be afraid to test the joint out.

Keeping these items in mind lets continue with our demonstration. This part of the project is pretty easy once you get used to doing it. All you have to do is take your solder and place it over the soldering joint and then lightly place the soldering iron over the solder. This is just like unsoldering, although this time you are soldering and not unsoldering.

This part is a little tricky when you first start and is hard to describe with words alone. It is recommended that you test out melting solder first to get an idea of how it behaves. One ideal exercise you might want to try is to attempt to solder together two pieces of wire. Take two pieces of wire, strip the ends, twist the ends together and then practice applying solder over this twisted joint.

During the course of this project if you run into trouble remember you can always back track and remove the solder and try again, using the soldering braid. Soldering braid and solder are very cheap and as such are worth playing around with to get comfortable with before you go ahead and try to solder in a replacement battery. Now that we have covered the basics of soldering and unsoldering, let's get started with the installation of that new battery and capacitor.

Step One:

Please start by flipping over your Sega CD RAM cart and locating the two 4.5mm Nutsetter screws located on the back. You will need a 4.5mm Nutsetter security bit or driver to unscrew them. If you do not have one please see our website as we carry a wide variety of security bits and drivers.



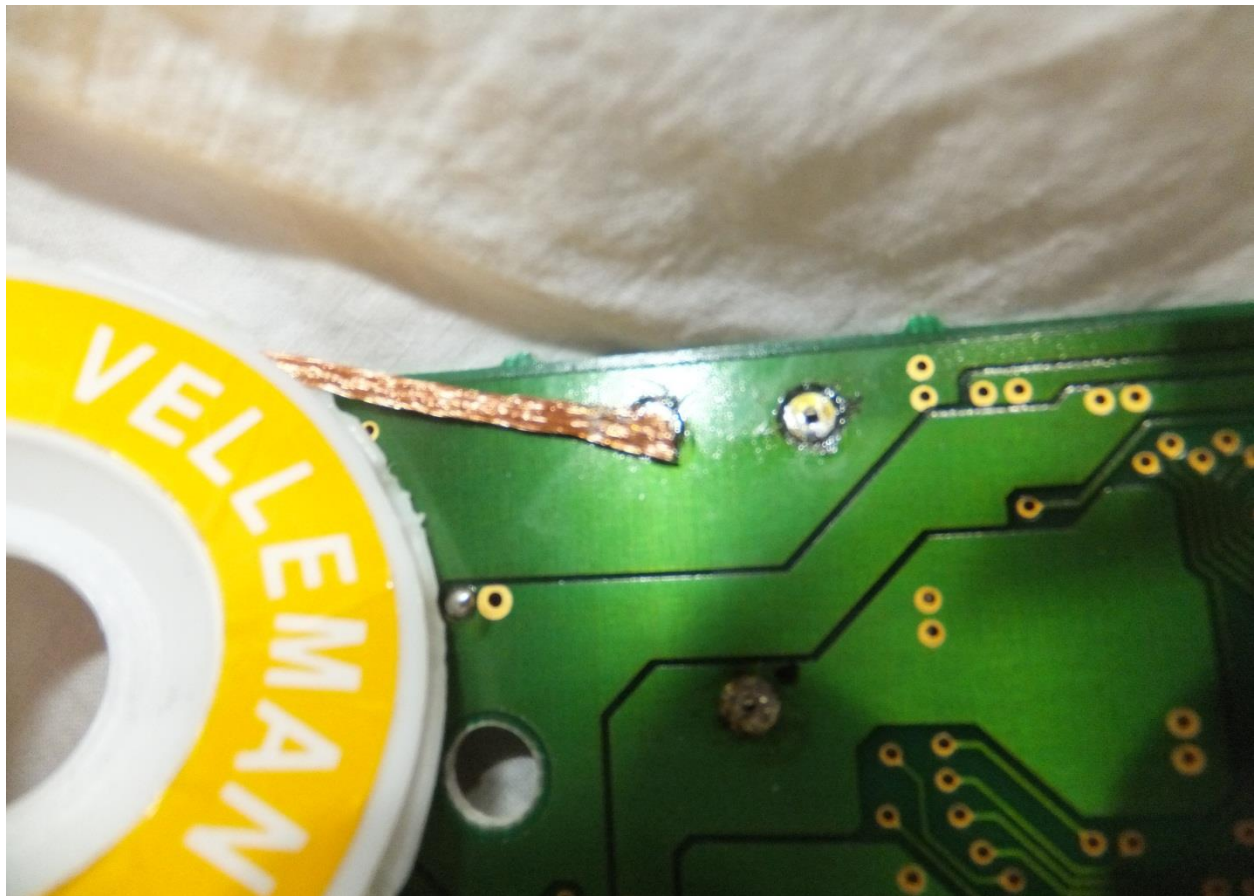
Picture One: Back side of the Sega CD RAM cart

Once the screws are removed please separate the two halves of the case and take out the circuit board. Once completed please proceed to step two.

Step Two:

Included in your repair kit are a CR2450 coin cell battery and a 45uf 16V capacitor. We included the capacitor in your kit since being roughly 20yrs old it is likely they are on the verge of failure. By replacing the capacitor as well as the battery you are ensuring you have replaced all the most likely to fail components in the cart.

Please start by turning over your game board and locating the solder joints for the battery first. We will discuss the proper replacement of the capacitor next. Using the soldering braid as discussed earlier place it over the solder joint as seen in picture two below and then use a soldering iron to heat the joint up therefore allowing the braid to suck up the solder.



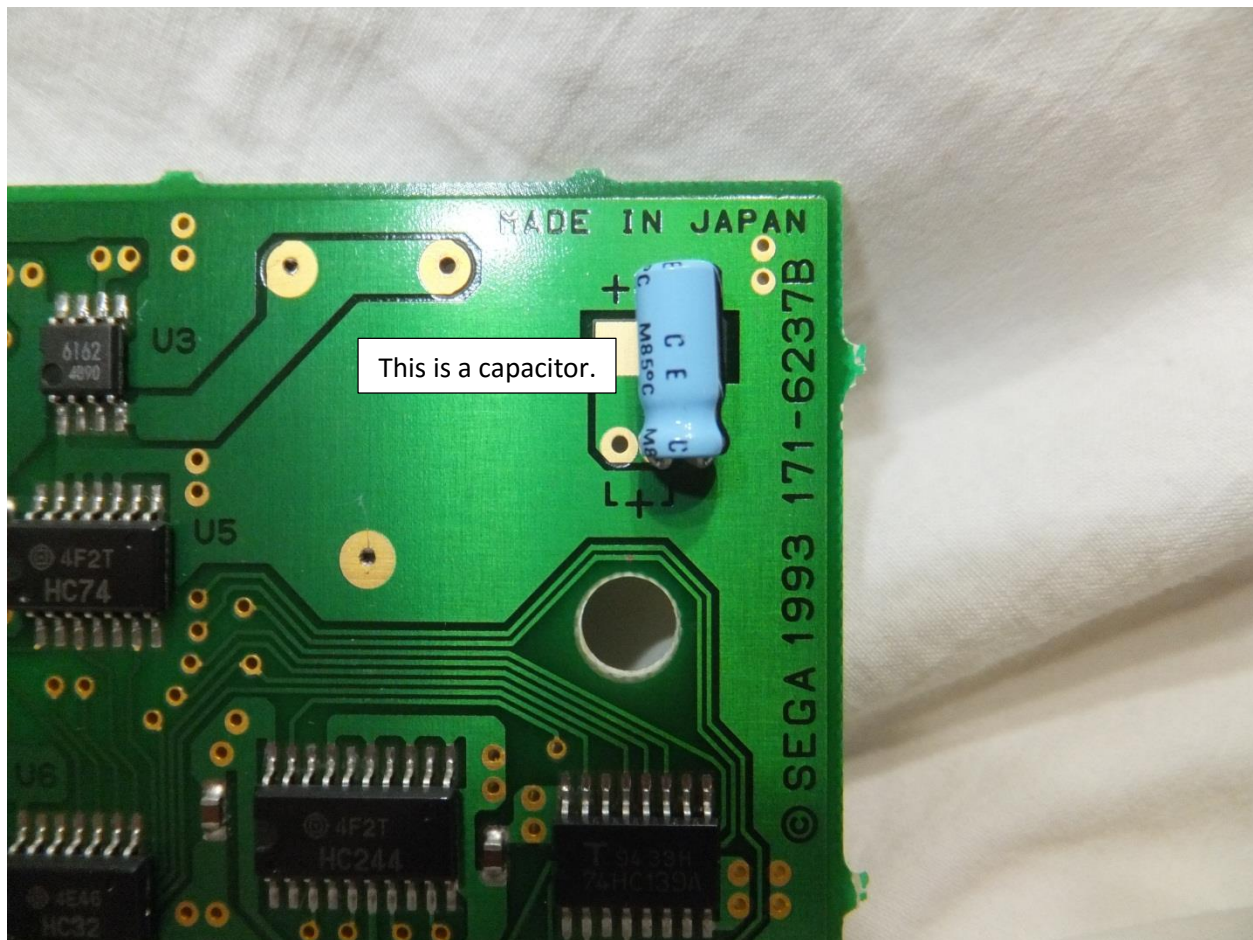
Picture Two: Proper usage of the soldering braid

Once you have removed the solder try bent the tabs straight and then try to pull off the battery. Most likely it will not come off at this point. We recommend that you heat the tab and then pull the battery from the other side with a pair of small pliers. In this way the tabs should life out. Once the battery is removed please clean out the holes of any solder that might be blocking them and then insert the new battery. Once inserted bend the tabs flat and then solder them into place. Once finished please go to step three.

An Introduction to Capacitors

Before we jump into the capacitor replacement it's important to understand the basics first. A capacitor is used to store electrical energy. It has two listed measurements microfarads (μF) and voltage (V). You will notice when you look at your replacements capacitor it has the microfarads and voltage listed on it. It is important that you replace each capacitor with the same ratings as the original for optimal performance.

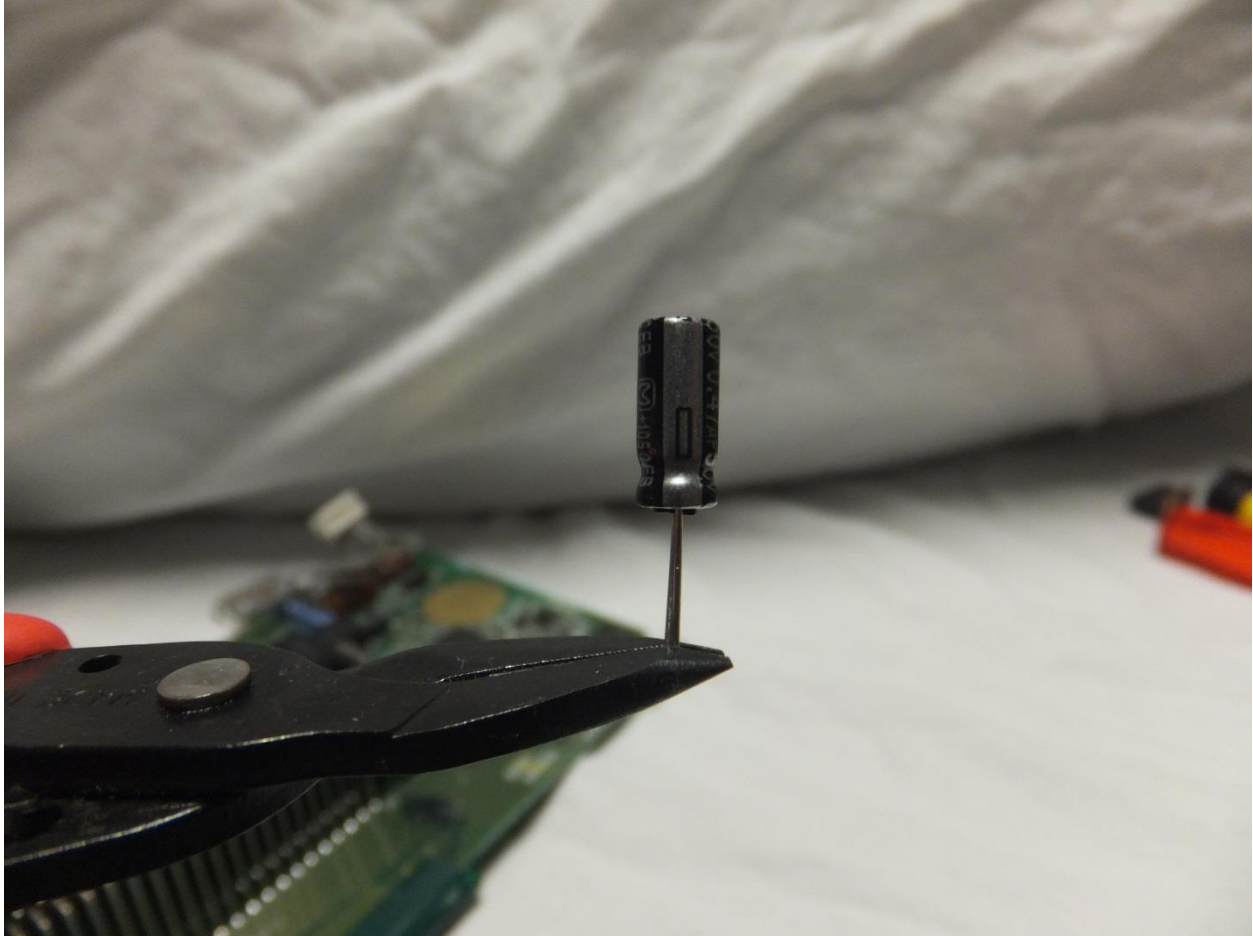
Next you will notice that the capacitor two leads. One is the positive lead and one is the negative lead. It is very important to make sure that you don't get these backwards. The positive terminal should be soldered to the positive terminal on the circuit board and the negative terminal to the negative terminal on the circuit board. Fortunately the positive terminal is marked on the circuit board; however the terminals on the capacitor are not marked. This is discussed on the next page.



Picture Three: Sample capacitor

An Introduction to Capacitors Continued

Most capacitors do not have the positive and negative terminals marked with symbols, but instead the negative terminal is defined by the terminal that originates from the part of the capacitor that has a strip running down it. This strip can vary in color.



Picture Four: Replacement capacitors

In this case the strip is silver in color. Please don't be fooled as the strip can be different colors. Just remember that the strip always denotes the negative terminal of the capacitor. Now that you have a general understanding of what capacitors are and how to properly identify their microfarad and voltage rating it is time to start replacing them.

Step Three:

Using the same techniques discussed previously please unsolder the capacitor and replace it. Once you are finished your Sega CD RAM cart should be working like new again. If you have any problems with your cart after the repair please see our troubleshooting section on the next page.

Troubleshooting Section

We are sorry to hear that you are experiencing technical problems with your cart after it has been repaired. Please choose the problem closest to the one you are experiencing from the list below. We are also available to answer questions via email. Our email address is Starwander@Comcast.net

1. My RAM cart is not recognized by my Sega CD system

- a. The first thing you should try to do is to clean the contacts on the Sega RAM cart itself. Take some rubbing alcohol and using Q-Tips vigorously scrub the contacts until you stop getting residual back on the Q-Tip. Once done try out the cart again.
- b. If the cart still refuses to be recognized by the Sega CD system please open up the cart and look for defective solder joints anywhere on the board.
- c. If this fails to correct the problem try cleaning the game slot on your system by using one of the old Sega Genesis system cleaning kits.

2. My games still won't save

- a. Open up your system and make sure that the soldering job is good and all leads are firmly attached to the board.
- b. If they are use a voltmeter to measure the voltage of the battery. Make sure it is working.
- c. If it is working try replacing the capacitor if you haven't already. If you have changed it make sure the leads are properly oriented positive to positive and negative to negative.