

Famicom Disc Drive Capacitor Replacement Kit Installation Guide

Thank you for your purchase of a Famicom disc drive capacitor replacement kit from Mortoff Games. 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 capacitor replacement kit. If you have any questions along the way please contact us at CustomerService@MortoffGames.com

Thing you will need

- Famicom disc drive capacitor replacement kit
- Small Philips head screw driver
- Pair of needle nose pliers
- Soldering iron
- Solder
- Soldering braid
- Fume hood
- Patience
- A clean work area where small parts will not get lost
- About 1.5-2hrs of spare time

Safety

This repair requires hours of extensive solder and unsoldering. Much of the old solder is composed of lead and other harmful toxins. In addition the board is covered in plastic and glue that will be melted during this repair. All of these substances should not be inhaled. Throughout this repair you should use a fume hood to protect yourself from the dangers associated with breathing these fumes in. Please do not try to do these repairs without one. We are more than happy to provide you with a full refund on this repair kit rather than have you endanger yourself because you lack the proper protection equipment.

Soldering Skills Needed

This repair requires extensive soldering skills and should not be attempted by a novice. You are more likely to damage the system if you don't have the proper skills. We recommend that if you are not completely comfortable with your soldering skills you return this repair kit for a full refund at this time.

Patience

This repair requires roughly one and a half to two hours of intensive work. If you start to get tired we recommend that you stop and come back to the work at a different time. Attention to detail is an absolute must during this repair.

Index of Capacitors in Kit

In case you are interested here is an index of all of the capacitors include in this repair kit. As you may notice the capacitors are packaged by type and labeled accordingly for ease of usage. If you ever find what you need more of a particular type of capacitor please contact us at CustomerService@MortoffGames.com we are more than happy to sell them individually.

Specifications	Mounting Type	Quantity
100uf 25V	Radial	2
47uf 16V	Radial	1
10uf 16V	Radial	1
100uf 6.3V	Radial	4

Index of Part Numbers and their Associated Capacitor

When looking at the circuit board you will notice there is a number next to each capacitor that identifies its part number. The part number will always start with the letter “C”. This is an index of those part numbers and their associated capacitors.

Power Board

Part Number	Specifications	Mounting Type
C1	100uf 25V	Radial
C2	47uf 16V	Radial
C3	100uf 25V	Radial
C6	10uf 16V	Radial

Disc Drive

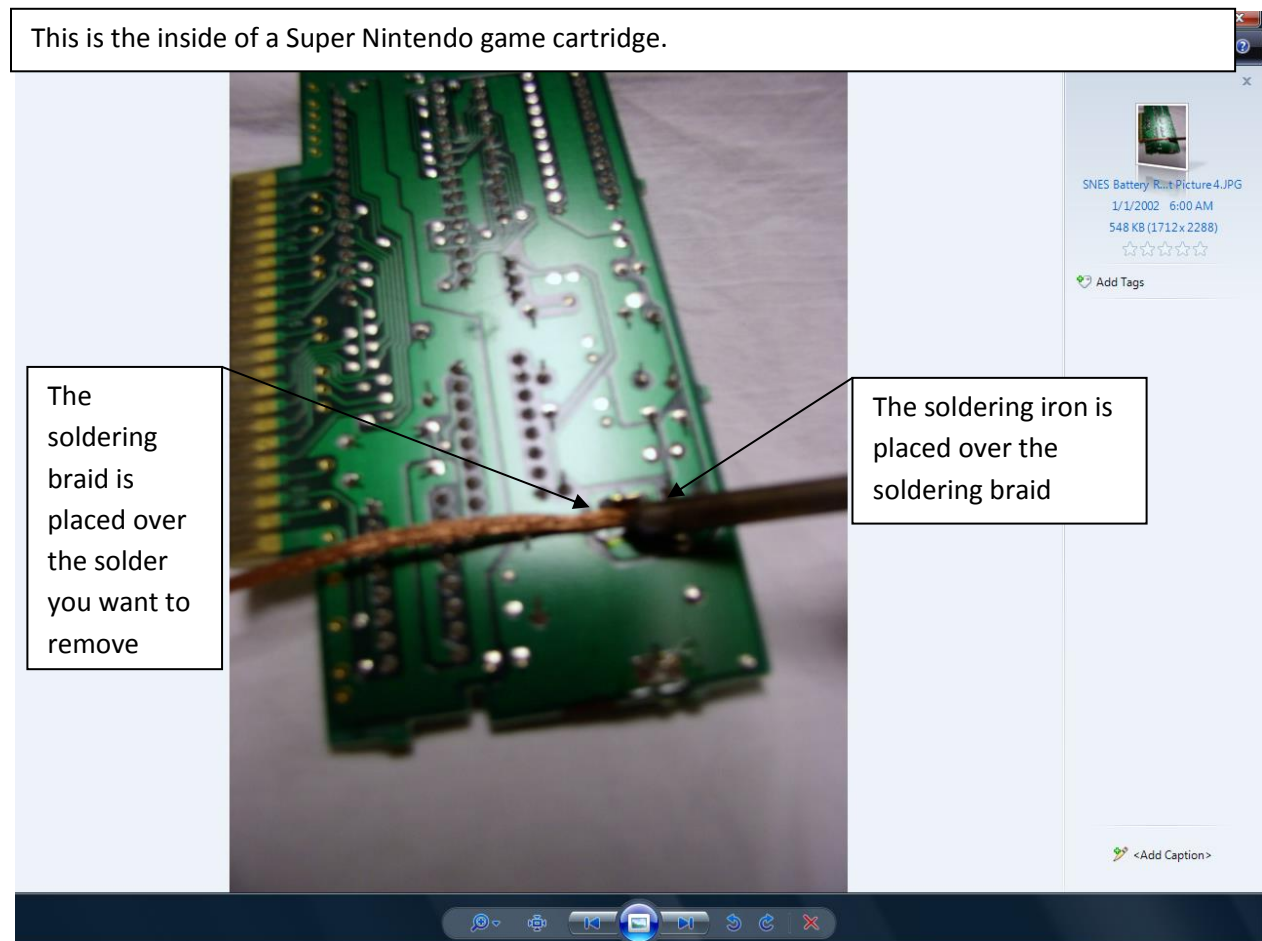
Part Number	Specifications	Mounting Type
C1	100uf 6.3V	Radial
C2	100uf 6.3V	Radial
C3	100uf 6.3V	Radial
C12	100uf 6.3V	Radial

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 guns use an electrical current to melt the solder. Passing a strong electrical current through your games or systems 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 the picture below.



Picture Introduction: Proper usage of solder braid

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 have been fully removed. As soldering braid is takes up solder periodically cut off these used sections as needed.

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. During this project it is not safe to use excessive soldering material as bridging between joints is very easy due to their close proximity to each other.

The two most important things to keep in mind are:

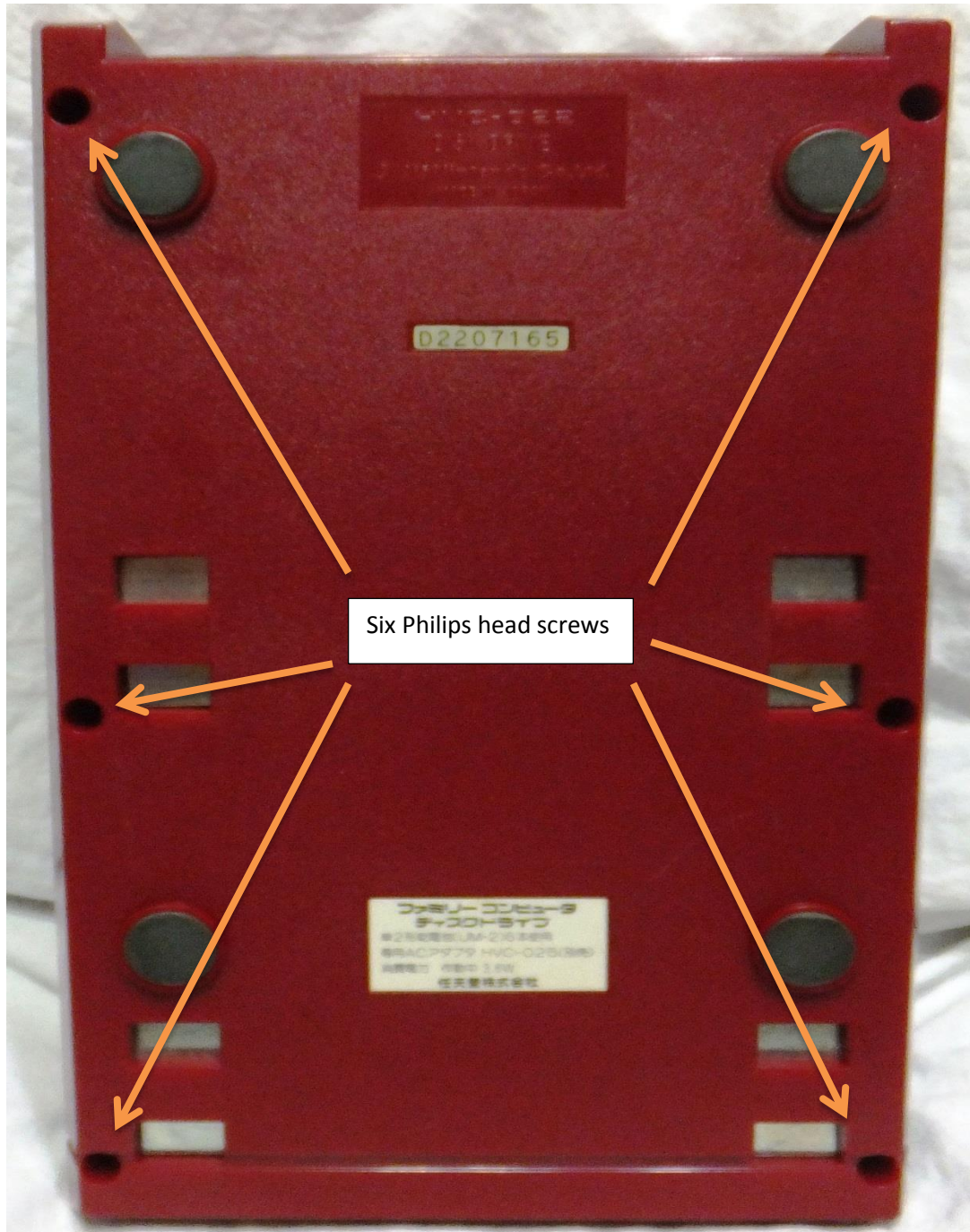
- 1) Never allow patches of solder to overlap or touch, doing so creates a short, thereby rendering the circuit inoperable.
- 2) Make sure to use enough solder to securely attach whatever it is you are soldering, do not be afraid to test the joint out.

Keeping these items in mind lets continue with our demonstration. To apply the solder take it 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 replacement of those capacitors.

Step One:

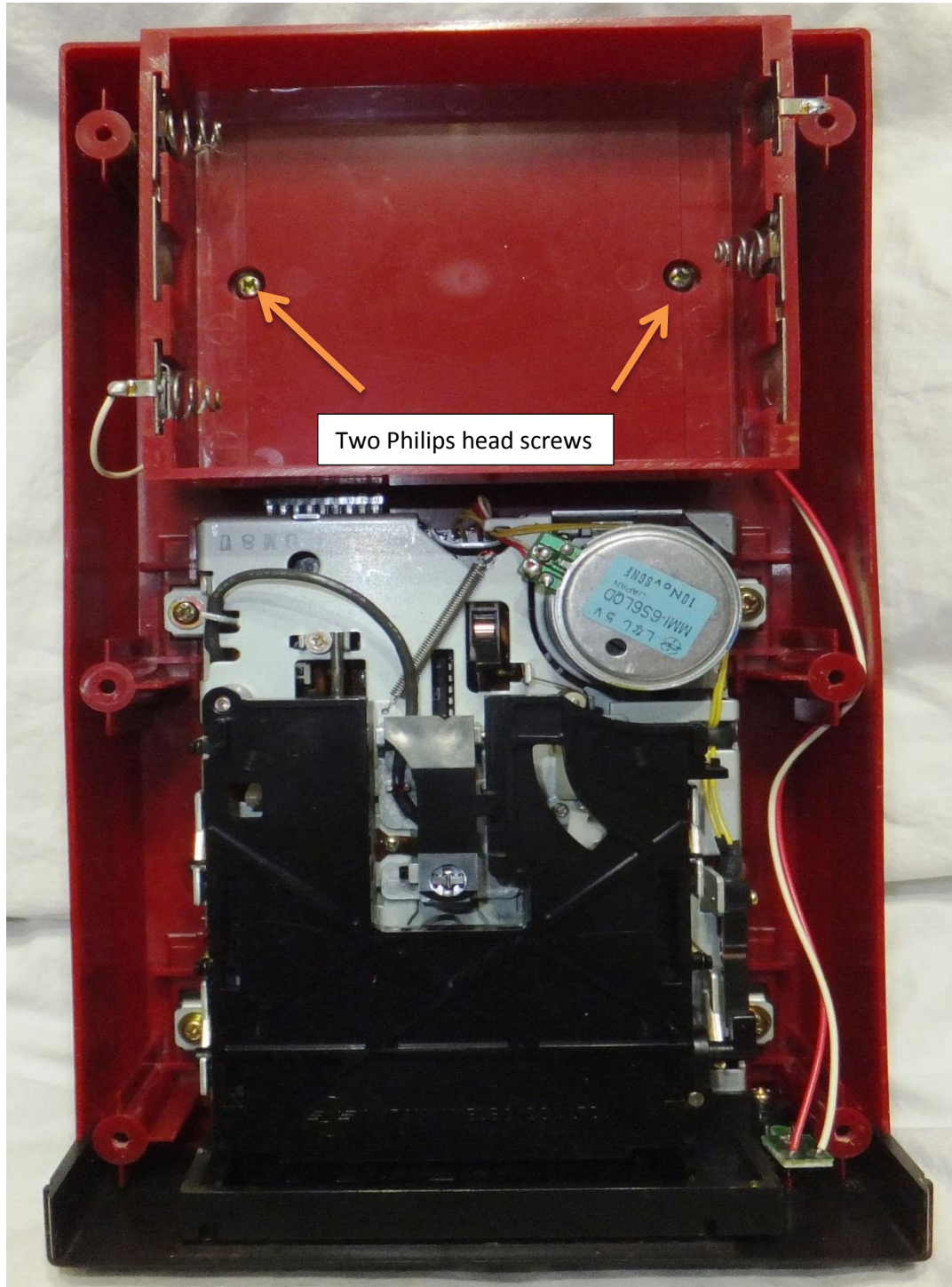
Unfortunately in order to install your replacement parts you have to disassemble the system. While this might be a tedious task it is entirely possible; however please make sure to do so in a place where small screws will not be misplaced. To start please turn over your system and locate the six Philips head screws holding the casing together. Once they are removed please proceed to step two.



Picture One: Underside of the Famicom Disc System

Step Two:

Now please locate the two Philips head screws indicated in picture two below and remove them. Once they are removed please proceed to step three.

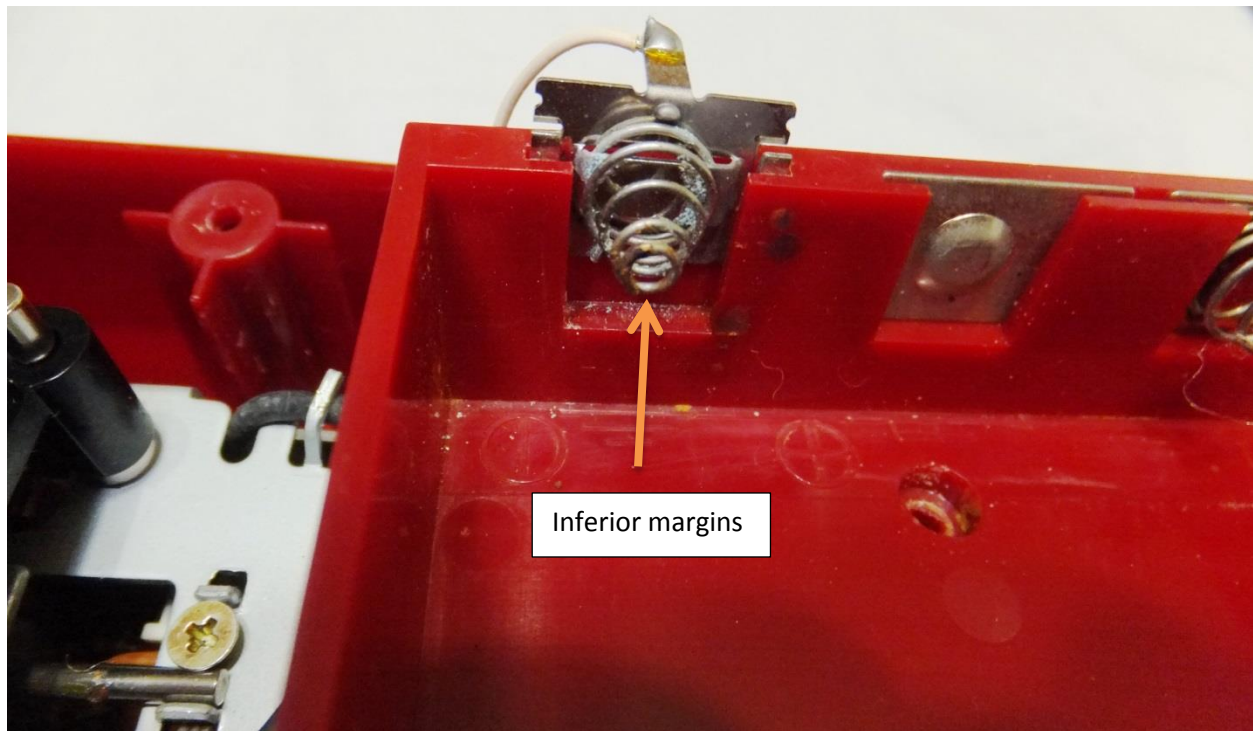


Picture Two: Removing the battery compartment.

Step Three:

In order to remove the battery compartment tray and to gain access to the mother board underneath you will need to remove the battery contacts that have wires attached to them. In order to remove these battery contacts use a small flat head screwdriver and pry the contact upwards from the inferior margins as indicated by the notations in picture three below.

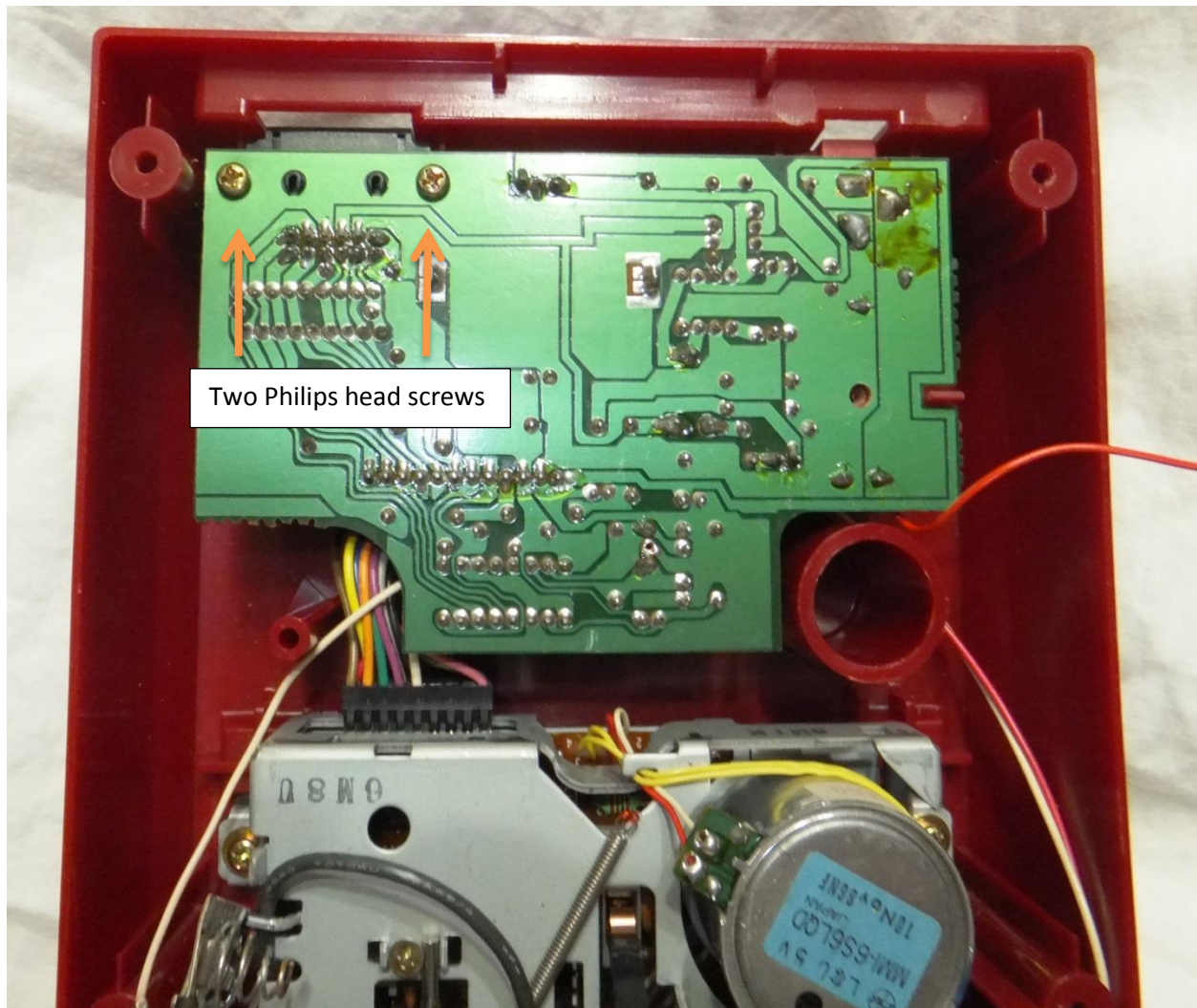
Once you have the first contact removed please proceed to the second one and remove it. After the battery contacts are removed the battery compartment can be separated from the system. Once done please proceed to step four.



Picture Three: Removing the battery terminals

Step Four:

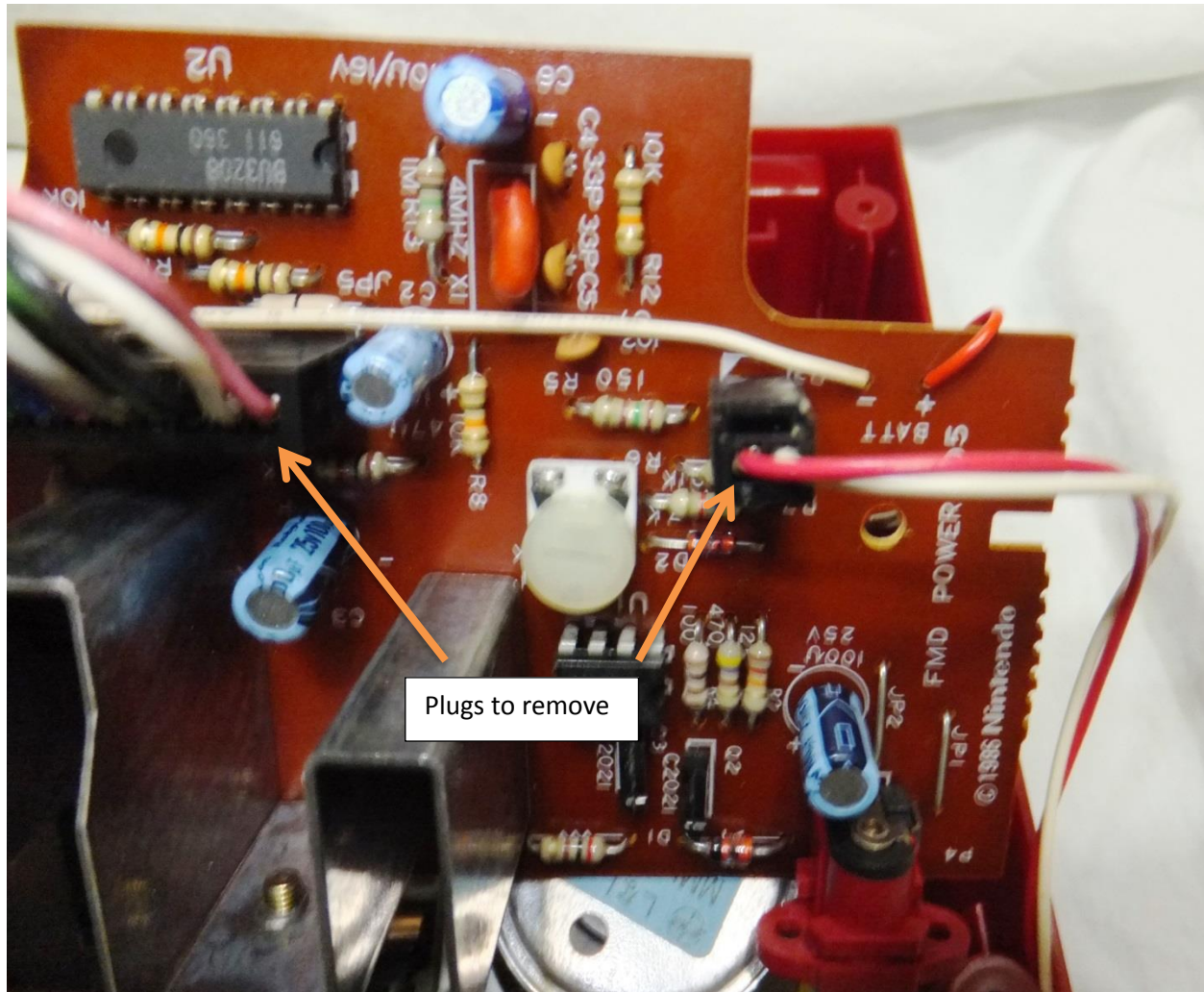
Now you are ready to remove the power board. Please locate the two Philips head screws seen in picture four below and remove them. Once they are removed please carefully and slowly lift up the power board taking great care to not rip off any of the cables soldered onto the power board. Once done please proceed to step five.



Picture Four: Power board removal

Step Five

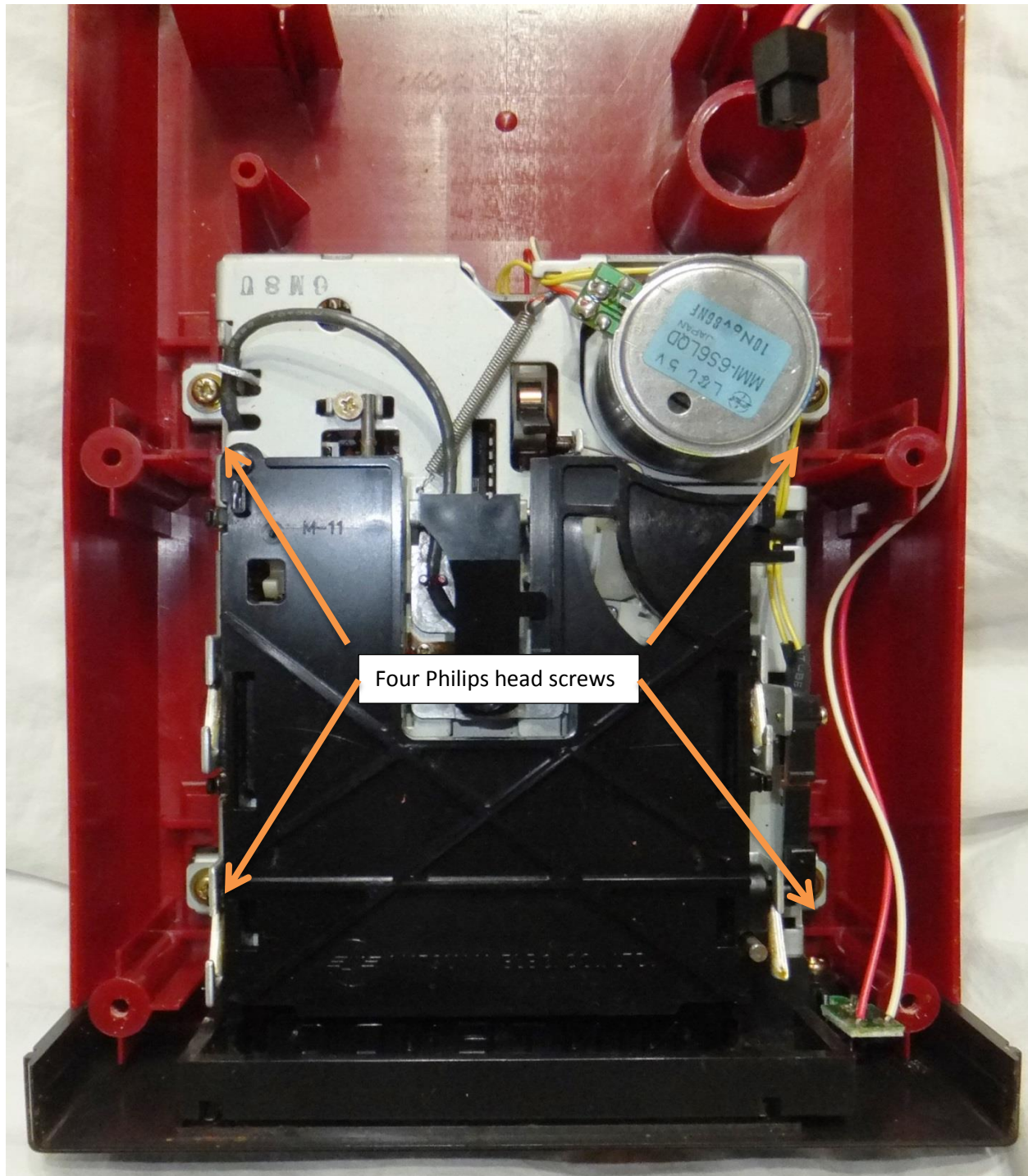
Next you will need to disconnect the power board from the disc board. There are two cables that need to be disconnected. Both are removed the same way. Carefully and slowly grasp the cable plug with the needle nose pliers and pull superiorly to the plug. The cable should come out of its port. Please use caution as you can tear the entire port off the mother board if you are not careful.



Picture Five: Power board plugs

Step Six:

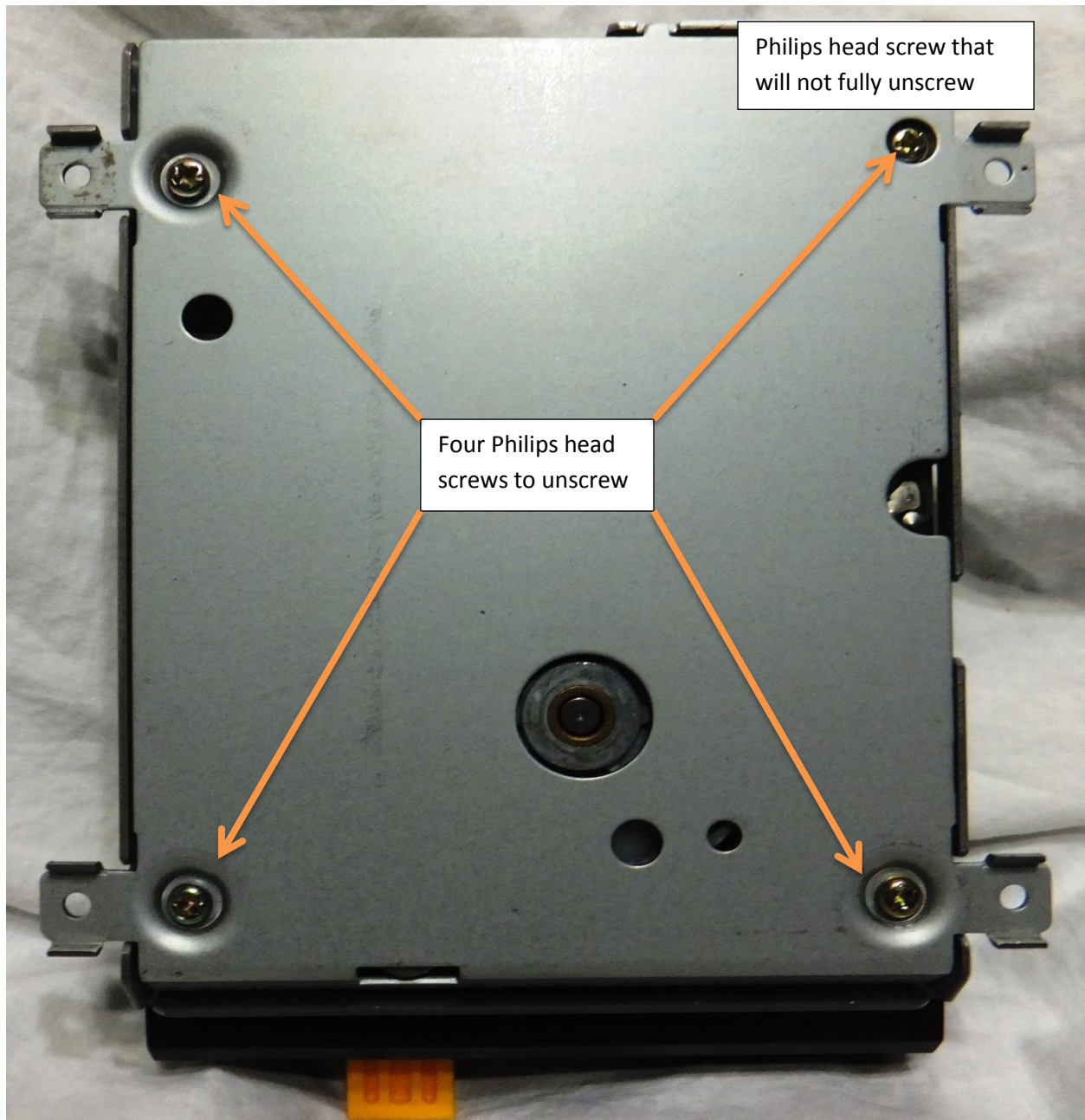
Now that the power board has been disconnected you are ready to start disassembly on the disc drive. To start please locate the four Philips head screws holding the disc drive down and remove them.



Picture Six: Disc drive removal

Step Seven:

Now that the disc drive has been removed from the casing please locate the four Philips head screws holding the bottom RF plate in place. Please unscrew them; however please be aware that one of the screws cannot be fully unscrewed, which is marked in picture eight below. This is normal and will not interfere with the removal of the bottom RF plate.



Picture Seven: Bottom RF plate

Step Eight:

Now that the bottom plate has been removed you are ready to unscrew the disc drive circuit board. Please locate the four Philips head screws holding down the circuit board and unscrew them. Fortunately one has already been unscrewed. Do not lift up the board however. Proceed to step nine first.

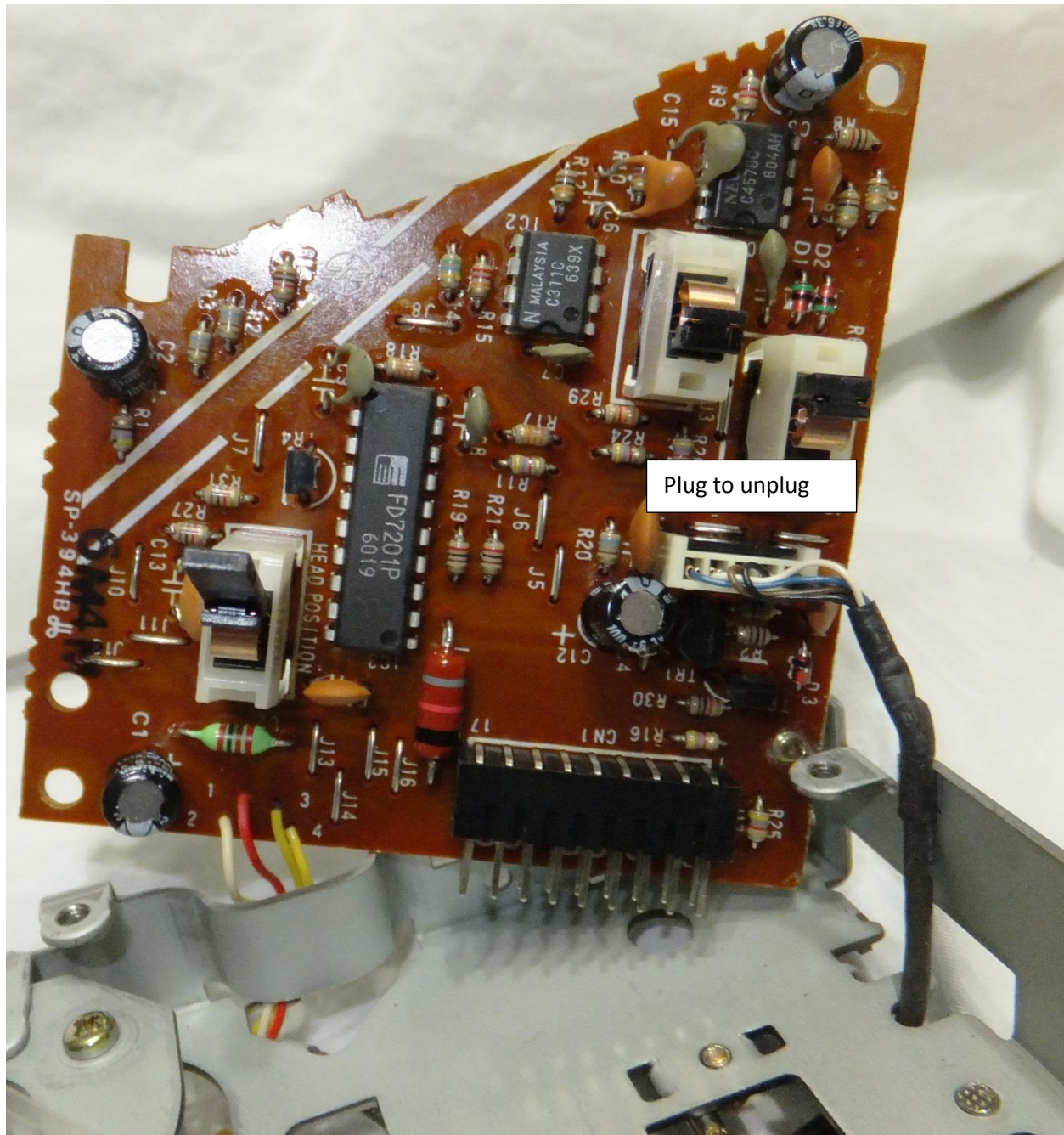


Picture Eight: Disc drive circuit board removal

Step Nine:

Carefully and slowly lift up the disc drive board taking great care to not rip off any of the cables soldered onto the disc drive board. To do this there is a black cable that runs from the top of the system to the bottom. Please free this cable to allow you some maneuvering room.

Once you have the disc drive board positioned as seen in picture nine below. Please unplug the cable marked in picture nine below using the same strategy discussed previously.



Picture Nine: Unplugging the disc drive

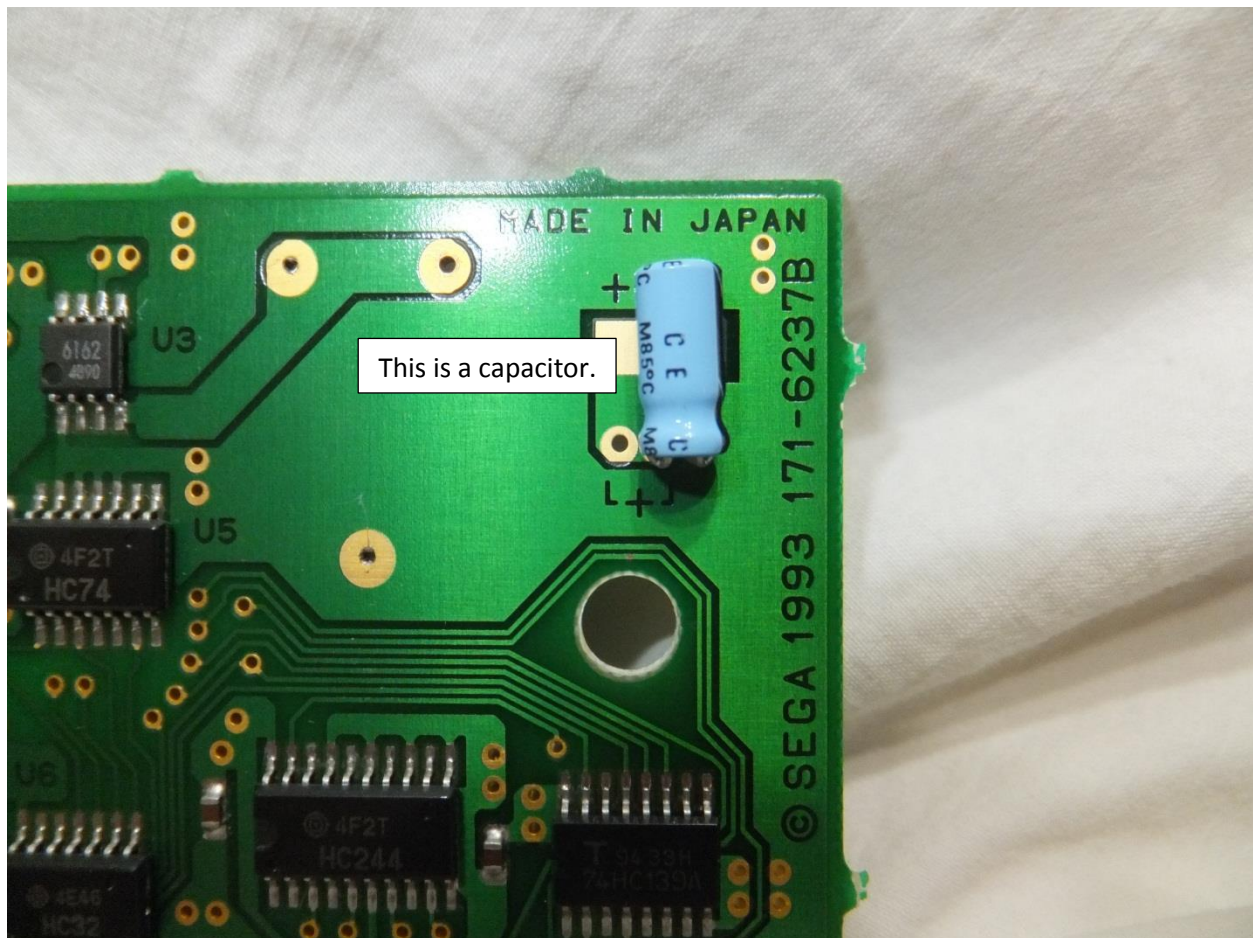
Step Ten

Congratulations you disassembled the Famicom disc drive and are now ready to start the capacitor replacement process; however it is important for us to familiarize you with the basics of how capacitors work. A brief introduction to capacitors is discussed next and it is highly recommended that you read it first.

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.

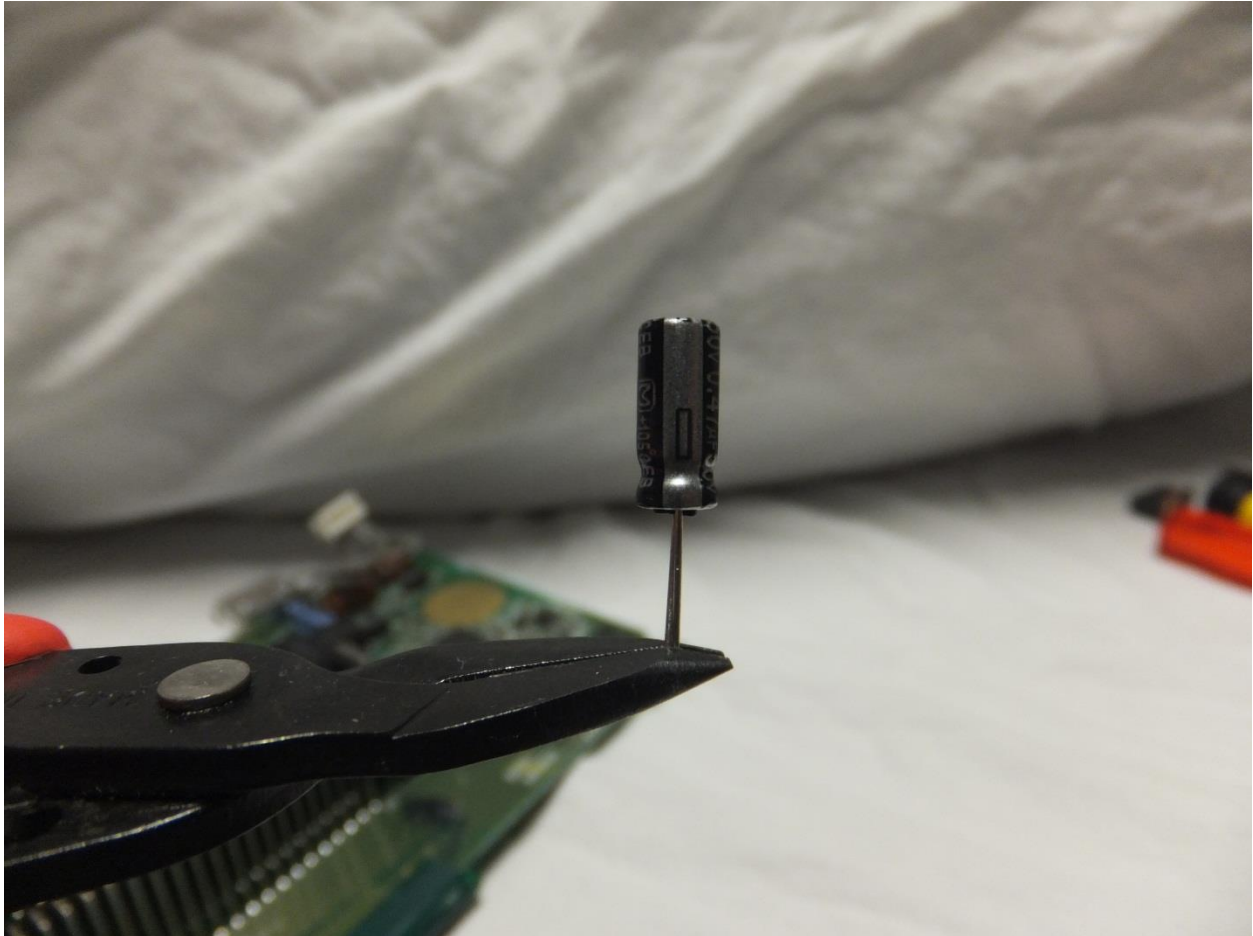
Next you will notice that the capacitor two leads. One is the positive lead and one is the negative lead. It is very important to make sure that you don't get these backwards. The positive terminal should be soldered to the positive terminal on the circuit board and the negative terminal to the negative 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 Ten: 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.

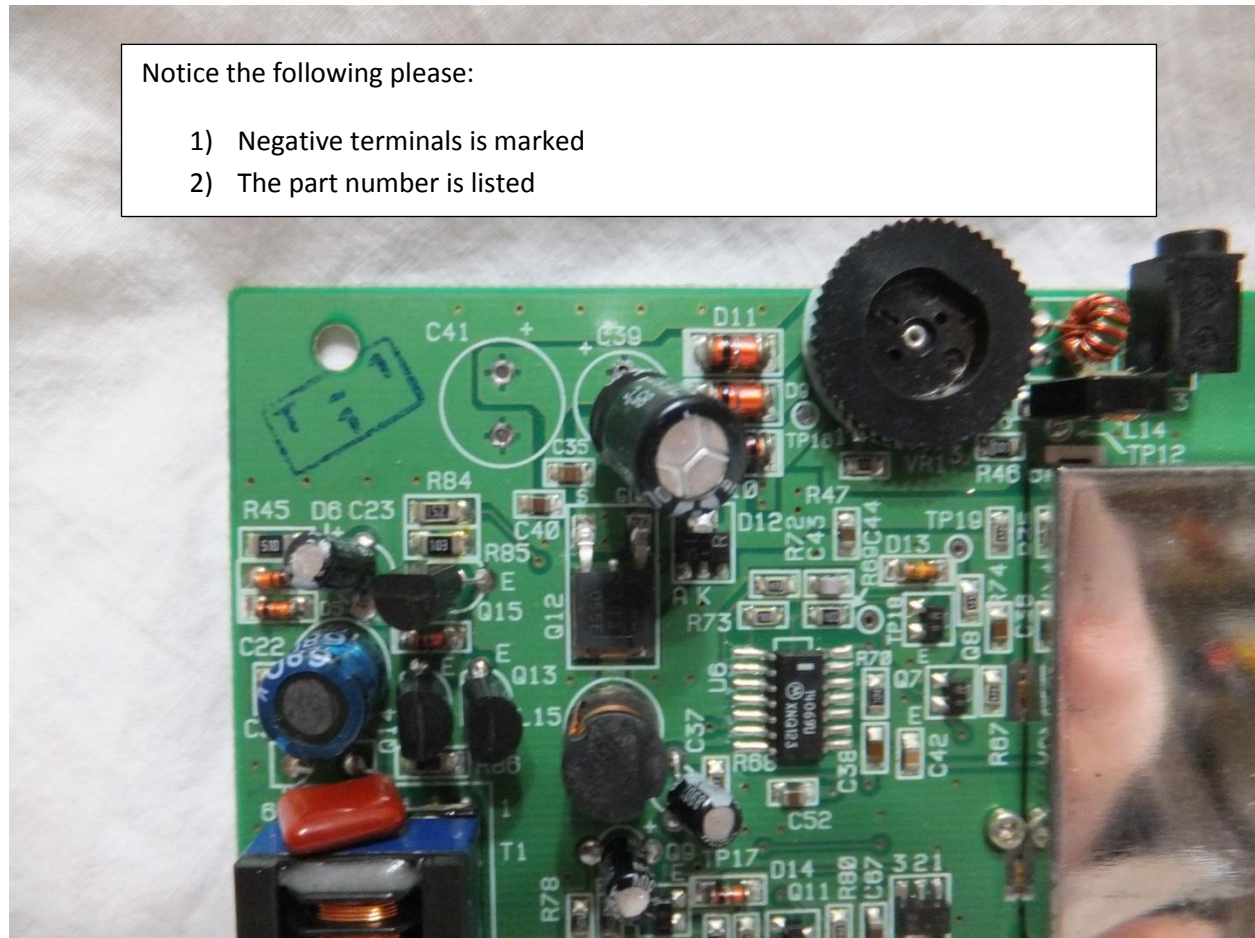


Picture Eleven: Replacement capacitors

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 Ten:

This guide does not cover the installation of each capacitor as this would be redundant. Instead the installation of one capacitor is covered instead. For the purposes of this guide we shall replace C41. C41 is not present in this system and is presented simply for illustration purposes.



Picture Twelve: Replacement of C41

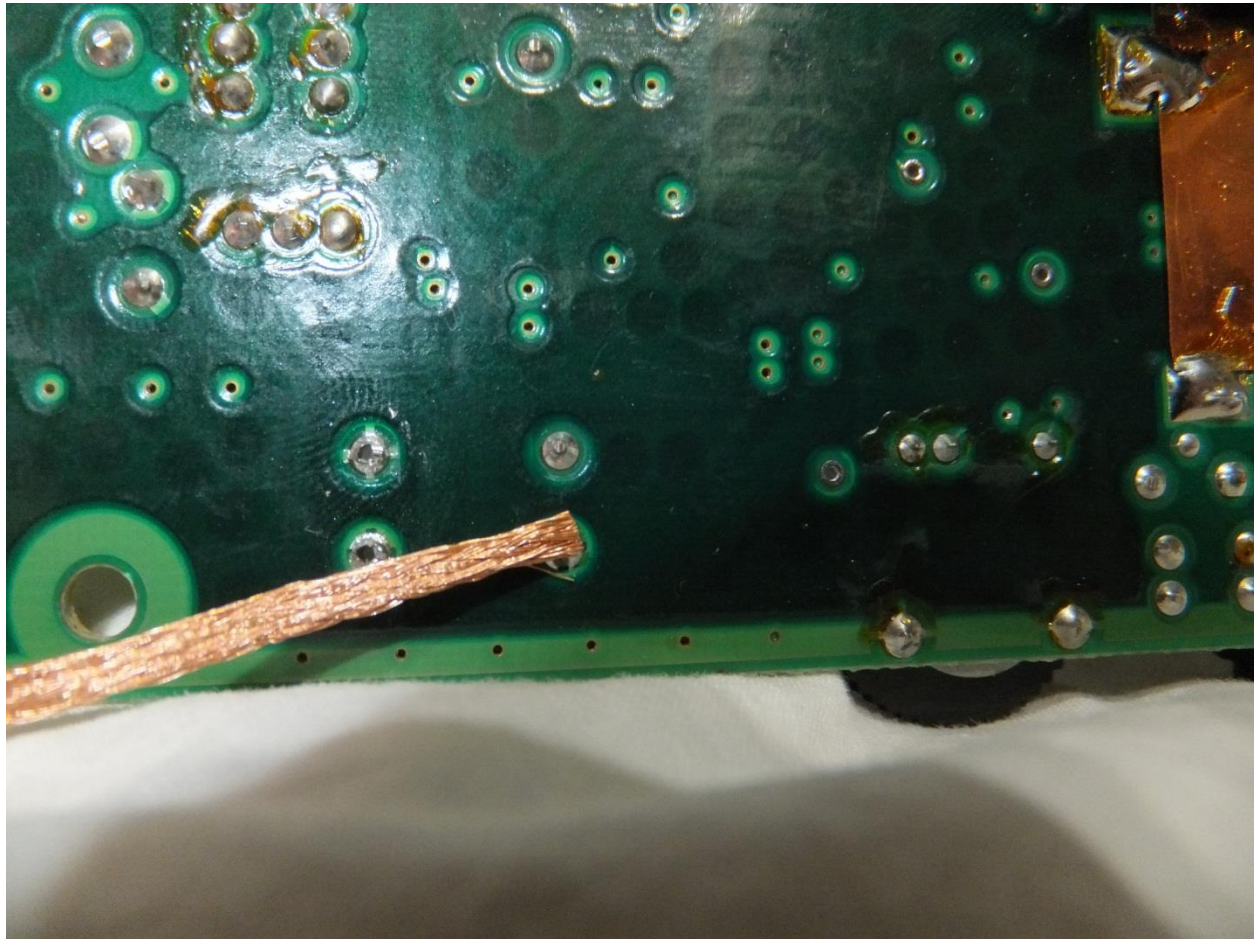
You may notice that the capacitor has already been removed. This is intentional as it allows for better visualization of important information on the circuit board. Please notice the following:

- 1) Negative terminals is marked
- 2) The part number is listed

Alrighty now that we have familiarized ourselves with what all the information on the circuit board means lets continue onwards.

Step Eleven:

Unsolder the capacitor of interest. We recommend the following strategy.



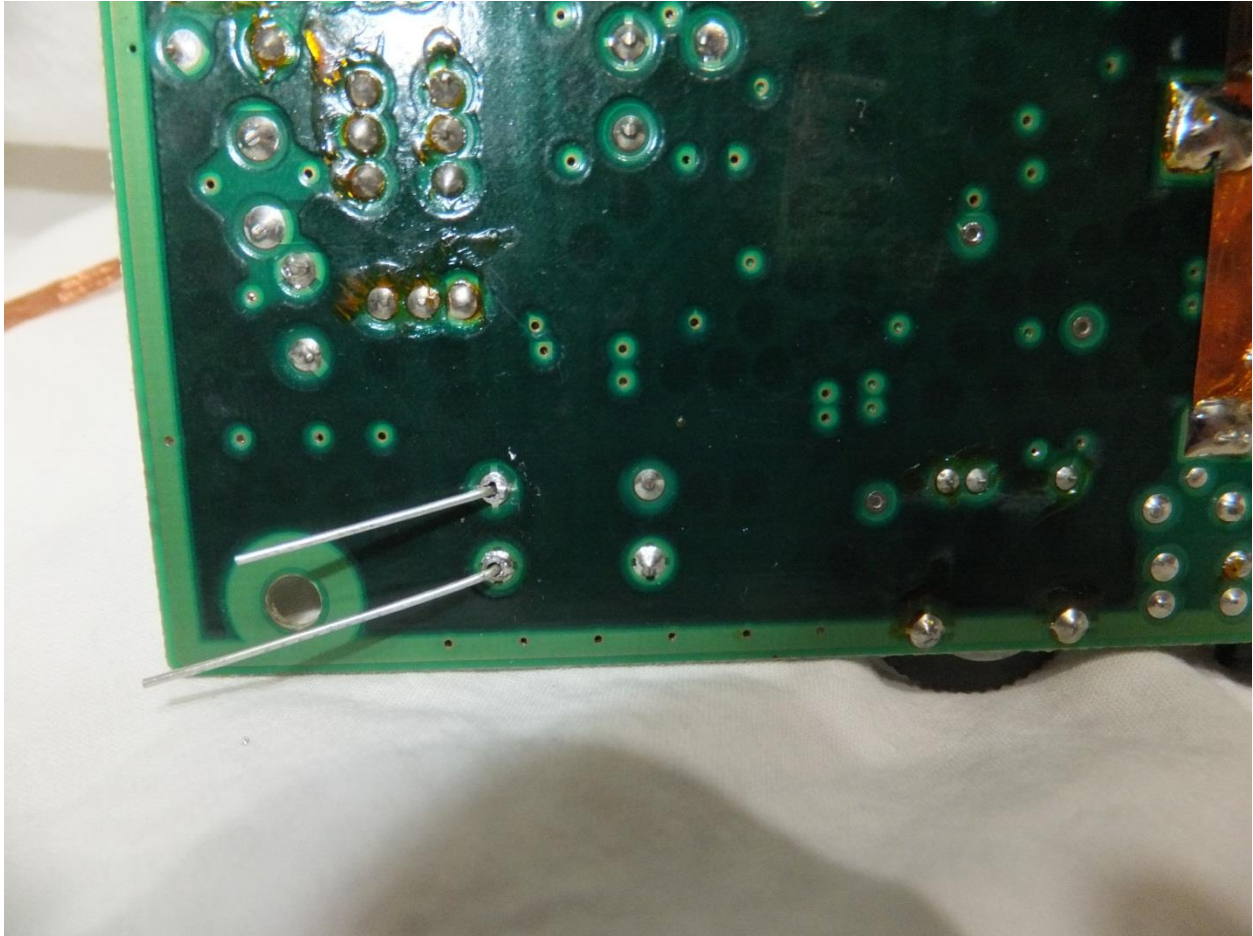
Picture Thirteen: Proper usage of soldering braid

Place the soldering braid over the solder joint and then heat the joint with your soldering iron. The braid will suck up the solder and free the lead. You can also apply a small amount of traction on the lead by grasping the lead from the other side with a set of needle nose pliers and pulling if needed.

Once the leads are unsoldered please proceed to the next step.

Step Twelve:

Next you need to solder the replacement capacitor into place. Remember negative to negative and positive to positive. We recommend the following strategy.



Picture Fourteen: Lead soldering

Insert the leads and then bend them at a ninety degree angle. Then cut the leads down to the desired length. Finally solder the leads into place.

Please continue replacing the capacitors as needed. Here are some very important points not to forget.

- 1) Make sure you do not bridge any terminals
- 2) Make sure the leads of the capacitors don't touch each other.
- 3) Don't be afraid to bend the capacitors leads. You will have to flatten them anyways to get the casing to close.

Troubleshooting Section

We are sorry to hear that you ran into complications from your repair. Unfortunately this particular repair is difficult to troubleshoot due to the complexity of the repair job, although here are some general guidelines.

- 1) Make sure that the terminals of each capacitor are firmly soldered in place.
- 2) Make sure that none of the terminals are bridge with solder
- 3) Make sure that none of the leads of the capacitors touch each other.

We do apologize that we can't be more helpful than this.