

# ***Stereo 150***

## ***Replacing and Upgrading the Power Supply Capacitors***



© 2021 Akitika, LLC  
All rights reserved  
Revision 1p04      May 8, 2021

## ***Table of Contents***

Section 1: About This Manual .....	3
Who Should Attempt this Project? .....	3
Tools You'll Need.....	3
Project Overview .....	3
Important Safety Notes .....	4
Section 2-Making the Capacitor Upgrade.....	4
Safety First.....	4
Gaining Access to C201 and C202 .....	4
Remove the wooden side panels .....	4
Remove the metal cover.....	5
Slide out the decorative front panel .....	5
Build the Capacitor-Standoff Combination .....	5
Prepare the first capacitor .....	6
Prepare the second capacitor.....	6
Make a Sketch of the Polarity of the Existing Capacitors .....	6
Remove the original capacitors.....	7
Install the new capacitors.....	7
Power Up and Test your work .....	8
Reassemble the Amplifier.....	8

## ***Table of Figures***

Figure 1-Remove 3 screws from each of two wood side panels.....	4
Figure 2-Locations of the sheet metal screws that hold the side of the cover .....	5
Figure 3-insert standoffs into the capacitors .....	5
Figure 4-Polarity and arrangement of filter capacitors .....	6
Figure 5-Install the new capacitors .....	7

## **Section 1: About This Manual**

This manual covers the replacement of the large power supply electrolytic capacitors in Dynaco's Stereo 150 Power Amplifier. The original capacitors were 10,000  $\mu\text{F}$  75 Volt capacitors. This kit upgrades those capacitors to 22,000  $\mu\text{F}$  80 Volt capacitors. The more than doubled capacitance reduces hum in the power supply and allows for a bit more low frequency output power.

The new capacitors are the same diameter as the original capacitors, so they fit into the existing capacitor mounting clamps. The kit includes standoffs that provide a really good way to make the modern caps fit seamlessly into the original physical design.

### ***Who Should Attempt this Project?***

You can build this kit and improve your Dynaco Stereo 150 if you can:

1. solder (using normal rosin core solder and a soldering iron).
2. use simple hand tools like screwdrivers, wire cutters, and pliers.
3. make basic voltmeter measurements
4. read and follow directions.

It helps if you:

1. know a bit about electronics, or
2. have a friend who knows a bit about electronics

### ***Tools You'll Need***

You'll need the following tools to update your Stereo 150:

1. flat blade screwdriver for #6 screws, #2 Phillips screw driver
2. pliers or nut drivers suitable for #6 hardware (5/16" nut driver or hex wrench)
3. needle nose pliers
4. pencil type soldering iron of 25 to 50 Watts (no huge honking soldering guns or blowtorches)
5. wire cutters and strippers

### ***Project Overview***

The project replaces C201 and C202. The main steps are:

1. Disassembling the Stereo 150 to gain access to C201 and C202.
2. Installing stand-offs into the new capacitors.
3. Removing the original capacitors.
4. Installing the new capacitors.

## ***Important Safety Notes***

By purchasing this kit, you have agreed to hold Akitika, LLC harmless for any injuries you may receive in its assembly and/or use. To prevent injuries:

- Wear safety glasses when soldering to prevent eye injuries.
- Always unplug the power before working on the amplifier.
- Large capacitors hold lots of energy for a long time. Before you put your hands into the amplifier:
  - Pull the AC plug!
  - Wait 1 full minute for the capacitors to discharge!
- Remove jewelry and rings from your hands and wrists, or anything that might dangle into the amplifier. Remove loose objects from your shirt-pockets that might fall into the amplifier.
- If working in the amplifier, keep one hand in your pocket, especially if you're near the power supply or power supply wires. This can prevent serious shocks.
- Build with a buddy nearby. If you've ignored all the previous advice, they can dial 911 or get you to the hospital.

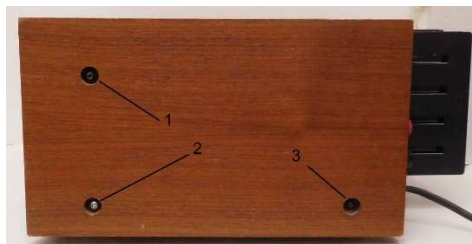
## **Section 2-Making the Capacitor Upgrade**

### ***Safety First***

1. Turn the amplifier off.
2. Remove the AC plug from the wall socket.
3. Wait one minute before starting disassembly to assure that the capacitors have discharged.

### ***Gaining Access to C201 and C202***

Get a bowl or other safe place to store the screws you remove as you disassemble your Stereo 150.

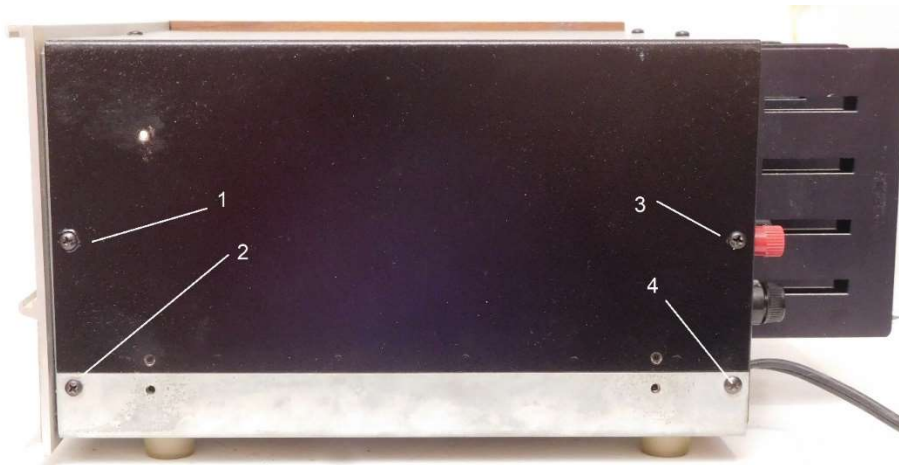


**Figure 1-Remove 3 screws from each of two wood side panels**

### **Remove the wooden side panels**

1. Remove the screws that hold the wooden panels to the side of the amp. There are three long 6-32 machine screws and washers that hold each of the wooden panels in place. There are a total of 6 screws and washers that will be removed (3 from the left, and 3 from the right).
2. Set aside the screws into a bowl or other safe place.
3. Set the wooden panels aside in a safe place.

## Remove the metal cover



**Figure 2-Locations of the sheet metal screws that hold the side of the cover**

1. Remove the 4 sheet metal screws that hold the right side of the cover.
2. Remove the 4 sheet metal screws that hold the left side of the cover
3. Remove the 3 sheet metal screws that hold the top of the cover in place.
4. Put all the screws in a safe place.
5. Pull the cover straight up and set it aside. You may have to work at it a bit if it has been a long time since the cover was removed.

## Slide out the decorative front panel

Slide out the decorative front panel and set it aside in a safe place.

## ***Build the Capacitor-Standoff Combination***



**Figure 3-insert standoffs into the capacitors**

The new capacitors (22,000  $\mu\text{F}$  @80V) have the same 2" diameter as the original capacitors. They are not as tall as the original capacitors. Capacitor makers have figured out how to put more capacitance in less space since the Stereo 150 was designed.

The new capacitors may have been shipped with 1K Ohm resistors fastened across their terminals. Remove the 1K resistors before going on.

### **Prepare the first capacitor**

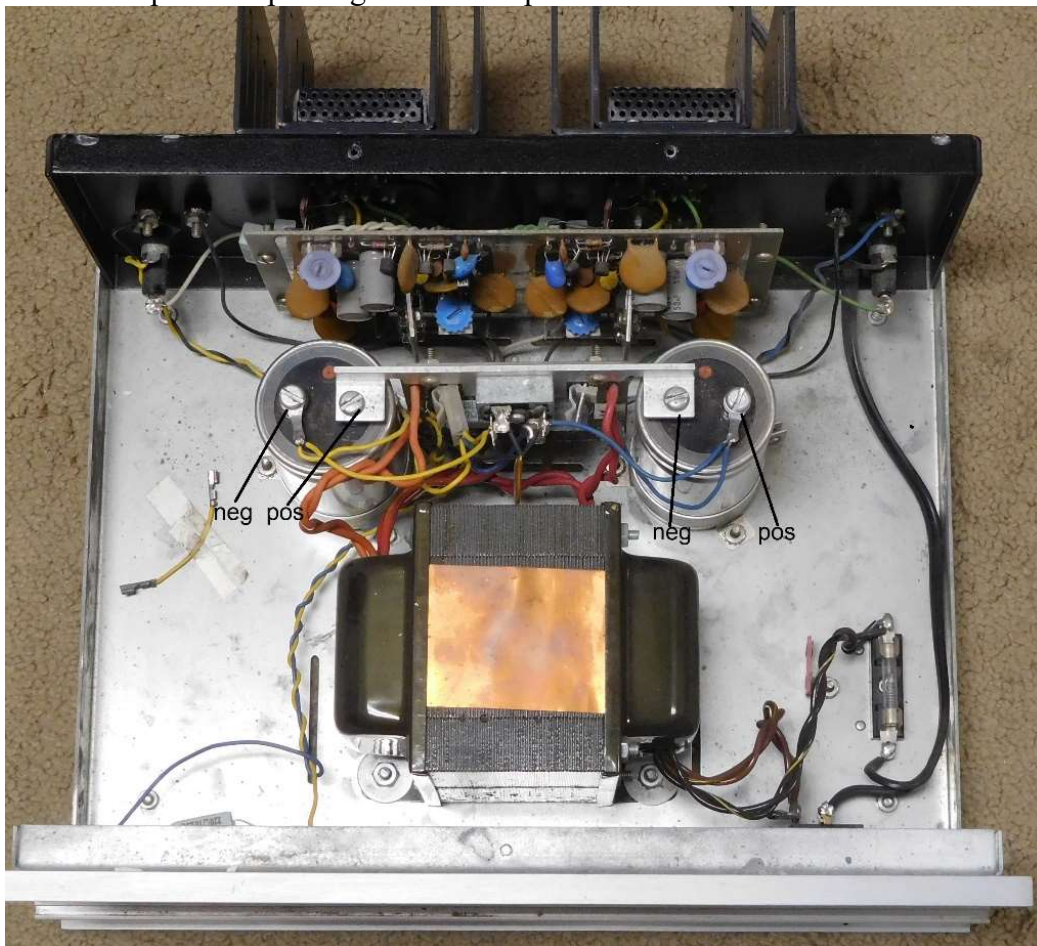
1. Remove the positive screw and attached washers from the positive terminal of the first capacitor. Set them aside in a safe place.
2. Screw the male end of one of the 1" long male-female standoff in the positive terminal of the capacitor. Make the standoff snug, but don't overtighten it.

### **Prepare the second capacitor**

1. Remove the negative screw and attached washers from the negative terminal of the second capacitor. Set them aside in a safe place.
2. Screw the male end of the other 1" long male-female standoff in the negative terminal of the second capacitor. Make the standoff snug, but don't overtighten it.

### ***Make a Sketch of the Polarity of the Existing Capacitors***

Before removing the existing capacitors, make a sketch of their orientation...e.g. which side is positive, and which side is negative for each capacitor. Ideally, it will all be exactly the same as what we show you in this manual, but getting a capacitor in backwards can harm both you and the amplifier, so it's important to be extra careful. Look at each cap for the plus sign next to its positive terminal.



**Figure 4-Polarity and arrangement of filter capacitors**

## Remove the original capacitors

1. Loosen the screws for the clamps that girdle the capacitor bodies.
2. Remove the 4 screws that make the electrical connections of the capacitors to the lugs and central bus-bar.
3. Label the lugs and wires with the capacitor polarities to make sure it all goes back together correctly.
4. There is a bracket that holds the center of the power supply circuit board to the bottom of the chassis. Loosen, but do not undo the screw and nut that hold the bracket to the chassis bottom. This will give you some room to wiggle the power supply circuit board. The easiest way to get to this screw is to turn the amp on its side. **Be careful as this is not a stable position for the amp.**
5. Return the amp to its normal operational position, sitting flat on your work-bench.
6. Wiggle each large capacitor in turn to remove it from the amplifier. You'll have to lean the power supply circuit board out of the way. That's why you loosened the bracket in step 4.

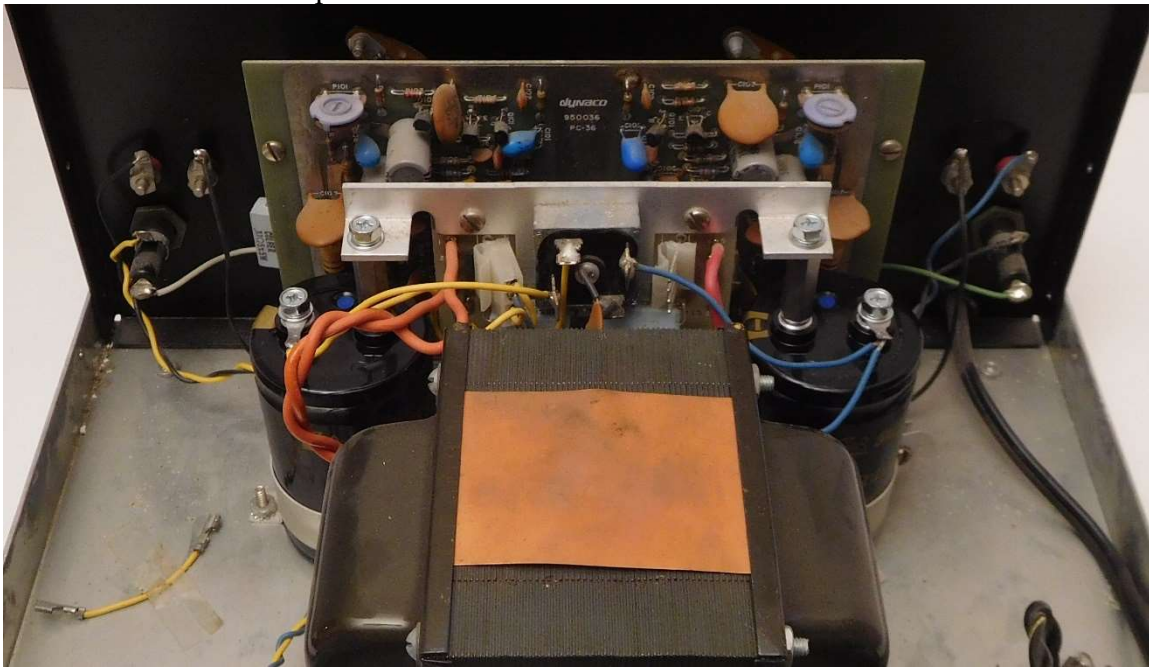


Figure 5-Install the new capacitors

## Install the new capacitors

1. Remove and set aside the remaining screws in the new capacitors.
2. Install the new capacitors into the capacitor clamps. You may have to loosen the belt of the clamp a bit more. You may also need to loosen one or more of the screws that hold the capacitor clamps to the floor of the chassis.
3. Double or triple check the polarities of the new capacitor and standoff arrangement.
4. Line up the capacitors so they fit easily into the bus-bar and look square.
5. Insert the capacitor screws, just finger-tight for now, as you line up the capacitors, the bus-bar and the circuit board.

6. You may find that the new capacitors don't want to sit exactly down on the chassis floor. That's ok. The bottoms of the capacitors can sit a few millimeters above the chassis bottom. Just tighten the clamp that goes around the capacitor in the normal fashion.
7. Tight all of the screws in a round-robin fashion to keep everything square and fitting together well:
  - a. Capacitor clamp belt screws.
  - b. Capacitor clamp mounting screws.
  - c. Capacitor electrical screws in both the lugs and bus bar.
  - d. Screw that holds the power supply mounting bracket to the floor of the chassis.
8. Make one more check of polarity of all the capacitors.
9. Make one more check to assure that all the screws are tightened down.

### ***Power Up and Test your work***

1. Turn the power switch off.
2. Plug the amplifier into the AC wall socket.
3. Stand back as you turn the power switch on. If you somehow put a capacitor in backwards, you don't want to be close to the amplifier.
4. The room lights may briefly dim as the capacitors charge.
5. Carefully check the voltage across each of the new capacitors. If all is well, you should measure about 50 volts DC across each capacitor.

### ***Reassemble the Amplifier***

1. Turn the amplifier power switch off.
2. Pull the amplifier plug out of the AC wall socket.
3. Reinstall the cover. Remember that the perforations go at the back of the amplifier.
4. Re-install the sheet metal screws that hold the cover in place:
  - a. 4 on the left side, see Figure 2.
  - b. 4 on the right side, with similar placement to Figure 2.
  - c. 3 on the top of the cover
5. Slide the metal decorative plate back into the front panel extrusion.
6. Reinstall the wooden end panels using the long 6-32 machine screws and washers:
  - a. 3 screws for the right side
  - b. 3 screws for the left side
7. Return the amplifier to service in your music system.