

POWER SUPPLY REPLACEMENT CAPACITOR KIT

Revision 1p2

This kit, part number PSRC, is meant to be used with the updatemydynaco amplifier modules made by Akitika, LLC. These instructions show how to replace the original power supply capacitors with the PSRC capacitors. They assume as a starting point that you updated your Dynaco without changing the power supply capacitors. If you are updating the amplifier modules and capacitors at the same time, there is a specific set of directions for that purpose.

Before working on the amplifier, disconnect it from the rest of your equipment and speakers, and unplug it from the AC mains (wall socket power). Let the amp sit for at least one minute before you remove the cover and begin to work.

Remove the perforated metal cover by removing the four screws from the bottom. If you're unsure how to do this, please refer to the assembly manuals on the website, www.updatemydynaco.com. If you followed the assembly direction for the update kit, the wiring in your amplifier starts out looking something like this:

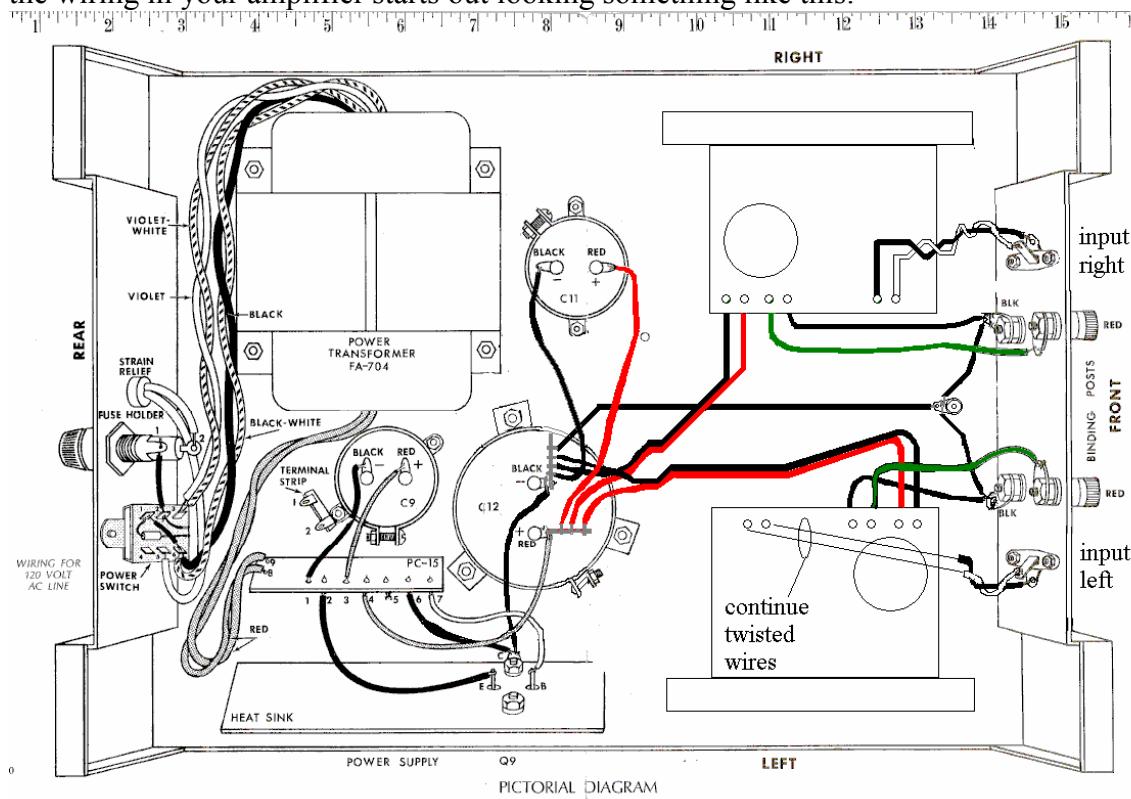


Figure 1-power supply wiring after installing the update kits, but before installing the PSRC Power Supply Replacement Capacitor kit.

1. Remove the old C9.
 - a. Unsolder the red and black wires from the top of C9.
 - b. Unscrew and save the 2 6-32 screws, nuts and lock-washers that hold the capacitor mounting clamp to the chassis.
 - c. Remove the capacitor its mounting clamp.

- d. Loosen the remaining 6-32 screw and nut that provide the tension in the clamp that holds the capacitor in place.
 - e. Wiggle the old capacitor ($1000 \mu\text{F}$ @ 100 V) out and set it aside.
2. Install the new C9.
- a. Take the new capacitor ($3900 \mu\text{F}$ @ 100 V) and wiggle it into the clamp. You may need to loosen or tighten the tensioning screw.
 - b. Orient the capacitor in the clamp so it won't be necessary to cross the red and black wires. The bottom of the capacitor should be about $\frac{1}{4}$ " above the bottom of the bracket.
 - c. Tighten the clamp so that the capacitor is snug, but do not over tighten to avoid capacitor damage.
 - d. Use two 6-32 screws, nuts, and lockwashers to fasten the capacitor and clamp to the chassis.
3. Solder the leads from the power supply to the new C9.
- a. Solder the black lead (from PC-15 eyelet 1) to the NEGATIVE terminal of the new C9.
 - b. Solder the red lead (from PC-15 eyelet 3) to the POSITIVE terminal of the new C9.

Be careful about the capacitor polarity! Check it twice, then check it again. If you get this wrong, the capacitor will be damaged, throwing hot aluminum foil with impressive force. The negative signs on the capacitor mark the negative terminal.



Figure 2-Identifying the positive and negative terminals

REPLACING C11/C12

The original Dynaco design used C12 ($3300 \mu\text{F}$) as the filter for the power stage, and C11 ($500 \mu\text{F}$) as the filter for the driver stage. The updatemydynaco design doesn't need the two separate filters, having only one main supply voltage. Because of this, we'll remove C12 and C11. We will replace C11 with a $3900 \mu\text{F}$ 100 Volt capacitor. We'll also redo the wiring a bit. Here are the step by step directions:



Figure 3-showing the new C9 installed.

1. To remove C11.
 - a. Clip the red and black wires that attach to C11, cutting them near the terminals of C11 (See Figure 1).
 - b. Remove the two 6-32 screws, nuts, and lock-washers that hold C11's mounting clamp to the chassis.
 - c. Remove C11 along with its clamp.
 - d. Loosen the remaining 6-32 screw and nut that provide the tension in the clamp that holds the capacitor in place.
 - e. Wiggle the old capacitor ($500 \mu\text{F} @ 100 \text{ V}$) out and set it aside.
2. Install the new C11 as follows:
 - a. Take the new capacitor ($3900 \mu\text{F} @ 100 \text{ V}$) and wiggle it into the clamp. You may need to loosen or tighten the tensioning screw.
 - b. The bottom of the capacitor should be about $\frac{1}{4}$ " above the bottom of the bracket.
 - c. Tighten the clamp so that the capacitor is snug, but do not over tighten to avoid capacitor damage.
 - d. Use two 6-32 screws, nuts, and lockwashers to fasten the capacitor and clamp back to the chassis.

Now, you have a choice to make. We'll give you a choice between the following three options. We list the pros and cons here:

1. Quick and Easy – Solder in the new C11, and leave the old C12 in place.
 - a. Pro-if C12 is ok, then you've nearly doubled the capacitance.
 - b. Con-if C12 is ok, why did you buy new capacitors? Because the old caps were old?
 - c. Pro-if C12 dies, it usually does so by gradually losing capacitance. At some point, you might only have the capacitance of the new C11, but that's still more than you used to have.
 - d. Con-sometimes, an old cap will die shorted. It's not that common, but do you feel lucky? If the power supply is Dynaco original, it should just go into fold-back current limiting, and there should be no collateral damage.

2. Not quite as quick, and a little ugly-solder in the new C11, and cut out the old C12, leaving all the connections undisturbed, and taped to avoid short circuits.
 - a. Pro – pretty quick
 - b. Con-black tape makes it look a bit like a rig
 - c. Pro-old capacitors gone, reliability enhanced
 - d. Con-no chance for the glory of doubled capacitance.
3. Most reliable, best looking, but a bit of work-cut out C12, move all the connections to new wires soldered onto C11.
 - a. Pro-best looking
 - b. Con-may be annoying or not easy if some wires are cut too short

Take a moment to consider which option you want to do, then perform just one of the following:

Quick and Easy:

1. Solder the black wire from the negative terminal of C12 to the negative terminal of C11.
2. Solder the red wire from the positive terminal of C12 to the positive terminal of C11. Refer to Figure 2 if you have any questions about identifying the terminals of the new C11.
3. Continue on to final assembly and test.

Not Quite as Quick, and a Little Ugly:

1. Solder the black wire from the negative terminal of C12 to the negative terminal of C11.
2. Solder the red wire from the positive terminal of C12 to the positive terminal of C11. Refer to Figure 2 if you have any questions about identifying the terminals of the new C11.
3. Clip the connection that the red wire makes with C12's positive terminal, leaving the rest of the wires and their connections in tact. Use electrical tape to securely cover the bare connections.
4. Clip the connection that the black wire makes with C12's negative terminal, leaving the rest of the wires and their connections in tact. Use electrical tape to securely cover the bare connections.
5. Continue on to final assembly and test.

Most Reliable and Best Looking, But a Bit of Work (see Figure 5)

1. Solder antenna-like wires onto C11, as shown in Figure 4. These wires will be used for the rest of the power and ground connections to the power supply.
2. Connect the following wires (make a loop and crimp, but don't yet solder) to the positive terminal of C11.
 - a. from PC-15 eyelet 4 to the positive terminal of C11, closest to the positive terminal
 - b. red wire from right channel VCC pin
 - c. red wire from left channel VCC pin
3. Solder the 3 wires on the wire attached to the positive terminal of C11.

4. Connect the following wires (make a loop and crimp, but don't yet solder) to the negative terminal of C11.
 - a. From the lug attached to the Collector of Q9 to the negative terminal of C11, closest to the negative terminal.
 - b. Black wire from right channel PGND pin, next to the previous wire.
 - c. Black wire from left channel PGND pin, next to the previous wire.
 - d. Black wire from the ground lug on the chassis, near the input and speaker connects. This wire should be farthest from the terminal.
5. Solder the 4 wires on the wire attached to the negative terminal of C11.



Figure 4 – solder “antenna-like” wires to terminals of C11 to facilitate the connection of the power supply and amplifier wires.

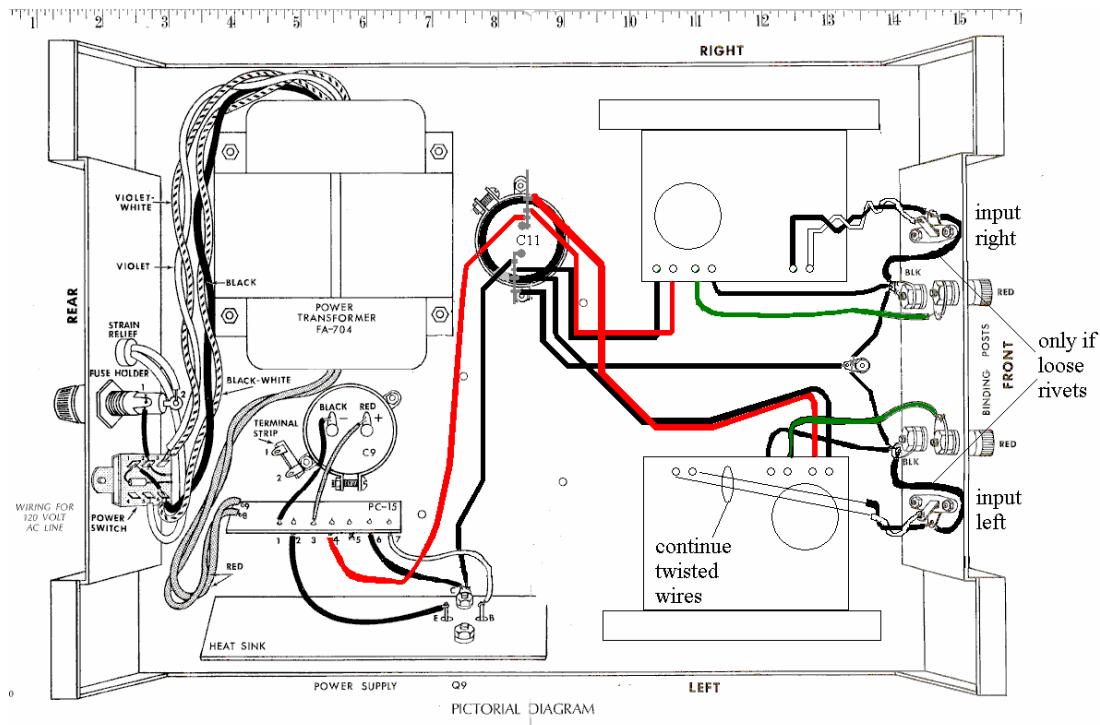


Figure 5 – Rewiring (Most Reliable and Best Looking, but a bit of work)

Note that black wires between black binding post spade lug and ground of input connectors are only needed if the input jacks are held in by rivets, and the rivets are somewhat loose.

FINAL ASSEMBLY AND TEST

Inspect your work to see that all the wires are attached and that nothing is in a position to be shorted out. When everyone and everything is clear of the amplifier, plug it in and power it up. Measure the voltage across C11, it should be 72 plus or minus 4 volts, and in no case should it exceed 78 Volts. Note that most of the Stereo 120's that I've seen have output voltages on the high, rather than low side of 72 Volts. It seems to have something to do with the way the resistors in the power supply age.

Observe the amplifiers for a minute for normal operational appearance, e.g. no smoking, excessive heat, or sparking.

Turn the amplifier off and remove the AC mains cord from the wall socket.

Wait 1 minute before proceeding.

Replace the perforated metal cover and fasten it in place with 4 6-32 screws.

You are ready to re-install the amplifier into your system.