

# *Update my dynaco*



## ***Dynaco PAT-4 Preamp Replacement RCA Jack Installation (PAT4RCA)***

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

This manual gives the information needed to build and install new RCA jacks into Dynaco's PAT-4 Preamp. It also covers installation of the "Good Ground", which replaces the sheet metal screw phono ground with a knurled nut arrangement.

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

You can build this kit 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. 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
3. can get to YouTube to watch a few helpful videos about the assembly process (none are posted as of this version of the manual).

### ***Tools you'll need***

You'll need the following tools:

1. Phillips screwdriver (#1 and #2), regular screw-drivers.
2. Pliers or nut drivers suitable for #4 and #6 hardware
3. needle nose pliers (helpful, but not strictly necessary)
4. pencil type soldering iron of 25 to 50 Watts (no huge honking soldering guns or blowtorches)
5. wire cutters and strippers

### ***Helpful Tools***

These tools aren't strictly necessary, but make building the kit easier.

1. magnifying glass, if you're over 42!

### ***Project Overview***

The project consists of the following steps:

1. Labeling the wires on the RCA jacks.
2. Removing the old RCA Jacks.
3. Installing and testing the new RCA Jacks.

## ***Important Safety Notes***

By purchasing, using, or assembling 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 or clipping wires 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 2 full minutes for the capacitors to discharge!
- Remove jewelry and rings from your hands and wrists, or anything that might dangle into the amplifier.
- If working on the equipment with the power on, 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.
- Read and understand the safety manuals of all the tools you use.

## ***About Components***

We reserve the right to make design/or component changes at any time without prior notification.

## ***Recommended Solder***

The kit must be assembled with 60/40 Rosin Core solder. The recommended diameter is 0.032 inches. Among many such sources of solder, I have used Radio Shack part number 64-009. It contains 8 oz. of solder, which is *much more* than you'll need to assemble this kit.

## ***Warranty***

With the exception of fuses, Akitika LLC will replace for free any parts of a correctly assembled product that fails within one year of the date of purchase when the equipment has been used in home stereo applications. It is the responsibility of the kit builder to install the replacement part(s). This warranty applies to the original purchaser only. It does not apply to units that have been physically or electrically abused, modified without prior factory authorization, or assembled with other than 60/40 Rosin Core solder. Akitika LLC's liability shall in no event exceed the cost paid to Akitika LLC for the kit.

## Section 2: Kit Building Hints

Yes, I know you want to ignore this section and jump right into building the kit. However, please ***take a minute and read the advice.*** I've condensed it into bullets so that even you guys who are in a hurry can benefit.

- Stop any time you're feeling confused, tired, or anxious. Taking breaks at those strategic times will keep the build enjoyable and greatly enhance your chances of first-time success.
- A soup bowl is your friend. Before you build, carefully empty the parts for just that board into a broad, flat, light colored soup bowl. That makes it easy to find the parts, and keeps them from getting lost.
- Is something in this manual confusing? Does something look wrong? Send your questions by email to [dan@akitika.com](mailto:dan@akitika.com) or [dan@updatemydynaco.com](mailto:dan@updatemydynaco.com). You'll help yourself and everyone who builds the kit.

## Section 3: Removing the Old RCA Jacks

You could be asking why you need step-by-step instructions for this kit. You probably don't. As a result, these instructions may be a bit less detailed than for other kits. Still, you may find valuable hints that will make the process easier.

### ***Removing the Cover***

1. Disconnect your PAT-4 from your system.
2. Pull your PAT-4's power cord out of the AC wall socket.
3. Pull any power cords that are plugged into your PAT-4's convenience outlets.
4. Remove the 4 screws (two on each side) that hold the cover in place. Note that some PAT-4's have a 5<sup>th</sup> screw in the center of the back-panel cover.
5. Remove the cover and set it aside in a safe place.

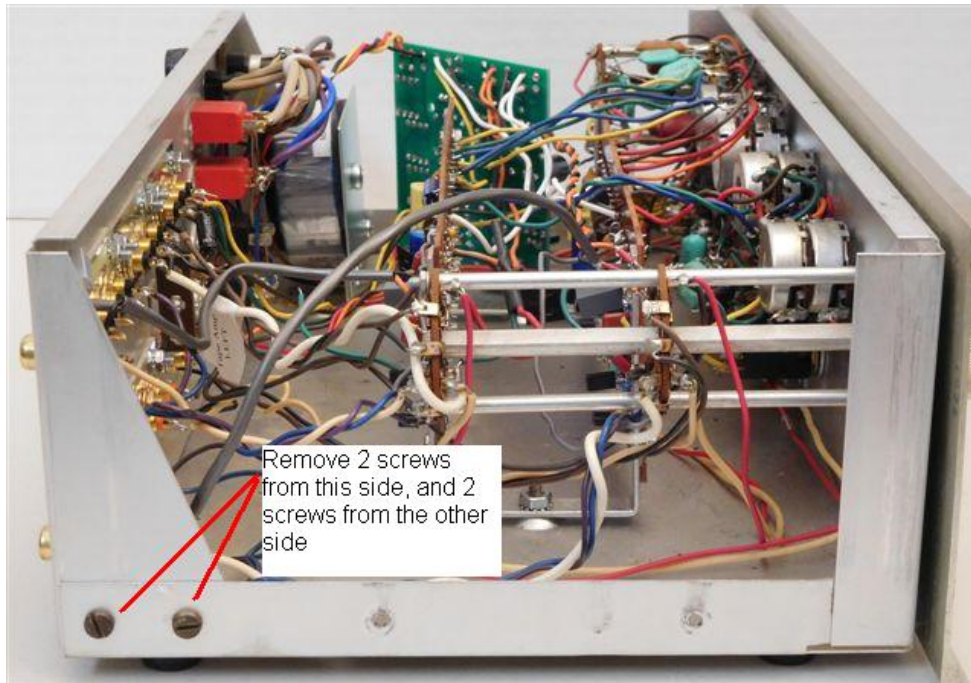
### ***Gaining Access to the Old RCA Jacks***

Removing the jacks may be made much easier by loosening the back-panel. Remove four screws (refer to Figure 1). At that point, you will be able to lift the back panel and tilt it back. Be careful not to put too much strain on the wires that run from the chassis to the back panel.

For all of the wires that connect to the RCA jacks, follow this procedure:

1. Remove 1 wire
2. Label each wire using a bit of masking tape and the jack number

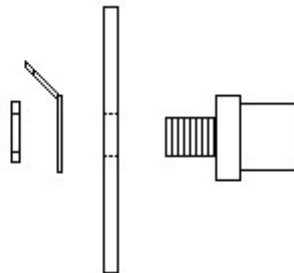
Continue that procedure until all of the wires have been de-soldered and labeled. Now, remove the screws that hold the jack fields in place, and remove the old jack fields.



**Figure 1-Remove screws to loosen back panel**

### ***Building the New Jack Fields***

You'll note there are two types of jack fields. The following drawing shows how all the jacks are assembled onto the jack fields.



**Figure 2-Assembling RCA jacks to the mounting PCB's**

### **Right and Left Channels**

Each kit is supplied with 22 RCA jacks:

- 11 red-insulator RCA jacks for the right channel
- 11 white-insulator RCA jacks for the left channel.

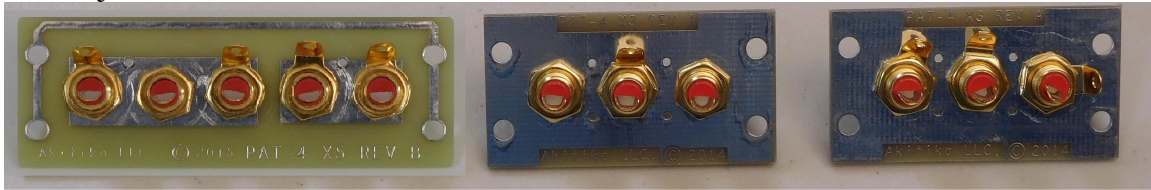
### **Installing the Jacks onto the mounting PCB's**

If you have it, an 11/32" nut driver can make assembly much easier. You'll assemble the following jack and PCB combinations. Note the placement of the ground lugs.

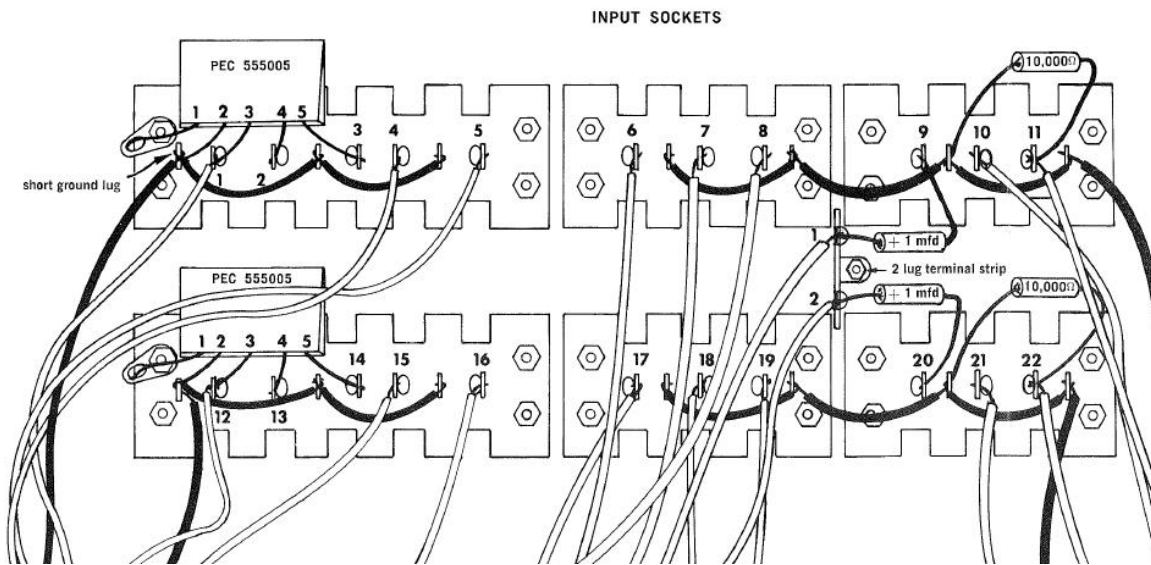
- Two 3-jack right channel RCA connector assemblies using red insulator RCA jacks
- One 5 jack right channel RCA connector assemblies using red insulator RCA jacks



- Two 3-jack left channel RCA connector assemblies using white insulator RCA jacks
- One 5 jack left channel RCA connector assemblies using white insulator RCA jacks



**Figure 3-Jack installation, (right channel, red insulator jacks shown)**



**Figure 4-Jack Installation, Rear View (stock arrangement)**

Make sure to observe right and left channel designations. We recommend the following installation order:

1. 5-jack right channel (red connectors, installs at the bottom of the front panel)
2. 3-jack right channel (red connectors, center set of the bottom of front panel)
3. 3-jack right channel (red connectors, right-most set, bottom of front panel)

Re-solder each labeled wire in turn matching the label and back panel designations. As each jack field's soldering is complete, use the supplied 4-40x5/16" Phillips head screws and 4-40 keps nuts to retain the new jack arrangement.

### ***A Note about grounds on the 5-RCA PCBs***

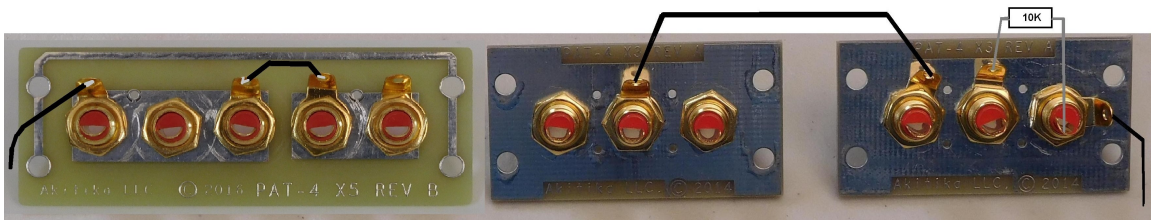
The most recent kit has 5-RCA PCBs with a split ground, as shown in Figure 5. This makes it easy to adapt the ground arrangement to either the stock set-up:

- 3 high level inputs (Tape, Tuner, Spare)
- 3 low level inputs (Special, Tape Head and Phono)

There is an alternate set-up that you may have chosen in previous modifications (outside of replacing the RCA jacks), in which there are:

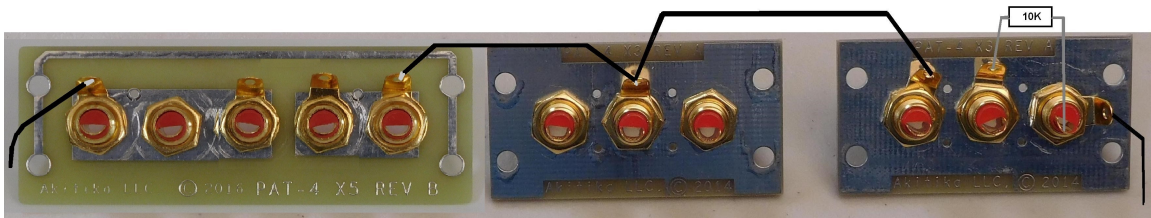
- 5 high level inputs (Special, Tape Head, Tape, Tuner, Spare)
- 1 low level input (Phono)

For the stock set-up, you'll add one ground wire as shown between the left and right grounds on the 5-lug RCA jack field as shown in Figure 5:



**Figure 5-grounds for stock wiring**

For the alternate set-up, the additional ground wire is as shown in Figure 6.



**Figure 6-grounds for 5-high level and 1 phono input**

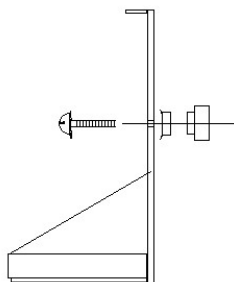
### ***Extra Stuff***

You'll note that the kit also includes two 0.01  $\mu\text{F}$  capacitors, and 2 number 6 solder lugs. You may find these useful if you choose not to replace the PEC555005, for example if you have done the PAT4LP phono preamp upgrade. In that case, you'll still want to connect phono ground to chassis ground via the 0.01  $\mu\text{F}$  capacitor(s).

### ***Good Ground Installation***

The "Good Ground" components replace the sheet metal screw ground. This is typically used for the phono ground, but that same point is sometimes also connected to an earth ground. The original sheet metal screw connection is a bit dicey, thus we have included the good ground components.

You'll need to open up the existing ground screw by drilling it out with a 9/64" or 5/32" drill. Try to limit the filings by making a small raised catch-basin of tape to catch the metal filings.



**Figure 7-Good Ground Installation**

The good ground is assembled as shown in Figure 7. Use a screw-driver and nut-driver to tighten the screw and the keps nut. The thumb screw, which goes on last, will typically only be "thumb-tight".