Updatemydynaco

Installing the VC-102 Volume Control into the Dynaco Stereo 120 Power Amp

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Section 1: About This Manual

This manual shows how to install a volume control into Dynaco's Stereo 120 Power Amplifier. The procedure works with either a stock Stereo 120, or one that has been enhanced with Updatemydynaco upgrade modules.

Why add a volume control?

- Being able to reduce the gain of the power amp might let you run your preamp's gain control in a more favorable range. This is especially so if you use your music system extensively at background levels.
- Many people run minimal systems…a CD player and a power amp. Adding the volume control lets you avoid the need for a preamp. I ran such a system in my music practice room for a number of years.
- If you find yourself always reconfiguring your stereo, swapping components in and out, turning down the volume control offers a nice way to avoid blats and buzzes as you swap input cables.

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

Tools you'll need

You'll need the following tools and supplies:

1. Phillips screw driver
2. Masking tape, duct tape, and electrical tape
3. A drill, and various drill bits (5/16" and some smaller bits to start the hole)
4. needle nose pliers, wire cutters, and strippers
5. pencil type soldering iron of 25 to 50 Watts and 60/40 rosin core solder
6. a utility knife to help prepare the shielded cable
7. Magnifying glass, if you're over 42!

Project Overview

The project consists of the following steps:

1. Drilling volume control mounting hole,
2. Pre-wiring the volume control,
3. Installing the volume control and connecting it to the amp modules and input 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 one 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.
- Is something in this manual confusing? Does something look wrong? Send your questions by email to dan@akitika.com or dan@updatemydynaco.com. You'll help yourself and everyone who builds the kit.

Before You Begin

Unplug the power amp from the wall outlet. Disconnect the Stereo 120 from your sound system. Allow the capacitors in the amplifier one full minute to discharge before beginning installation.

After the minute has elapsed, remove the 4 screws that hold the cover in place and put them in a safe place. Remove the cover and set it aside in a safe place.

Section 3: Drilling the hole for the volume control

Dealing with Metal Shavings

Installing the volume control requires that you drill a hole in the Stereo 120. You must be very careful that the metal shavings resulting from drilling the hole don't short out the electronics already installed in the enclosure. We'll show some ways to avoid problems with metal shavings shortly.

Locating the hole

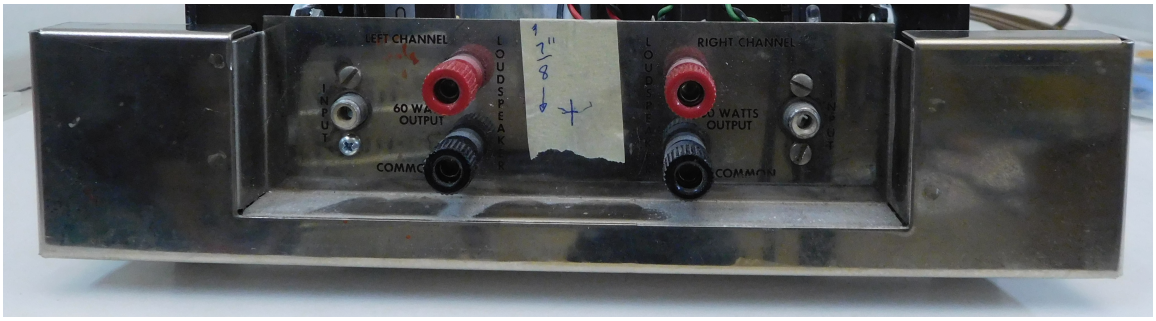


Figure 1- Locating the volume control hole

Locate the hole for the volume control 7/8" from the top edge of the chassis-bottom, centered left-to-right between the binding posts. Figure 1 shows the hole placement. To locate the hole without marking the chrome, we recommend that you measure the rough position of where the hole will go, then cover the location with a piece of painter's masking tape. Now you can accurately measure and mark the hole location on the masking tape with a pen or pencil. This protects the finish from damage.

Make a catch basin out of duct tape. You'll place this catch basin on the inside of the chassis wall, behind where the hole will be drilled. The purpose of the duct-tape catch-basin is to catch the metal filings before they can get away from you. This is particularly important if the amp is already built. It's not quite so important if you're putting the hole in an empty chassis. In either case, your goal is to end up with no stray metal chips in the chassis.

To accurately locate the hole, use a spring-loaded center-punch. If you don't have one, a nail and a tap of a hammer will mark an indentation to guide your drill bit.

Start with a small drill and make a small hole, say 1/16". Change to a 1/8" drill and enlarge the hole. Before making the hole any larger, make sure that the chassis is secured. Change to a ¼" drill and enlarge the hole again. Don't press too hard. Let the drill do the work. ***Taking it easy will prevent you from damaging the chassis, or yourself, or turning the chassis into a propeller, or poking big holes in the duct-tape catch basin.*** Finally, drill the hole out to the finished 5/16" diameter.

Remove the duct-tape catch basin. If you "smush" it against the inside of the chassis front wall, you may find it catches most of the metal shavings. De-burr the edges of the hole. Remove the masking tape that you used to mark the hole location.

Installing the Volume Control

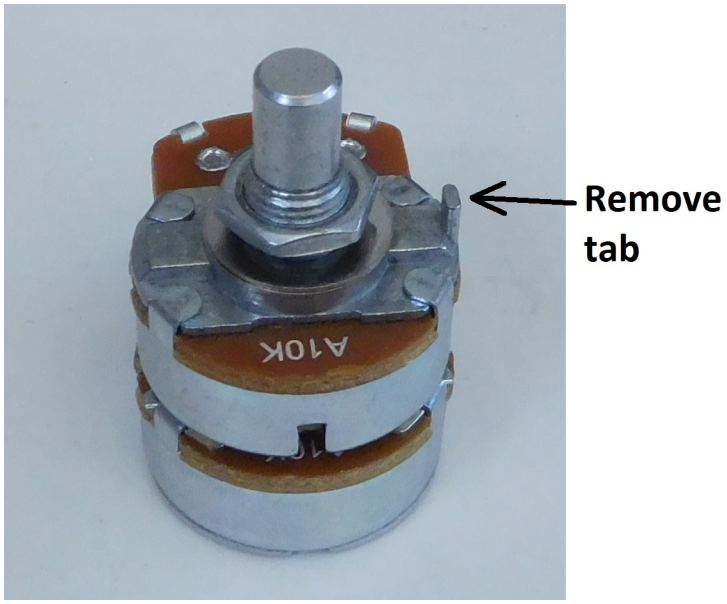


Figure 2-Snap off the locating tab

Snap off the locating tab with a pair of pliers before installing the volume control. The volume control comes with a retaining nut and two washers on the shaft. Install the volume control as shown in Figure 3.

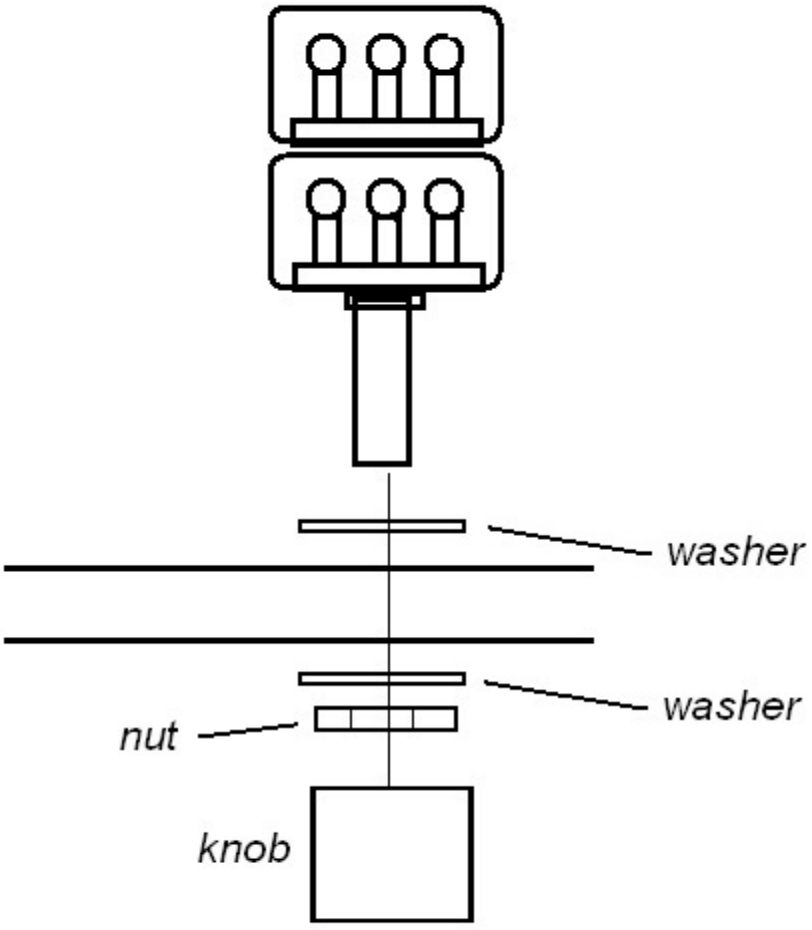


Figure 3-fasten the volume control in place

Install the volume control knob:

- Set the volume control fully counter-clockwise,
- Loosen the set-screw so that the volume control will slide on the shaft.
- Place the knob on the shaft and set the indicator to 7 o'clock.
- Tighten the set screw.

Wire the Volume Control

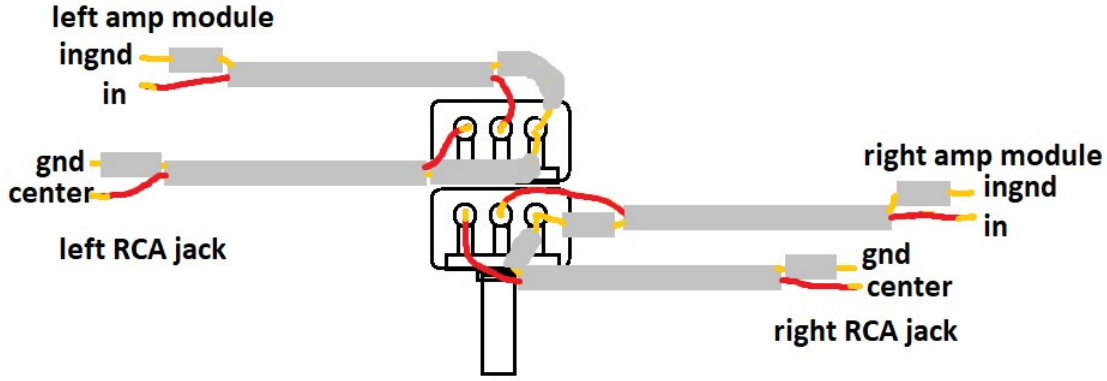


Figure 4-Shielded cable connections

Cut the following 4 lengths of shielded cable[1]:

1. Left amp module input-6”
2. Left RCA jack-4.5”
3. Right amp module input-5”
4. Right RCA jack-4.5”

Use the directions in the Appendix that show how much to strip, and how to use the outside jacket to insulate the drain wire. Make sure to reserve the removed outer insulation, as you’ll use this to insulate the drain wire of the shielded cable. Figure 4 shows the connections.

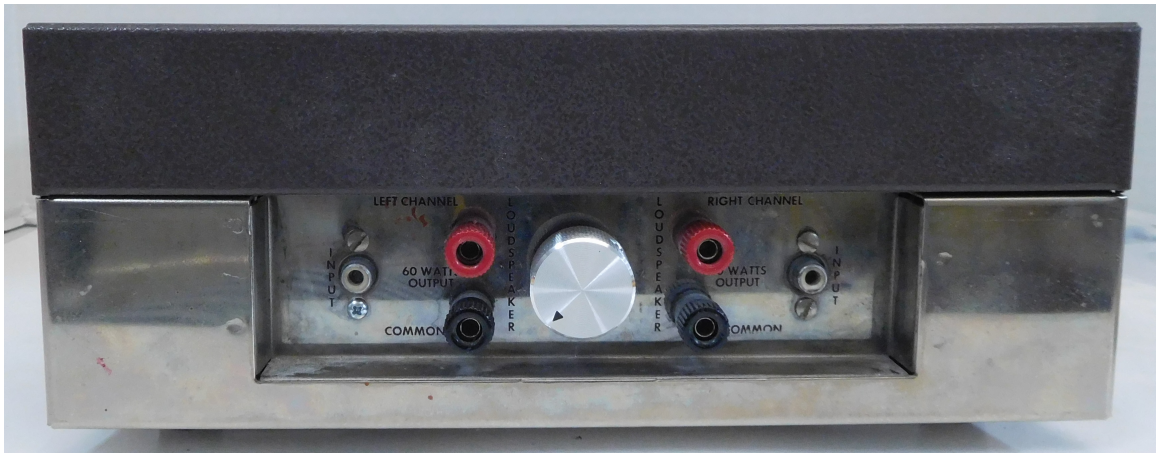


Figure 5-Completed Volume control installation

Final Assembly

Check your work for the absence of solder bridges and the presence of good connections. When you’ve completed the wiring, ohm out the connection from the mecca ground (chassis) to INGND on the amplifier modules.

Reinstall the cover and the 4 screws that hold it in place.

[1] I’ve made these lengths somewhat longer than necessary to make it easy to remove a module if troubleshooting is necessary.

Specifications and a Usage Note

The input impedance of the amplifier with the volume control will be about 10 K Ohms. This is lower than the typical power amplifier's input impedance (around 50 K Ohms). Still, it's high enough not to cause a problem with 99.49% of existing equipment.

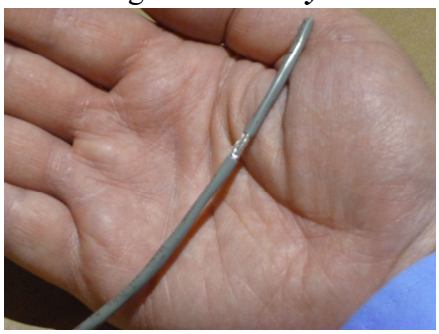
Installing the volume control in the Stereo 120 enables direct connection of a CD player, or other high-level output device, directly to the GT-102. Doing so minimizes the amount of electronics between you and the sound, maximizing the potential fidelity of your system.

Appendix 1: Preparing a shielded cable end

This section tells how to prepare the ends of the shielded cable. This process will be repeated at both ends of all the cables (although the cables may have different overall lengths).

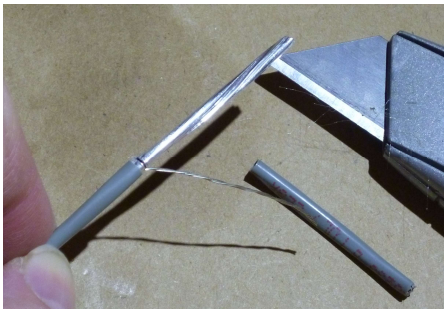
1. Cut the shielded cable to the overall required length.
2. Use a utility knife with a new, sharp blade to cut the plastic jacket of the shielded cable 1" back from the end. Hold the blade perpendicular to the cable, and draw it across the cable lightly as you rotate the cable along its long dimension. This creates a scored line through the plastic jacket. With a sharp blade, not much pressure is needed. You may need a bit of practice to get the feel.

3. If you've scored the jacket carefully, you can separate the jacket at the score line without using tools. Pull the insulating jacket off, exposing the cable, showing the foil shield, the drain wire, and the fuzzy string. The result is shown here, with the foil shield showing. ***Make sure you save the gray insulating jacket for later use.***

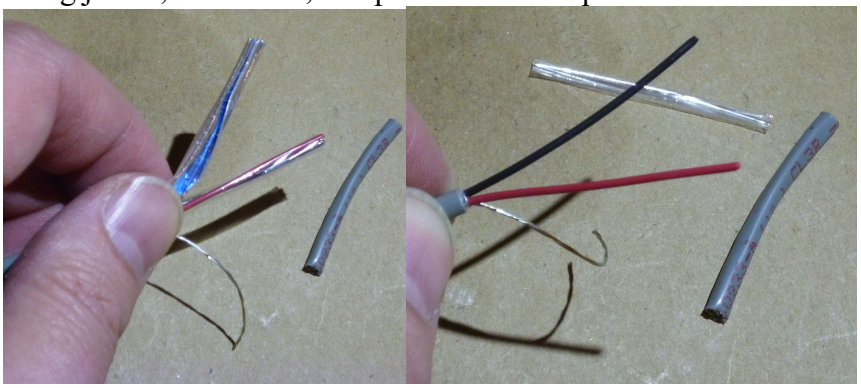


4. Cut off the fuzzy string.

5. Separate and twist the drain wire.



6. Peel back and remove the foil. Remove the plastic wrap from the red and black wires. The drain (bare wire), red, and black wires are exposed now that gray insulating jacket, foil shield, and plastic over-wrap have been removed.



7. Cut the black wire flush at the end of the gray jacket. It will note be used. Alternatively, in these short cable lengths, you can usually slip the black wire out of the cable pretty easily.
8. Remove 3/8” of insulation from the red wire. Keeping the two wires separate, tightly twist the strands of the red, and drain wires. Tin the ends of both wires.
9. Cut about 3/8” off the length of the gray insulating jacket you saved from step 3.
10. Slip the insulation from the previous step over the drain wire. This should leave 3/8” of bare drain wire exposed. That leaves enough bare conductor to make connections but prevents inadvertent short circuits as you complete assembly.
11. Repeat the end preparation process for the other ends of the shielded cables.