

Realistic DX-160 AC Wiring Change

by Bill Sepulveda, K5LN

In review of the DX-160 schematic, the AC line is connected directly to the power transformer, thus having an active power circuit even when the radio's turned off. I guess when this receiver was manufactured in the late 1970's there was no polarized plugs to make products safe. Plus, it's just not good to have power applied to the unit when one thinks it's off.

In the original condition of the DX-160, the AC wall outlet is connected directly to the unit's transformer and will have an active circuit when the unit is expected to be off as seen in **figure 1**.

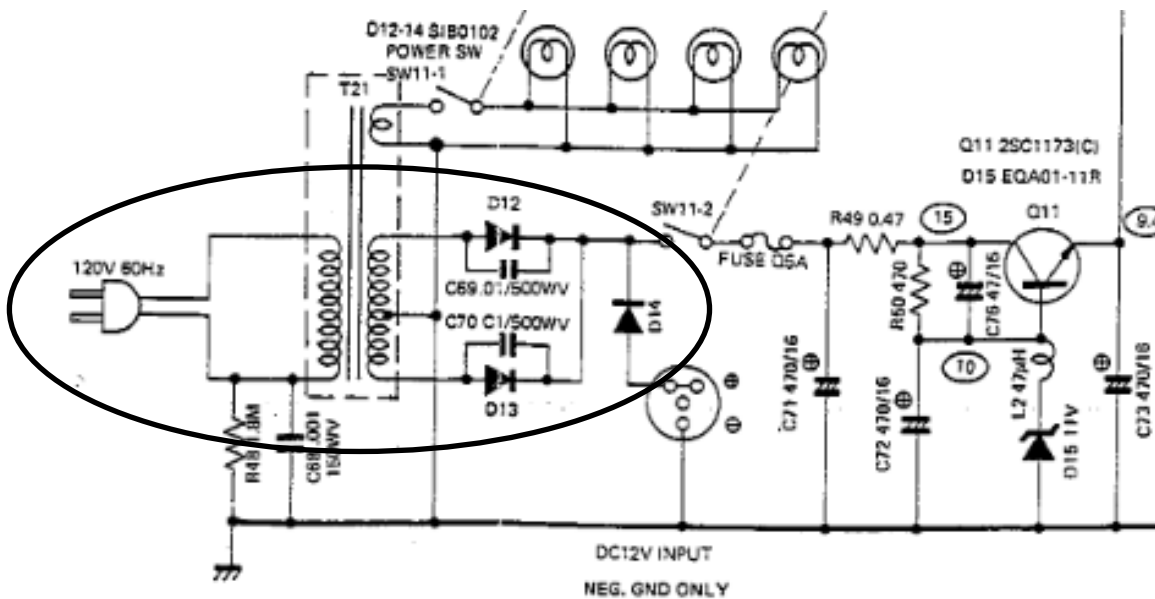


Figure 1

Today when electrical devices are turned off, it's expected that all power is remove from the device and wiring is safe. We are fortunate today (2016) to have polarized two and three wire plugs to update these units to become safer with power remove from any circuitry when the unit's turned off.

If you're interested in making the following modifications please understand I am not accountable for any issues created by the changes you have made. You agree to do these modifications at your own risk!

The power situation in the DX-160 may be viewed in three ways:

1 – Leave the unit wired as is (**figure 1**), which continues to apply power when the unit is plugged into an AC outlet and the unit is turned off.

2 – Add a polarized plug to the unit (either two or three wire plug), and use the two ON-OFF switches, one for the AC input and the second for the DC input as shown in **figure 2**.

Figure 2 below is one method to modify the DX-160 to remove any power to the unit when it's in the off position. The power plug has also been changed to a two prong polarized plug. This diagram shows both ON-OFF switches with one used for the AC power application ("**C**"), and the second for the DC voltage application ("**D**"). The original wires from the ON-OFF switches ("**A**" and "**B**") are removed and shorted together and new wiring added for both of the new switch connections.

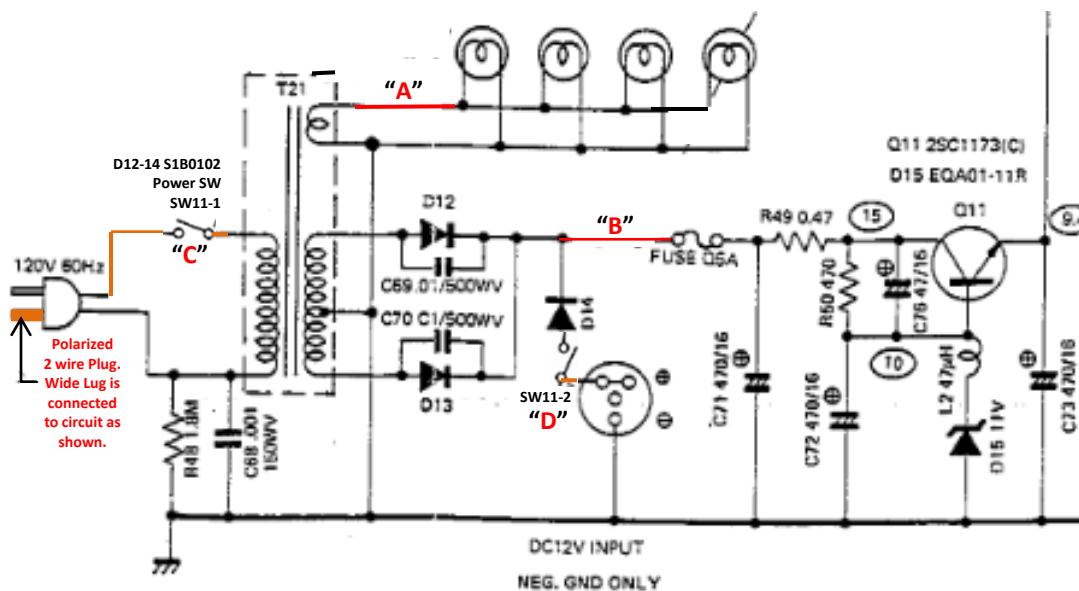


Figure 2

3 – Or add a polarized plug "**D**" to the unit (either two or three wire plug), and rewire the unit so when it's used with AC power both ON-OFF switches ("**C**") are wired together and in series with the Hot side of the AC line as seen in **figure 3**. This is the method I applied to my DX-160.

When I use a 12 VDC power source I make sure the AC plug is disconnected from the wall outlet and turn off the external 12 VDC power source when the receiver is not used. This way I don't have to turn off the receiver when it's connect to 12 VDC. I just want all power removed from all my equipment when they're not used.

Figure 3 below is what I used to change the power input in my DX-160 and will be the circuit used for the following AC switching modifications.

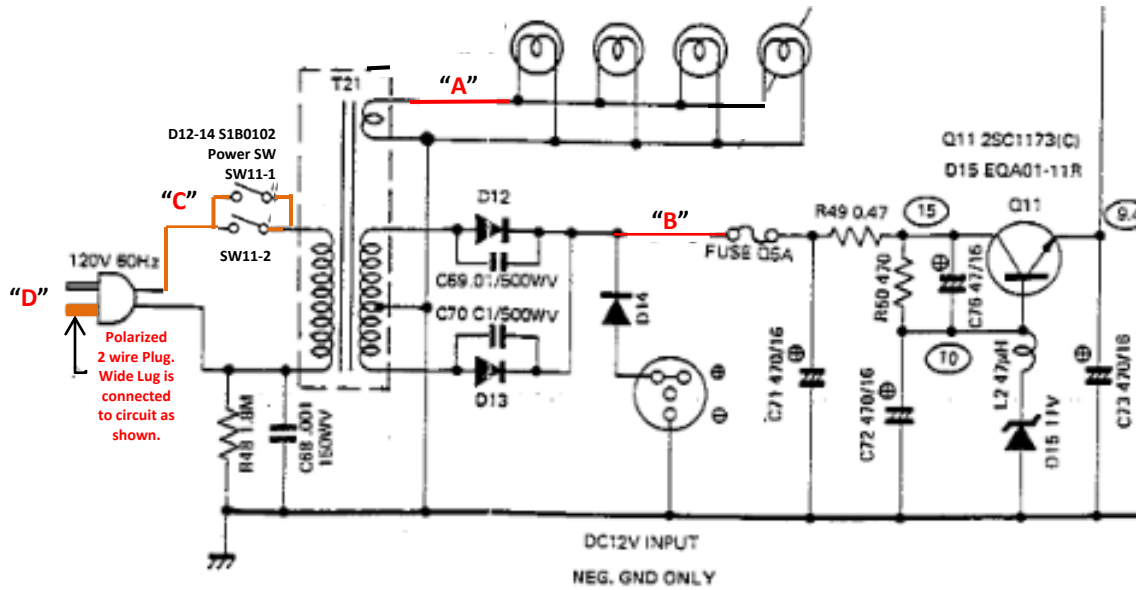


Figure 3

There will be a series of steps with pictures showing the process for the modification. **OH, and obviously before the mod is made, please remove the power plug from the AC outlet!** 😊

First step is the replacement of the **AC power plug**. Pretty simple change and not shown here. I cut off the original power plug and added a polarized two prong plug to the end of the power cord. I used heat shrink tubing to insulate the soldered connections and hold the cable together. When applying the new plug make sure that the larger prong (**NEUTRAL**) goes to the connection as shown is **figure 3 and 4**. I used a polarized plug I had laying around. If you wish, the existing AC power cord may be changed with a six foot cord that already has a polarized plug on the end.

This is the **Neutral** side of the power line which goes to **LARGE PRONG** on the two prong polarized plug.

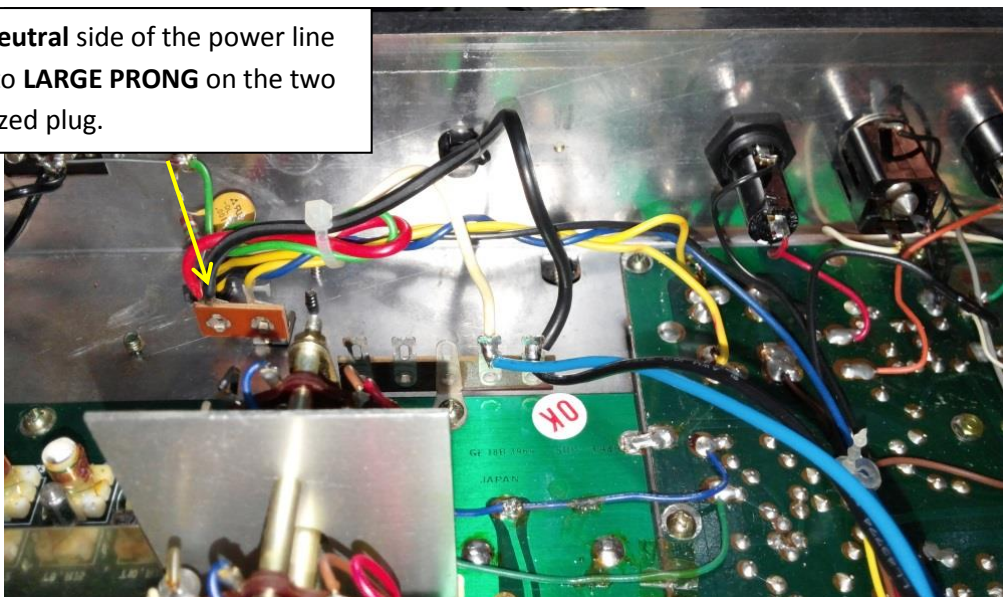


Figure 4

Second step is the addition of a terminal strip. I only had a five position strip and only used two terminals of the strip. The terminal strip is mounted to a board mounting screw as shown in figure 5. Please note only two lugs on the strip are used and **the ground lug is NOT** used!

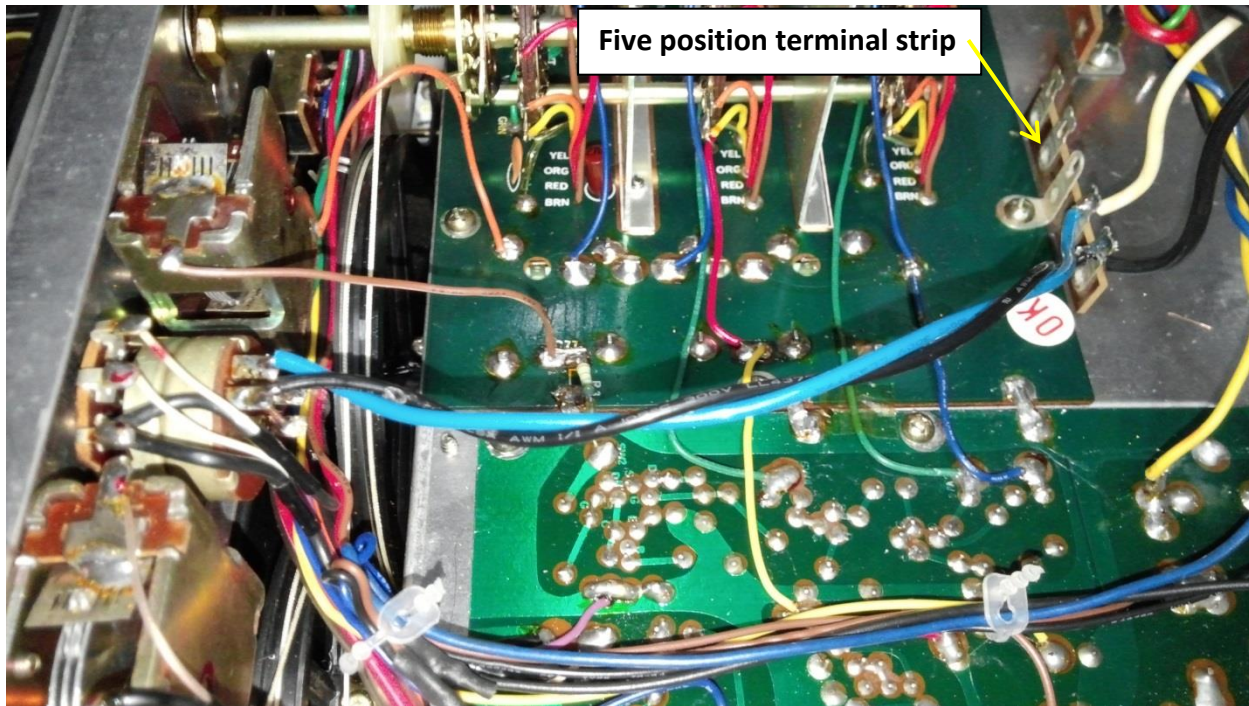


Figure 5

The **third step** is the removal of the wires from the ON-OFF switches. The original wiring in the unit has one switch used to turn on the lights (see "**A**" in figure 3) and the second switch is used to apply power to the rest of the receiver (see "**B**" in figure 3).

Remove the **Black** and **Brown** wire from one Switch and solder them together. Then remove the two **Blue** wires from the other switch and solder them together as shown in figure 6. Then add Heat Shrink tubing to the end of the wires as shown in figure 7.

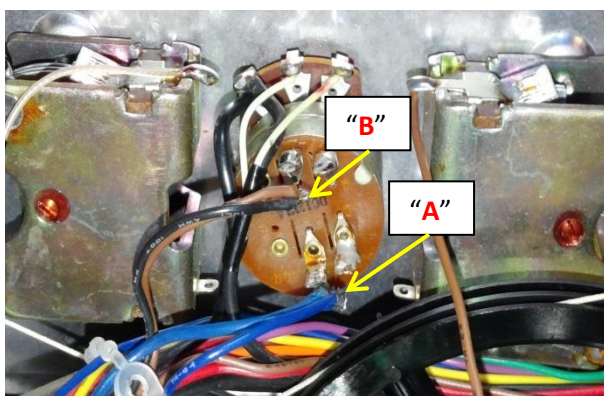


Figure 6

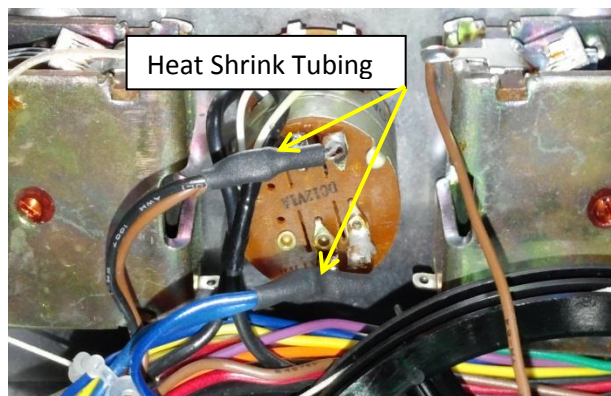


Figure 7

Then loosen the tie wrap on the cable bundle nearest the “**Ant Trim**” Capacitor. Tuck the ends of the **Brown/Black** and two **Blue** wires under the tie wrap and retighten the tie wrap as shown in figure 8.

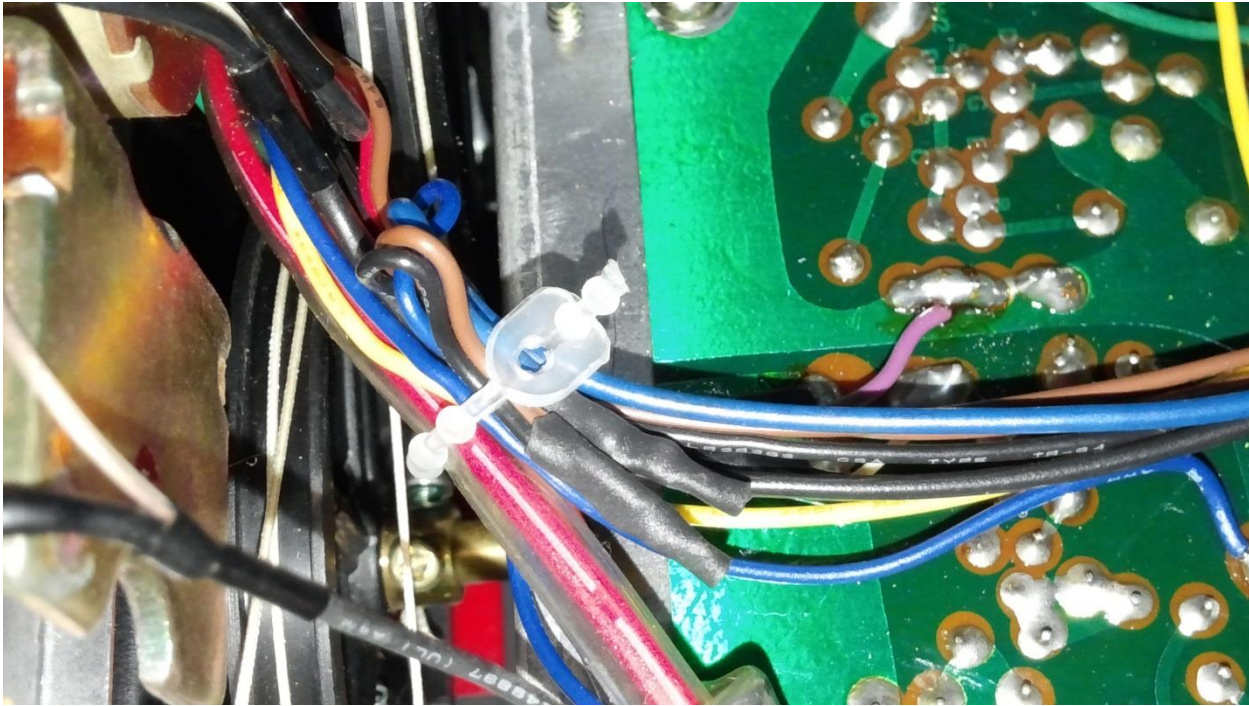


Figure 8

The **forth step** is to use two insulated 20 gage wires, 12 inch long. Connect one end of the wires to the same side of both ON-OFF switches as shown in **figure 9 and 3** (if you can find it at the local hardware store, here's a great application to use **Liquid Electrical Tape**). Make sure the two wires going away from the ON-OFF switches are twisted together since they'll be conducting AC which is a conductor of noise. It's just a good rule of thumb.

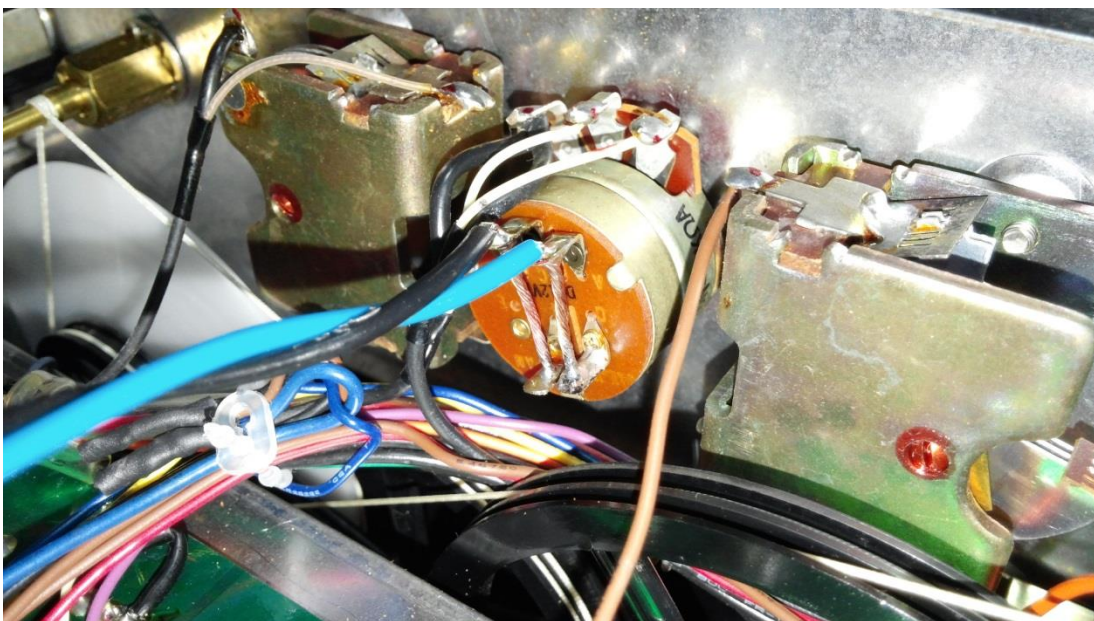


Figure 9

Step five, make sure the new wires are twisted together and leave them elevated and away from all other wiring and circuit boards. Cut and strip the free end of the wires and set them in the terminals as shown in **figure 10**.

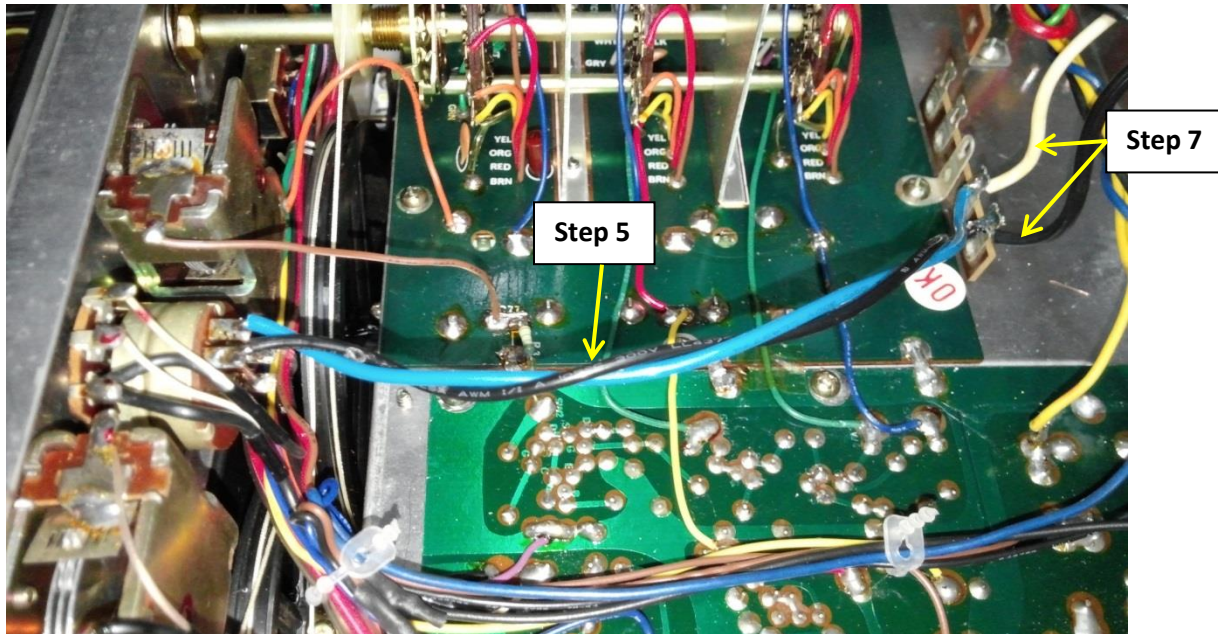


Figure 10

Step Six is to remove the tie wrap from the bundle of wires securing the AC Line cord as shown in **figure 11**. After removing the tie wrap, lift the **Black** and **White** wires (which are crimped together) from the bundle. The tie wrap may be put back to hold the remainder of the wires together. Next remove the crimp connection from the **Black** and **white** wires and strip the end of the wires.

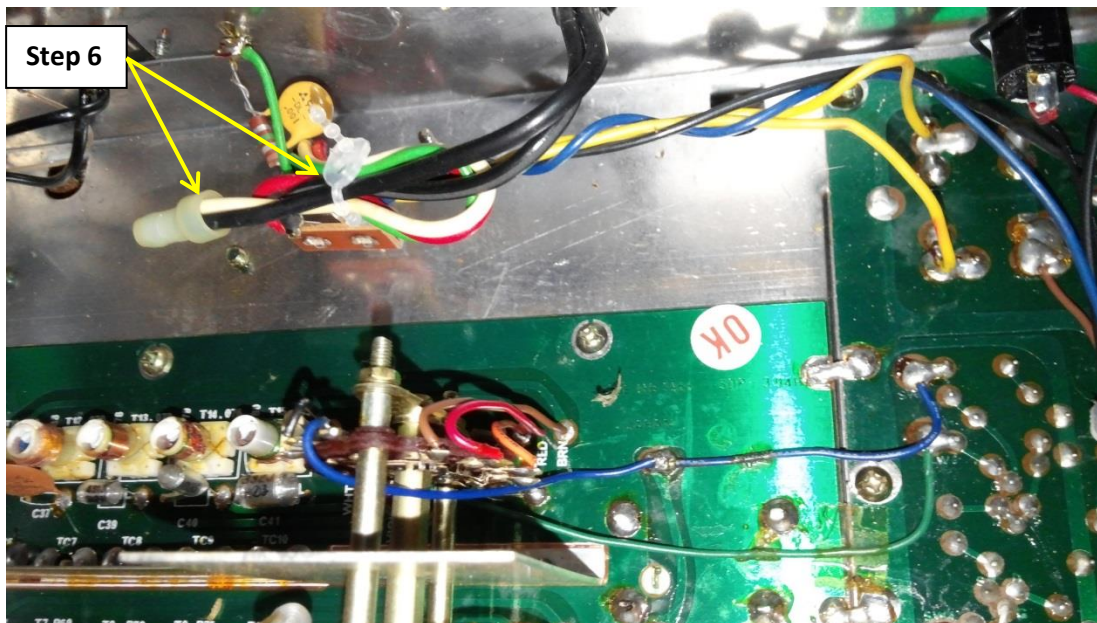


Figure 11

Step Seven is to connect the **Black** and **white** wire from step six to the wires from the ON-OFF switches on the terminal strip as show in **figure 10**. Solder the wires to the terminal strips and double check you wiring and solder joints. **Make sure the wires from the terminal strip to the ON-OFF switches are lifted away from any wires and circuit boards.**

This completes the AC modifications so there is no power applied past the ON-OFF switch to any part of the receiver when it's in the OFF position.

Good luck and enjoy your Realistic DX-160. It winds up becoming a great SWL receiver for its time and age, and a pleasure to listen to when all the different mods are added to the receiver.

Other Mods: (Click on the links to see the original mod)

1 – Changing all the Electrolytic Capacitors (kits are available on EBay for a reasonable price). The capacitors are old technology and changing them is just a good investment.

2 – [Audio Mod](#). Well worth the change.

C54 – changed from a 1uf 50V to a 22uf 50V (FYI, my radio sounds better without this change)

C56 – changed from a 33uf 16V to a 220 uf 16V

C58 – changed from a .1 uf to a 10 uf 35V

C63 – changed from a 100 uf 16V to a 1000 uf 16V

C64 – lift one let of the capacitor but leave the other side connected. Mine sounded better with the cap leg not removed.

3 – Adding [LED Lighting](#) so you can read the dial face will enhance the look. Below is my receiver with the mod. I got my LED strip at Fry's and cut the length to fit under the upper lip of the front panel. I wired a 1K miniature pot from the 10 Volt supply to the LED strip and adjusted the pot to reduce the amount of lighting from the LED strip (around 8VDC). WOW what a difference and I can now read the dial. ☺



4 – SP-150 Speaker enhancements. I put ¼" **thick foam** inside all sides, top, bottom, and rear cover. I used double sided Rug Tape to hold them in place.

5 – Completing the AC Power Mod (this document)

6 – Adding a [Digital readout](#). Please note with the Sanjian (PLJ6LED-A2) Frequency Counter, may need a .01uf in place of the 68pf capacitor. Or look for other articles to build an interface stage.

7 – Other DX-160 [Mods](#) , Helpful hints on Alignment

8 – Printable [Second Edition DX-160 Service Manual](#)