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to me

Pioneer SX-1250 Power Supply, Protection, Stabilizer Boards Rebuild Instructions:

Hi, thank you for buying this kit from me. This will allow you to rebuild the power supply board (AWR-107-0), protection board (AWM-091-A), and stabilizer board (AWR-106-A) on a Pioneer SX-1250. These are brand new, high-quality parts, and will work great for you. If your SX-1250 has other serious problems, I would strongly recommend you fix it before you install this, unless you are positive that the issue is with the power supply, protection board, or stabilizer board. Typically the stabilizer board will need to be rebuilt, so pretty much every SX-1250 should have it rebuilt. You can download a free service manual here:

https://www.hifiengine.com/manual_library/pioneer/sx-1250.shtml

This can help you with a number of things, and will help you set the stabilizer board and amplifier voltages.

If your receiver will not come out of protection (you don't get two relay clicks right after you turn it on), the issue is probably either with the stabilizer board or one of the amplifier boards. In order to help pin it down, unplug your receiver, unhook the wire harnesses that plug into one of the amp boards, then plug in and power up your receiver again. If it comes out of protection now, the problem is with that amp board and/or the output transistors (probably both). Otherwise try unplugging the other amp board and see if it comes out of protection. If it still doesn't come out of protection, the problem is most likely in one of the three power supply/protection boards. It's possible that you could have issues in the power supply/protection section AND the amp board, but it's rare. If you see burnt resistors on an amp board, you have amp issues.

You will need a pencil-type soldering iron, rosin-core solder, wire cutters, a Philips screwdriver, needle-nose pliers, a little heat-sink compound, and some sort of desoldering

device, whether it's a desoldering iron or a solder-sucker or whatever. You will also need a wood pencil with an eraser (I'll explain later).

This is an advanced-level rebuild, and if you have not worked on vintage stereo gear before, this will most likely be too advanced for you. If you don't have a dim-bulb tester, please build one and use it with this. You will need a 100-watt or 150-watt incandescent bulb, since this will probably not come out of protection with anything smaller.

https://audiokarma.org/forums/index.php?threads/dim-bulb-tester-build-and-how-to.808399/

A note, before we begin: The service manual suggests biasing the amplifier boards at 100mv. I, and many other people, prefer to bias the amplifier boards at 65mv instead. The sound is the same, it just runs the receiver cooler and puts less stress on it. It's up to you, but I have used 65mv as the suggested bias in the instructions.

What I like to do when I'm repairing stuff is to replace a few components, then test the equipment, then replace a few more, then test it again. If you replace a TON of parts all at once, and you do something wrong, it's going to be a lot of hassle trying to figure out where you went wrong. These are moderately complicated boards, so I would strongly recommend taking it one step at a time.

1. Remove the top and bottom covers of your Pioneer, and put all the screws somewhere safe, like a baggie or plastic container.

2. Take careful pictures of the top of the entire unit, and of the individual boards, especially the wire connections, using a smartphone or digital camera. Pictures are great because if you screw something up you can usually figure out what went wrong using your pictures.

3. Let's start with the protection board (AWM-091-A). This board is mounted vertically in a metal tray. In order to get it out, unplug the wire harnesses that connect to it on the bottom,

then undo the screws that hold it down. It should come right out. Then undo the screws that hold the metal tray to the circuit board. I usually work on plug-in boards on a rag or old T-shirt, but if you have a circuit-board clamp holder that would work great as well. Take some careful pictures of the front and back before you work on this.

4. First, replace the capacitors. The capacitors in this kit are the same capacitance (uf) ratings as the originals, though many will go higher on voltage. The new caps are much higher-quality, but are smaller because of advances in electronics design. Before you install any caps, look through all of the new ones--there are some with the same capacitance as others in the kit, but different voltages. In order to replace each capacitor, carefully desolder ONE capacitor, then pull it out of the board, noting which way it goes in. Each cap will have a line along one side of the body, showing that to be the negative side. Make sure you put in all the new caps exactly the same orientation as the old ones. The circuit board will have a little + or - sign to show you which way the cap goes, and you can always double-check in the service manual, but sometimes there are errors in the manual or on the PC board, believe it or not, so the easiest way to do it is just to pull the cap out carefully and put in the new one exactly the same way. Once you've put in the new cap, making sure to observe polarity (+/- orientation), bend the leads on the underside to hold the cap in place, and carefully resolder it. Then trim the leads so they match the others, and discard the wire bits. Don't leave wire bits lying around--they'll short stuff out and cause problems. You should mount the new caps pretty much flush with the circuit board--don't leave them sticking up. Replace all the capacitors, one by one. Make sure you put the correct ones in the correct locations.

5. Then replace the transistors. Make sure you save the old transistors--if you end up putting in a new one backwards for some reason, you can always put the old one back in to see if that was the issue. Replace the C945 transistors with the KSC2383s, which go in the same way. Replace the A733 transistor with the KSA992 transistor, which goes in the same way. Then replace the C1384 (or C1166) transistors with the C2690 transistors, which are bigger but will fit in just fine, and go in facing the same way. All of the new transistors in this kit are ECB (except the larger ones with metal backs), so when you're looking at the writing, the left pin is E, the middle is C, and the right one is B. The larger metal-backed transistors are BCE but just go in the same way as the old transistors do.

If you put any of the transistors in backwards, they will die and the receiver will not work. Make sure you orient them correctly. Here's a diagram of how transistors go in. All the

transistors in this kit are NPN transistors except the MJE15033G, KSA992, KSA1013, and KSA1220, which are PNP.

image.png

Now you can use the circuit-board markings to understand how these go in. Make sure you save the old transistors--if you end up putting in a new one backwards for some reason, you can always put the old one back in to see if that was the issue.

6. The protection board has five small glass diodes, which can all be replaced with the 5 small glass 1N4148 diodes in the kit. The black line on the diode goes where the white line on the board's diode marking is. The two big metal diodes rarely go bad and do not need to be replaced otherwise. Replace the relay with the new relay--just desolder the old one and solder in the new one. There are 4 pins that are not soldered on the old relay--you don't need to solder those on the new one either.

7. Now it's time for the AWR-107-0 power supply board, which is the one with the huge gray resistor on it. That resistor has a thermal fuse attached to it, and if you ever need to replace the thermal fuse, you can use the NTE8108, available on eBay and at Parts Express. This board is clipped in with plastic clips. In order to get it out, gently pinch one plastic mounting piece closed and then pull up that corner of the board. Repeat on the other corners. If the mounting clips shatter from age, then you'll have to replace them or just drill small holes in them and use screws to re-mount the board. Lots of fun! Do be careful not to snap the circuit board.

First, replace the capacitors. The two big axial caps are replaced with the new blue axial capacitors. The side of each has an arrow pointing to the negative end, or to make it even easier, the metal end is negative and the black end is positive.

The diodes here are pretty easy. All six of the small black diodes are replaced with the new 1N4004 diodes. Watch polarity on these!

8. Now it's time for the AWR-106-A stabilizer board. This is a complicated one. It comes out the same way the protection board did--just unplug it, undo the screws, then unscrew the tray from the board. Take some careful pictures of the front and back before you work on this.

9. First, replace the capacitors. They all stay the same in capacitance but go up in voltage. The 47 uf 80v are replaced with 47 uf 100v, the 47 uf 35v are replaced with 47 uf 50v, and the 47 uf 10v are replaced with the 47 uf 25v. The 1000 uf axial cap is replaced with the new 1000 uf axial. Everything else is pretty easy.

10. Then do the diodes. Use the service manual's schematic board diagram to determine the location of the diodes. D2, D4, and D6 are all replaced with 1N4148s, the little loose glass diodes. D1 and D3 are replaced with the 1N5252Bs, which are the two glass diodes stuck together with paper bits. D5 is replaced with the 1N5234B, which is the single diode with the paper bits on the ends. As before, the big metal diodes rarely go bad and don't need to be replaced otherwise.

11. The two trimmers (variable resistors) are both the same and are replaced with the two new blue Bourns trimmers, which go in the same way, just bend the leads as needed in order to fit them.

12. The transistors are more complicated. Here's the list of what gets replaced with what:

Position: Original Transistor: Replacement Transistor

Q1: 2SD313: MJE15032G

Q2: 2SC869: KSC2383 (goes in the opposite way)

Q3: 2SC1318: KSC1845

Q4: 2SC1384: KSC2690

Q5: 2SB507: MJE15033G

Q6: 2SA628A: KSA1013 (goes in the opposite way)

Q7: 2SA720: KSA992

Q8: 2SA684: KSA1220

Q9: 2SD325: MJE15032G

Q10: 2SC945: KSC2383

Q11: 2SC945: KSC1845

Q12: 2SD325: MJE15032G

Q13: 2SC945: KSC2383

All of these go in the same way except the 2SC869 and 2SA628A, which go in the opposite way. Check the board markings to be sure on all of these.

For the heat-sinked transistors, desolder and then carefully unscrew the transistor. Remove the little clear mica insulator (if it has one) and clean the insulator and the heat sink with a Q-tip or paper towel. Put new heat-sink compound on the black heat sink under the clear mica insulator, then put heat-sink compound on the back of the new transistor as well. Screw it back together and then solder it in. Repeat with the others.

13. Now comes the easy part. The pins that connect the board to the bottom plugs get oxidized over time, and this can actually cause issues. Cleaning them is easy. Go get your pencil with rubber eraser, and center the eraser on the tip of one pin. Gently push down until the pin is swallowed up by the eraser, then rotate the pencil gently. This will clean off the pin. Repeat with the other pins. Be gentle, and be careful not to damage the board or the pins.

14. Double-check and make sure you installed everything correctly. There will be no extra parts when you're done, just a pile of cut-off wire bits and the old parts. Make sure the receiver doesn't have any random wire bits in it, and that you didn't leave a screwdriver or anything in it. Put the boards back in their trays, screw them back down, and plug all the wire connectors in as necessary.

15. Now we've come to a challenging part. You need to be extremely careful when setting the voltages, because if you mess up, you can blow up your receiver. You will NEED mini-grabber leads on your multimeter. If you don't have those, you cannot safely use probes

here, so go buy some mini-grabber leads. Seriously. Do all this with no speakers or anything else attached to the receiver. If for any reason you do not have the output transistors installed, you will need to reinstall them to set the voltages successfully. Obviously make sure they're all good.

1. The voltage-setting instructions are in the service manual, and you can use that if you'd like. Otherwise, here's a clearly-worded way to do it.

2. Plug the receiver into a 100W or 150W dim-bulb tester and power on the receiver. If it powers up without brightly lighting the dim-bulb, then turn it off, unplug it, and plug it directly into the wall outlet.

3. Set the stabilizer board regulated +/- 65v voltages. First, put your positive multimeter lead on terminal 17 and the negative lead on the chassis. Set VR1 (trimmer closer to terminal 17) to 65v. Then switch your positive lead to terminal 16 (negative lead still on chassis), and adjust VR2 (trimmer closer to terminal 16) for -65v.

4. On the left amplifier board, put your positive multimeter lead on terminal 9 and the negative

lead on chassis ground. Adjust VR1 (trimmer closer to terminal 9) for 0v.

5. Then put your positive multimeter lead on terminal 7 and your negative lead on terminal 19 and adjust VR2 (trimmer closer to terminal 19) for 65mv.

6. On the right amplifier board, put your positive multimeter lead on terminal 9 and the negative lead on chassis ground. Adjust VR1 (trimmer closer to terminal 9) for 0v.

7. Then put your positive multimeter lead on terminal 7 and your negative lead on terminal 19 and adjust VR2 (trimmer closer to terminal 19) for 65mv.

8. Check and adjust the two stabilizer board voltages as necessary.

16. Close your receiver up and enjoy!

If you have any questions, you can contact me through eBay or you can post on Audiokarma.org in the Pioneer forum. They'll be happy to help you out there.

http://audiokarma.org/forums/index.php?forums/pioneer-audio.90/

I have many other kits and parts available--keep an eye on my listings!