

Retrolinear / Warneck Research

· WURLITZER EP200A INSTALLATION INSTRUCTIONS ·

INTRODUCTION:

The Warneck Research EP200A amplifier is a high-performance, reliable replacement for the original Wurlitzer model 200A amplifier board. The new low-noise design is excellent for applications where sonic performance and dependability are paramount. Although the new architecture is vastly different than the original design, the new circuitry is carefully optimized to recreate the original Wurlitzer EQ curve and tonal qualities. The new design eliminates the harp-mounted preamp card as well as the 'Aux. Out' trimmer pot. Most factory 200A pianos already have hum shield bars already installed which are essential for low noise operation. If the shield bars are missing, we can supply you with a set. This board is for use in model 200A series pianos ONLY. It will not work in 200 series instruments. It is recommended that the installer be familiar with working on Wurlitzer EPs. Because there is high voltage involved, installation should only be completed by qualified personnel.

AMPLIFIER INSTALLATION INSTRUCTIONS:

- 1. Required tools:** #2 Phillips head screwdriver, small flat head screwdriver, ¼" nut driver, ½" hollow nut driver, wire strippers, side cutters and a soldering iron.
2. Turn off and unplug the instrument from the AC line.
3. Open the instrument by removing the three front rail (key slip) screws underneath and the two music rack screws on top. Be sure to save all the washers. The cover flips open once the screws are removed. If you have a later 200A, disconnect the speaker wiring harness on the left side before lifting the cover away.
4. Remove the outer hum shield. This will expose the preamp card mounted between the two reed harps.
5. Remove the preamp card from the reed bars by removing the 2 screws with a ¼" nut driver. Also remove the two bridge brackets from the pickups and the reed bars.
6. Using the original screws with lock washers, attach the supplied RCA cable to the pickups and reed bars. The center conductors (clear wire) should go to the pickups, the shield conductors (blue wire) attach to the left and right reed bar ground. Be sure to dress the wires neatly to avoid interference with the reeds and dampers. You may find using small tie-wraps useful here.
7. Cut the transformer, control, speaker, and AUX output wires from the amplifier board as close to the pin connector lugs as possible. The vibrato control has two shielded cables that go to the main amp board and the preamp card.
8. Depending on the year of your 200A, the 'Aux. Out' pot, accessed through the bottom of the piano, may have wiring that goes to and from the main amp board only or from the main amp board to the 'Aux. Out' jack. In either case, for the new board there will only need to be one shielded cable that goes from the main amp board directly to the Aux. Out jack.
 - a. For the earlier version with pot wiring to and from the amp board, simply remove the pot's nut from the bottom of the piano using a ½" hollow nut driver. The pot and cabling can be removed from the piano. The cable from the amp board to the ¼" jack will continue to be used 'as-is' in the new installation.
 - b. For the later version with wiring from the amp board to the pot and then the ¼" jack, the cabling needs to be reconfigured slightly. Cut the cable that runs from the amp to the pot right at the pot terminals (there should be a signal and ground). Cut the wires connected to the 'Aux. Out' jack at the jack. Solder the cable cut from the pot directly to the jack paying attention to proper polarity. This cable will now become the 'line out' cable for the new installation. The pot and remaining cabling can be removed from the piano.
9. Plug the hole for the Aux. Out pot in the underside of the piano using the supplied hole plug and some glue.
10. Remove the ground screw located between the amp board and transformer and the green ground wire that goes to the old amp board. Retain the screw so that it can be reused later.
11. Remove the old amplifier from the piano. It is held down with four screws, two of which go through the heat sink. Using a magnetic screwdriver is helpful.

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12. Remove the excess cabling from the piano. When the removal is complete, all that should be left in the piano is:
 - a. The original speaker wiring (signal and ground).
 - b. One shielded cable with two inner conductors to the volume pot.
 - c. Two shielded cables to the vibrato pot.
 - d. One shielded cable direct to the 'Aux. Out' ¼" jack
 - e. Wiring (4 conductors) from the power transformer.
 - f. RCA cable from the reed bar pickups.
13. Strip the wires leaving between 1/8" to 1/4" of bare wire exposed. Tinning the ends with solder is recommended. Make sure no wire or insulation scraps make their way into the piano.
14. Install the EP200A board into the piano, re-using the four screws. As with the original amplifier, two of the screws go through the large heat sink.
15. Connect all wiring (controls, speaker, transformer, line out) to the EP200A as follows:
 - a. Power transformer: The wire colors are silk-screened on the board next to the terminal blocks. Carefully observe that the correct wires are placed in the correct terminals.
 - b. Speaker: Connect the signal and ground wires to the appropriate terminals. BLK is ground.
 - c. Line out: Connect the signal and ground wires to the appropriate terminals. Make sure the ground wire for the Line Out is not frayed and is kept fairly short.
 - d. Volume pot: Connect the pot CCW terminal (shield or ground) to Ctrl Harness terminal #1. Connect the pot wiper (usually red) to terminal #2. Connect the pot CW terminal (usually white) to terminal #3.
 - e. Vibrato pot: Connect the pot CW terminal to terminal #4. Connect the pot wiper to terminal #5. Connect both shields/grounds to terminal #6.
 - f. RCA cable: Attach to piano input jack.

As a general rule, the wires should be secured but the insulation should not be pinched in the terminal blocks. It is good to check that each wire is properly secured in the terminal blocks by testing with a very gentle tug.
16. If your vibrato pot is NOT an original Wurlitzer stock pot, or is missing the 18k resistor soldered across it, clip and remove the RV1B1 resistor on the EP200A board located near the 6 position terminal block.
17. Connect the terminal (with two wires coming from it) of the supplied green ground wire to the screw on the treble reed bar that holds on the hum shield nearest the ground screw on the amp chassis rail between the amp board and transformer.
18. Connect the terminal of the longer ground wire to the nearest screw on the front of the bass reed bar to the left of the amplifier heat sink.
19. Connect the amplifier ground cable, AC input ground, and remaining end of the supplied ground wire to the screw in between the amp board and transformer.
20. Any other ground cabling from the amp chassis plate to the reed bars on the far left or right sides should be cut or removed. The remaining jumpers from the reed bars to the sustain mechanisms must stay intact. In the event that the ground to the reed bar and sustain mechanism is single pointed at the amp chassis rail, reconfigure the wiring such that it goes from the reed bar to the sustain mechanism directly. The point of this is to only have ONE ground strap connection from the amp chassis rail to the reed bar. This will eliminate ground loops internal to the piano.
21. Configure the amplifier output switch. It selects either a fixed or variable (with volume control) line out.
22. Replace the outer hum shield that goes across the piano. If the hum shield shares screws with the new ground wires that were just installed, make sure the terminals are behind the hum shield before tightening down the screws.
23. Recheck and verify all connections have been properly made.
24. Plug in and power on the piano to test for proper operation. Adjust the GAIN ADJ trimmer with the volume control turned all the way up to the point just below where the amp begins to distort while playing loud full chords. The VIB ADJ trimmer is factory set.
25. This completes installation of the EP200A. Whew!!!